pennsylvania
DEPARTMENT OF TRANSPORTATION

# National Performance Management Measures to Assess System Performance, Freight Movement, and the CMAQ Improvement Program

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**SUBJECT: Establishment of State DOT Targets for PM-3 Performance Measures [23 CFR 490.105]**

**DESCRIPTION:**

The Federal Highway Administration (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 establishes a set of performance measures for State Departments of Transportation (State DOTs) and Metropolitan Planning Organizations (MPOs) to use as required by the Moving Ahead for Progress in the 21st Century Act (MAP–21) and the Fixing America's Surface Transportation (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); to assess freight movement on the Interstate System; 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. These system performance measures are collectively referred to as the PM-3 measures.

State DOTs are required to establish targets in coordination with MPOs for all the measures in this rule by May 20, 2018. MPOs will have an additional 180 days beyond that date to either set their own targets or agree to the State DOT targets. In addition, State DOTs will need to report on performance at regular intervals. The first State DOT baseline performance period report is due October 1, 2018, for all measures in this rule.

**DISCUSSION:**

1. PM-3 System 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
2. State DOT 2- and 4-year targets are due May 20, 2018 and will also be reported to FHWA in the 2017 baseline report 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.

3. 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 (NAAQS).

4. 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 all 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. Future revisions and modifications to these tools may impact the reported performance measures and established targets.

5. Due to potential tool enhancements, limited historic information, and the need for additional research understanding 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. DVRPC and SPC will also track the annual PHED and Non-SOV travel measures and revisit the estimated established 4-year targets at the mid-term period.

**COORDINATION:**

1. A workshop was conducted on January 11th with PennDOT and FHWA Pennsylvania Division staff to identify future steps and requirements related to the Transportation Performance Management (TPM) rulemaking.

2. PennDOT conducted a performance measure workshop on February 26-27th with the Pittsburgh, Philadelphia and York MPO planning staff to evaluate baseline performance measure trends and methodologies for target setting.

3. 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.

4. PennDOT conducted a May 9th webinar to review the State DOT targets with the Planning Partners.

5. There were four Transportation Performance Measure meetings held for the Philadelphia PA-NJ-DE-MD urbanized area to coordinate, discuss and establish target setting for the PHED and Non-SOV travel measures. The meetings occurred on February 16th, March 19th, April 9th and April 30th, 2018. Agency representation included PennDOT, NJDOT, DelDOT, MDOT, FHWA, DVRPC, NJTPA, SJTPO, WILMAPCO, LVPC, Berks and Lancaster County MPOs.

6. 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.

**ESTABLISHMENT OF STATE DOT TARGETS:**

Specific targets and informational resources are attached as follows:

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|---|---|
| ***Attachment 1 Targets*** | Baseline and target values for the travel time reliability and annual peak hour excessive delay measures |
| ***Attachment 2 Targets*** | Baseline and target values for the non-SOV travel measures |
| ***Attachment 3 Targets*** | Target values for the CMAQ emissions measures |
| ***Attachment 4*** | MPO baseline reliability measures <u>for informational purposes only</u> |

**ESTABLISHMENT OF MPO TARGETS:**

1. The MPOs must establish targets no later than 180 days after the respective State DOT(s) establishes (or amends in future) their targets (by November 16, 2018). The MPOs must establish targets by either:

   - Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target for that performance measure; or
   - Committing to a quantifiable target for that performance measure for their metropolitan planning area.

2. PennDOT will be formally contacting each MPO (similar to the safety measures) regarding the above MPO target setting options. If the MPOs establish their own performance measure targets, they should coordinate with PennDOT on the selection of the targets in accordance with 23 U.S.C. 134(h)(2)(B)(i)(II) to ensure consistency, to the maximum extent practicable.

3. The MPOs must report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

**Attachment 1: PM-3 Baseline and Target Values for Reliability and Peak Hour Delay Measures**

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

| Measure | 2017 Baseline | *2019* 2-year Target | *2021* 4-year Target |
|---|---|---|---|
| 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*) | *DVRPC* **16.8** | *N/A* | **17.2** |
| | *SPC* **11.1** | *N/A* | **11.8** |

**Attachment 2: PM-3 Baseline and Target Values for Non-SOV Travel Measure**

*(Baseline Estimated using American Community Survey)*

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

## 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.

## Attachment 3: 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

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

** 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 2nd 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.*

## Target Setting Notes:

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

| MPO* | *2017 Baseline Travel Time Values* | | |
|---|---|---|---|
| | **Interstate Reliability** | **Non-Interstate Reliability** | **Truck Reliability** |
| Statewide | **89.8%** | **87.4%** | **1.34** |
| 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*