

FFY 2021-2024

Southern Alleghenies RPO

Performance Measures



COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF TRANSPORTATION  
HARRISBURG, PENNSYLVANIA

OFFICE OF  
SECRETARY OF TRANSPORTATION

October 17, 2017

Steven K. Howsare, Executive Director  
Southern Alleghenies Planning Commission  
3 Sheraton Drive  
Altoona, PA 16601

Dear Mr. Howsare:

The Moving Ahead for Progress in the 21st Century Act (MAP-21) established a system of national goals and performance management measures designed to ensure the effective use of Federal transportation funds. 23 CFR 490 Subpart B establishes five performance measures for the Highway Safety Improvement Program (HSIP):

- (1) Number of fatalities
- (2) Rate of fatalities
- (3) Number of serious injuries
- (4) Rate of serious injuries
- (5) Number of non-motorized fatalities and serious injuries.

The targets in Table 1 of the enclosure reflect the 2017 Strategic Highway Safety Plan goal of reducing fatalities and serious injuries by 2%. In cooperation with our federal partners, PennDOT has established these targets which are effective August 31, 2017.

MPOs/RPOs must establish targets for each performance measure for the same calendar year within 180 days of PennDOT establishing targets (February 27, 2018) either by agreeing to plan and program projects in support of PennDOT targets, or by committing to their own quantifiable targets. FHWA will determine annually whether PennDOT has met, or has made significant progress toward meeting, established performance targets. More information about this is available through FHWA's website at [https://safety.fhwa.dot.gov/hsip/spm/mpo\\_factsheet.cfm](https://safety.fhwa.dot.gov/hsip/spm/mpo_factsheet.cfm)

Plans updated after May 27, 2018 including Metropolitan Long-Range Transportation Plans and Transportation Improvement Programs, and Statewide Transportation Improvement Programs must include a description of how the plans support and contribute to achieving the established performance targets.

To ensure compliance with 23 U.S.C. §134, please respond to this letter by selecting one of the 2 options below by December 29, 2017.

Please select one of the following options:



The MPO/RPO decision-making body agrees to support the state targets by planning and programming projects that contribute to meeting or making significant progress toward the established PennDOT safety targets. See Table 2 of the enclosure to see an example of what the corresponding values would look like in Southern Alleghenies RPO should they agree to support the statewide targets.



The MPO/RPO decision-making body commits to establishing their own quantifiable targets and has attached their methodology. MPOs/RPOs that establish their own targets will report the methodology, including VMT estimate, used to develop their targets.

Concurrence:

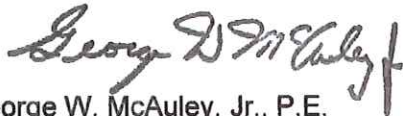
  
Authorized MPO/RPO Spokesperson

Date:

12/15/2017

Should you have any questions, please contact Kristin Mulkerin, Transportation Planning Manager, at 717.783.2430 or via email at [kmulkerin@pa.gov](mailto:kmulkerin@pa.gov).

Sincerely,



George W. McAuley, Jr., P.E.  
Deputy Secretary for Highway Administration

Sincerely,



James D. Ritzman, P.E.  
Deputy Secretary for Planning

MPO/RPO Target Setting  
Page 3  
October 17, 2017

4940/GEG/hmq

bcc: Richard Roman, P.E., Director, BOMO  
Larry Shifflet, Director, Center for Program Development and Management  
Glenn Rowe, P.E., Chief, Highway Safety and Traffic Operations Division, BOMO  
Gavin Gray, P.E., Chief, Highway Safety Section, BOMO  
Kristin Mulkerin, Transportation Planning Manager, CPDM

**Table 1: Statewide Targets:**

Performance Measure	5-year Rolling Averages		
	TARGET	ACTUAL	BASELINE
	2014-2018	2014-2018	2012-2016
Number of Fatalities	1,177.6		1,220.2
Fatality Rate	1.161		1.220
Number of Serious Injuries	3,799.8		3,434.0
Serious Injury Rate	3.746		3.433
Number of Non-motorized Fatalities and Serious Injuries	654.4		602.4

\* Future VMT estimated to be 1% higher per year starting in 2017

**Table 2: Southern Alleghenies RPO Supporting Values:**

Performance Measure	5-year Rolling Averages		
	TARGET	ACTUAL	BASELINE
	2014-2018	2014-2018	2012-2016
Number of Fatalities	30.7		36.2
Fatality Rate	1.116		1.338
Number of Serious Injuries	83.3		80.6
Serious Injury Rate	3.029		2.978
Number of Non-motorized Fatalities and Serious Injuries	10.8		7.8

\* Future VMT estimated to be 1% higher per year starting in 2017





COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF TRANSPORTATION  
HARRISBURG, PENNSYLVANIA

OFFICE OF  
SECRETARY OF TRANSPORTATION

July 16, 2018

Dear Planning Partners:

The Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) and Fixing America's Surface Transportation (FAST) Act established a series of performance measures to ensure effective use of Federal transportation funds. Title 23 Part 490 of the Code of Federal Regulations (23 CFR 490) establishes measures to assess pavements on the National Highway System (NHS), bridges carrying the NHS, and pavements on the Interstate, which are collectively referred to as the PM-2 measures. 23 CFR 490.105 establishes measures to assess the performance of the NHS, freight movement on the Interstate, and the Congestion Mitigation and Air Quality Improvement (CMAQ) Program. These measures are collectively referred to as the PM-3 measures.

PM-2 Performance Measures include:

- 1) Percentage of pavements on the Interstate System in Good condition
- 2) Percentage of pavements on the Interstate System in Poor condition
- 3) Percentage of pavements on the NHS (excluding the Interstate System) in Good condition
- 4) Percentage of pavements on the NHS (excluding the Interstate System) in Poor condition
- 5) Percentage of NHS bridge deck area classified as in Good condition
- 6) Percentage of NHS bridge deck area classified as in Poor condition

PM-3 Performance Measures include:

- 1) Percent of Person-miles Traveled on the Interstate System that are Reliable
- 2) Percent of Person-miles Traveled on the Non-Interstate NHS that are Reliable
- 3) Interstate System Truck Travel Time Reliability Index
- 4) Annual Hours of Peak-Hour Excessive Delay (PHED) per Capita
- 5) Percent Non-Single Occupant Vehicle (SOV) Travel
- 6) On-Road Mobile Source Emissions Reduction for CMAQ-funded Projects

For the three reliability measures, PennDOT has set statewide targets (sub-state targets are optional). Metropolitan Planning Organizations (MPOs) baseline reliability measures have been provided for informative purposes only. For the first performance period, the annual hours of excessive delay and non-SOV travel measures must be developed for the Pittsburgh and Philadelphia urbanized areas only. PennDOT has worked closely with the Southwestern Pennsylvania Commission (SPC) and the Delaware Valley Regional Planning Commission (DVRPC) to develop these targets and to include the necessary multi-state coordination partners in the target-setting process.

## PM2/PM3 Target Setting

Page 2

July 16, 2018

The mobile source emissions measure targets are produced statewide and for each MPO that is in nonattainment or maintenance of the National Ambient Air Quality Standards.

Federal regulations require MPOs to establish targets for each performance measure, within 180 days of PennDOT establishing targets (by November 16, 2018) either by agreeing to plan and program projects in support of PennDOT targets, or by committing to their own quantifiable targets. PennDOT is requesting that Rural Planning Organizations (RPOs) also establish targets by November 16, 2018, by agreeing to support the PennDOT targets or setting their own. The Federal Highway Administration (FHWA) will determine annually whether PennDOT has met, or has made significant progress toward meeting established statewide targets. More information on Transportation Performance Management (TPM) is available at <https://www.fhwa.dot.gov/tpm/faq.cfm>.

To ensure compliance with 23 U.S.C. §134, please respond to this letter by selecting an option for PM-2 and PM-3 measures below before November 16, 2018.

Please select one of the following options for PM-2 measures:

- ☐ The MPO/RPO decision-making body agrees to support the state PM-2 targets by planning and programming projects that contribute to meeting or making significant progress toward the established PennDOT performance targets. See Attachment 1 and 2 of the enclosures for statewide baseline and target values.
- ☐ The MPO/RPO decision-making body commits to establishing their own quantifiable targets and has attached their methodology. MPOs/RPOs that establish their own targets will report the methodology used to develop them.

Please select one of the following options for PM-3 measures:

- ☐ The MPO/RPO decision-making body agrees to support the state PM-3 targets by planning and programming projects that contribute to meeting or making significant progress toward the established PennDOT performance targets. See Attachment 3, 4, 5, and 6 of the enclosures for statewide baseline and target values.
- ☐ The MPO/RPO decision-making body commits to establishing their own quantifiable targets and has attached their methodology. MPOs/RPOs that establish their own targets will report the methodology used to develop them.

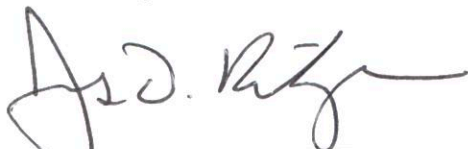
Concurrence: \_\_\_\_\_ Date: \_\_\_\_\_  
Authorized MPO/RPO Spokesperson



July 16, 2018

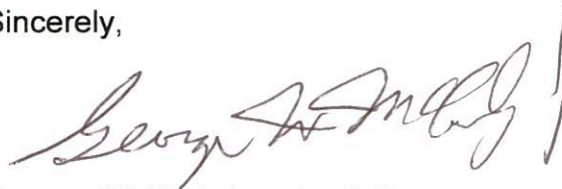
Should you have any questions, please contact Kristin Mulkerin, Transportation Planning Manager, at 717.783.2430 or via email at [kmulkerin@pa.gov](mailto:kmulkerin@pa.gov).

Sincerely,

A handwritten signature in dark ink, appearing to read "J.D. Ritzman", with a long horizontal flourish extending to the right.

James D. Ritzman, P.E.  
Deputy Secretary for Planning

Sincerely,

A handwritten signature in dark ink, appearing to read "George W. McAuley, Jr.", with a long horizontal flourish extending to the right.

George W. McAuley, Jr., P.E.  
Deputy Secretary for Highway Administration

Enclosure



## Attachment 1: PM-2 Baseline and Target Values for Pavement Measures

### Interstate:

Measure	2017 Baseline	2019 2-year Target	2021 4-year Target
Percentage in Good Condition	67.2 %	N/A	60.0 %
Percentage in Poor Condition	0.4 %	N/A	2.0 %

### NHS Non-Interstate:

Measure	2017 Baseline	2019 2-year Target	2021 4-year Target
Percentage in Good Condition	36.8 %	35.0 %	33.0 %
Percentage in Poor Condition	2.3 %	4.0 %	5.0 %

### Definitions:

Pavement performance measures required for FHWA reporting include 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 percent, rutting, and faulting:

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 percent of a state's NHS Interstate lane-miles be in poor pavement condition.

- PennDOT's pavement condition target (its desired state of good repair) for NHS Interstate roadways mirrors the federal standard: no more than 5 percent of Pennsylvania's NHS Interstate pavements shall be rated in poor condition.
- PennDOT's pavement condition targets are consistent with its asset management objectives of maintaining the system at the desired state of good repair, managing to LLCC, and achieving national and state transportation goals.
- 23 CFR 490.313(b)(4)(i) requires the total mainline lane-miles of missing, invalid, or unresolved sections for Interstate System and non-Interstate NHS shall be limited to no more than 5 percent of the total lane miles. A section is missing if any one of the data requirements specified in 23 CFR 490.309 and 23 CFR 490.311(c) are not met or that reported section does not provide sufficient data to determine its Overall Condition.

### **Methodology:**

- Since no historical data at tenth-mile increments exists, previously collected segment-level data for the years 2013-2016 was quantified and used to determine deterioration rates for each condition. For each segment, the change of each condition value was determined from 2013 to 2014, from 2014 to 2015, and from 2015 to 2016.
- If a value was missing for any year, no change was calculated. If a condition value equaled zero for any year, it was excluded based on the assumption that a significant repair (i.e., a project) had been completed. The change in condition for each year was averaged for each segment; the segment averages were then averaged to determine an overall deterioration rate for each condition.
- There are instances where there was incremental improvement from one year to the next for the conditions. This is attributed to minor maintenance and/or bias in the collection process. These values were included in the analysis. The overall deterioration rate was then increased by 3 percent to reflect the impact of inflation. Since minor maintenance is reflected in the deterioration rate, and our ability to continue to perform those activities is affected by inflation, as a worst case, the deterioration would increase proportionately to the decrease in spending power for this work.
- Where the segment average resulted in a negative number (i.e., the condition value improved over the three-year period), a value of zero was used for the segment average since deterioration was not reflected in that segment average value.
- The resultant deterioration rates are provided in the following table:

<b>Condition</b>	<b>Interstate</b>	<b>NHS Non-Interstate</b>
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. These values reflect a state of "do nothing."
- Based on data from MPMS, all projects programmed on the Interstate and NHS non-Interstate networks for the next four years (2018-2021) were compiled. The mileage of these programmed projects that affected pavements in good, fair, and poor condition was determined, and these proportions were projected over the next four-year period (2022-2025) and the following four-year period (2026-2029). Since the TYP is not fully developed beyond the first four years, projecting programmed mileage for the first four years is a better representation of the volume of work to be expected, assuming constant funding while reducing affected miles by 3 percent 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.



## Attachment 2: PM-2 Baseline and Target Values for Bridge Measures

Measure	2017 Baseline	2019 2-year Target	2021 4-year Target
Percentage in Good Condition	25.6 %	25.8%	26.0 %
Percentage in Poor Condition	5.5 %	5.6%	6.0%

### Definitions:

Separate bridge structure condition ratings are collected for deck, superstructure, and substructure components during regular inspections using the National Bridge Inventory 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 FHWA scoring system for bridge condition metrics for deck, superstructure, substructure, and culvert components is summarized in the following table:

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

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

### Methodology:

- 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.

**Attachment 3: PM-3 Baseline and Target Values for Reliability and Peak Hour Delay Measures**

*(Baseline Estimated using RITIS Data Extract from May 8, 2018)*

<b>Measure</b>	<b>2017 Baseline</b>	<b>2019 2-year Target</b>	<b>2021 4-year Target</b>
Interstate Reliability (Statewide)	<b>89.8 %</b>	<b>89.8 %</b>	<b>89.8 %</b>
Non-Interstate Reliability (Statewide)	<b>87.4 %</b>	<i>N/A</i>	<b>87.4 %</b>
Truck Reliability Index (Statewide)	<b>1.34</b>	<b>1.34</b>	<b>1.34</b>
Annual Peak Hour Excessive Delay Hours Per Capita (Urbanized Area)	<i>DVRPC</i> <b>16.8</b>	<i>N/A</i>	<b>17.2</b>
	<i>SPC</i> <b>11.1</b>	<i>N/A</i>	<b>11.8</b>

**Attachment 4: PM-3 Baseline and Target Values for Non-SOV Travel Measure**

*(Baseline Estimated using American Community Survey)*

<b>Measure</b>	<b>2017 Baseline</b>	<b>2019 2-year Target</b>	<b>2021 4-year Target</b>
Percent Non-Single Occupant Vehicle Travel (Urbanized Area)	<i>DVRPC</i> <b>27.9 %</b>	<b>28.0 %</b>	<b>28.1 %</b>
	<i>SPC</i> <b>24.8 %</b>	<b>24.6%</b>	<b>24.4 %</b>



## Attachment 5: PM-3 Baseline and Target Values for CMAQ Emission Measures

Applicable MPOs and Pollutants Determined from:

[https://www.fhwa.dot.gov/environment/air\\_quality/cmaq/measures/cmaq\\_applicability/page03.cfm#toc494364458](https://www.fhwa.dot.gov/environment/air_quality/cmaq/measures/cmaq_applicability/page03.cfm#toc494364458)

Measure	MPO	Emissions (kg/day)	
		2019 2-year Target*	2021 4-year Target
VOC Emissions	Statewide	<b>109.460</b>	<b>201.730</b>
	DVRPC (PA only)	<b>37.610</b>	<b>69.310</b>
	SPC	<b>58.060</b>	<b>107.000</b>
	Lehigh Valley	11.690	<b>21.540</b>
	Lancaster	1.950	<b>3.600</b>
	Reading	0.150	<b>0.270</b>
	NEPA	0.000	<b>0.000</b>
NOx Emissions	Statewide	<b>337.700</b>	<b>612.820</b>
	DVRPC (PA only)	<b>23.420</b>	<b>42.500</b>
	SPC	<b>256.110</b>	<b>464.770</b>
	Lehigh Valley	57.550	<b>104.440</b>
	Lancaster	0.570	<b>1.030</b>
	Reading	0.040	<b>0.080</b>
	NEPA	0.000	<b>0.000</b>
PM <sub>2.5</sub> Emissions	Statewide	<b>10.760</b>	<b>20.490</b>
	DVRPC (PA only)	<b>1.080</b>	<b>2.060</b>
	SPC	<b>7.010</b>	<b>13.350</b>
	Lehigh Valley	2.320	<b>4.410</b>
	York	0.060	<b>0.110</b>
	Harrisburg	0.050	<b>0.100</b>
	Lancaster	0.020	<b>0.040</b>
	Lebanon	0.050	<b>0.090</b>
	Johnstown	0.170	<b>0.320</b>
PM <sub>10</sub> Emissions	Statewide	<b>9.540</b>	<b>17.470</b>
	SPC	<b>9.540</b>	<b>17.470</b>
CO Emissions	Statewide	<b>567.700</b>	<b>1135.400</b>
	DVRPC (PA only) **	<b>282.740</b>	<b>565.470</b>
	SPC	<b>284.970</b>	<b>569.930</b>

\* 2-year emission targets are only applicable for SPC, DVRPC and Statewide targets (bold above). MPOs with populations <1 million are not required to report 2-year emission targets. The values were used to establish statewide 2-year targets.

\*\* As of December 2017, DVRPC's CO 2<sup>nd</sup> 10-year maintenance plan has ended. The applicability determination is made based on NAAQS designations as of one-year before the State DOT Baseline Performance Period Report is due. PennDOT and DVRPC will request that CO targets be excluded from the requirements at the midpoint of the performance period.

### **PM 3 Target Setting Notes:**

#### **Reliability Measures:**

- Targets set equivalent to 2017 baseline values
- Limited historic data to understand trends of reliability measures.
- More research and data monitoring required to identify trends and project impacts on measure.
- Reassessment at mid-term period.

#### **Delay Measure:**

- Historical Vehicle Miles Travel (VMT) and INRIX GPS data suggest increasing delay trends.
- MPO travel models in each region indicate potential increases to VMT and delay.
- Combination of MPO staff input, travel model forecasts, VMT and vehicle registration trends, and forecast economy information used to establish higher delay targets at this time.
- DVRPC estimates 0.6% annual increase in delay/capita.
- SPC estimates 1.5% annual increase in delay/capita.
- Reassessment at mid-term period.

#### **Non-SOV Travel Measure:**

- Non-SOV Travel trends based on ACS survey data are relatively constant over the last 5 years.
- DVRPC trend indicates slightly increasing Non-SOV percentage.
- SPC trend indicates slightly decreasing Non-SOV percentage.
- Reassessment at midterm.

#### **Emission Measures:**

- Targets based on reported emissions in FHWA's CMAQ annual database.
- Targets are very difficult to anticipate as CMAQ-funded projects can produce a wide range of benefits.
- 4-year (2014-2017) historical benefits for new CMAQ projects averaged to support target setting.
- Many projects are expected to provide less emissions benefit in the future due to fleet turnover.
- Historical average CMAQ benefits by MPO adjusted to reflect cleaner fleet in future years.

**Attachment 6: Supplemental Information for MPO Distribution**  
**PM-3 Baseline Reliability Measure Values by MPO**  
*(Extracted from RITIS on May 8, 2018)*

<b>MPO*</b>	<b>2017 Baseline Travel Time Values</b>		
	<b>Interstate Reliability</b>	<b>Non-Interstate Reliability</b>	<b>Truck Reliability</b>
Statewide	<b>89.8%</b>	<b>87.4%</b>	<b>1.34</b>
Adams	N/A	87.9%	N/A
Altoona	100.0%	83.5%	1.20
Johnstown	N/A	95.1%	N/A
Centre	100.0%	92.6%	1.14
DVRPC**	74.4%	84.1%	1.83
Erie	100.0%	83.9%	1.25
Franklin	100.0%	94.0%	1.09
Harrisburg	90.9%	91.9%	1.37
Scranton-Wilkes-Barre	98.1%	87.5%	1.40
Lancaster	100.0%	94.1%	1.08
Lebanon	100.0%	93.0%	1.11
Lehigh Valley	100.0%	87.1%	1.34
NEPA	100.0%	92.1%	1.22
Reading	100.0%	93.4%	1.12
Shenango Valley	99.4%	94.9%	1.18
SPC	92.3%	87.0%	1.44
SEDA-COG	100.0%	95.5%	1.10
Williamsport	100.0%	98.3%	1.16
York	100.0%	89.5%	1.22

\* The RITIS analysis platform currently does not directly produce MAP-21 measures for RPO areas

\*\* DVRPC MPO values currently include areas outside of Pennsylvania that are within MPO boundaries