MIAMI VALLEY
Regional Planning Commission

Transportation Performance Management Update

September / October 2018

Transportation Performance Management Update

Transportation Performance Management is a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals.

- Determine Annual TPM Safety targets for the second performance period
- Determine TPM targets for the first performance period: 2018-2021 for the following:
  - Pavement Condition,
  - Bridge Condition,
  - NHS Travel Time Reliability, and
  - CMAQ Emissions'

FHWA TPM Rulemaking

Target Areas	Performance Measures	Target Setting Deadlines	
		ODOT	MVRPC
Safety	Number of Fatalities	Annually by August 31st	Annually by February 27th
	Rate of Fatalities		
	Number of Serious Injuries		
	Rate of Serious Injuries		
	Number of Non-Motorized Fatalities & Serious Injuries		
Pavement Condition	% Interstate System Pavements in Good Condition	4 yr. STW targets by May, 20 2018	4 yr. targets by November 16, 2018
	% Interstate System Pavements in Poor Condition		
	% Non-Interstate NHS System Pavements - Good	2 & 4 yr. STW targets by May, 20 2018	
	% Non-Interstate NHS System Pavements - Poor		
Bridge Condition	% of NHS Bridges by Deck Area in Good Condition	2 & 4 yr. STW targets by May, 20 2018	4 yr. targets by November 16, 2018
	% of NHS Bridges by Deck Area in Poor Condition		

FHWA TPM Rulemaking (contd.)

Target Areas	Performance Measures	Target Setting Deadlines	
		ODOT	MVRPC
NHS Travel Time Reliability	% Person-Miles Traveled on Interstate that are Reliable	2 & 4 yr. STW targets by May, 20 2018	4 yr. targets by November 16, 2018
	% Person-Miles Traveled on Non-Interstate NHS that are Reliable	4 yr. STW targets by May, 20 2018	
Freight	Truck Travel Time Reliability (TTTR) Index	2 & 4 yr. STW targets by May, 20 2018	4 yr. targets by November 16, 2018
Total CMAQ Emissions	Total CMAQ Project Reductions for CO, VOC, Nox, $PM_{2.5}$ & PM_{10}	2 & 4 yr. STW targets by May, 20 2018	4 yr. targets by November 16, 2018

Safety PM Targets

- July 1, 2018: Targets included in the HSP
- August 31, 2018: Targets included in the HSIP
- Ohio adopted 1% Annual Reduction Goal
- **February 27, 2019:** Deadline for MVRPC to establish targets by
  - Adopting statewide targets, OR
  - Commiting to a quantifiable target for the MPO metropolitan area
  - MVRPC continues to support ODOT's targets

Safety Performance Targets

Safety Performance Measure	2013-2017 Baseline	2018 Target	2019* Target	2013-2017 Baseline MVRPC	2019 Target* MVRPC?	Met Target or Progress?**
Number of Fatalities	1,083.4	1,051	1,062	77.0	75	No
Fatality Rate	0.93	0.91	0.91	0.89	0.85	No
Number of Serious Injuries	9,013.2	9,033	8,834	612.2	600	Yes
Serious Injury Rate	7.76	8.01	7.60	7.07	6.93	Yes
No. of Non-motorized Fatalities and Serious Injuries	852.8	840	836	66.4	65	Yes

* Based on 1% reduction

** Next determination of progress to be made at the State level only, comparing 2018 targets to 2018 actual numbers.

Performance Measures: Pavements (PM2)

Measure Area	Performance Measure
Pavement Condition	Percentage of pavements of the Interstate System in Good condition
	Percentage of pavements of the non-Interstate NHS in Good condition
	Percentage of pavements of the Interstate System in Poor condition
	Percentage of pavements of the non-Interstate NHS in Poor condition

Pavement TPM: Calculating Metrics and Measures

- HPMS data used by FHWA to calculate good/poor metrics and measures
- Combines consideration of roughness, cracking and rutting/faulting
  - Present Serviceability Rating (PSR) for lower speed roads
- Measures aggregated by lane miles
- HPMS pavement data collection requirements revised

Pavement Condition Thresholds

Pavement Metrics	Good	Fair	Poor
IRI – International Roughness Index (inches/mile)	< 95	95-170	>170
Rutting (ashphalt pavements only) (inches)	< 0.20	0.20-0.40	>0.40
Faulting (concrete pavements only) (inches)	< 0.10	0.10-0.15	>0.15
Cracking (%)	<5	Ashphalt: 5-20 JCP: 5-15 CRCP: 5-10	Ashphalt: 5-20 JCP: 5-15 CRCP: 5-10
PSR (roads with speed limit < 40mph) (0.0 – 5.0 value)	≥ 4.0	2.0 – 4.0	≤ 2.0

- If All metrics are Good, then segment rated as Good
- If 2 or more metrics are Poor, then segment rated as Poor
- All Else Fair
- Aggregate lane miles of Good and Poor segments

MVRPC

Pavement Conditions

Pavement TPM Targets

NHS Pavement Condition	State Target 4 Year	MVRPC 2017 Baseline
Percentage of Interstate Pavements in Good Condition	50%	60.5%
Percentage of Interstate Pavements in Poor Condition	1%	0.0%
Percentage of Non-Interstate NHS Pavements in Good Condition	35%	**23.6%**
Percentage of Non-Interstate NHS Pavements in Poor Condition	3%	2.3%

- MVRPC will support ODOT targets for this performance period

Performance Measures: Bridges (PM2)

Measure Area	Performance Measure
NHS Bridge Condition	Percentage of NHS Bridges Classified as in “Good” Condition
	Percentage of NHS Bridges Classified as in “Poor” Condition

Bridge TPM: Calculating Metrics and Measures

- NBI data for NHS bridges used for assessing bridge condition
- Good/Poor Condition calculated based on minimum value of NBI deck, superstructure, substructure and culvert ratings
- Good/Fair/Poor Bridges aggregated by deck area to obtain % of Good and Poor Bridges

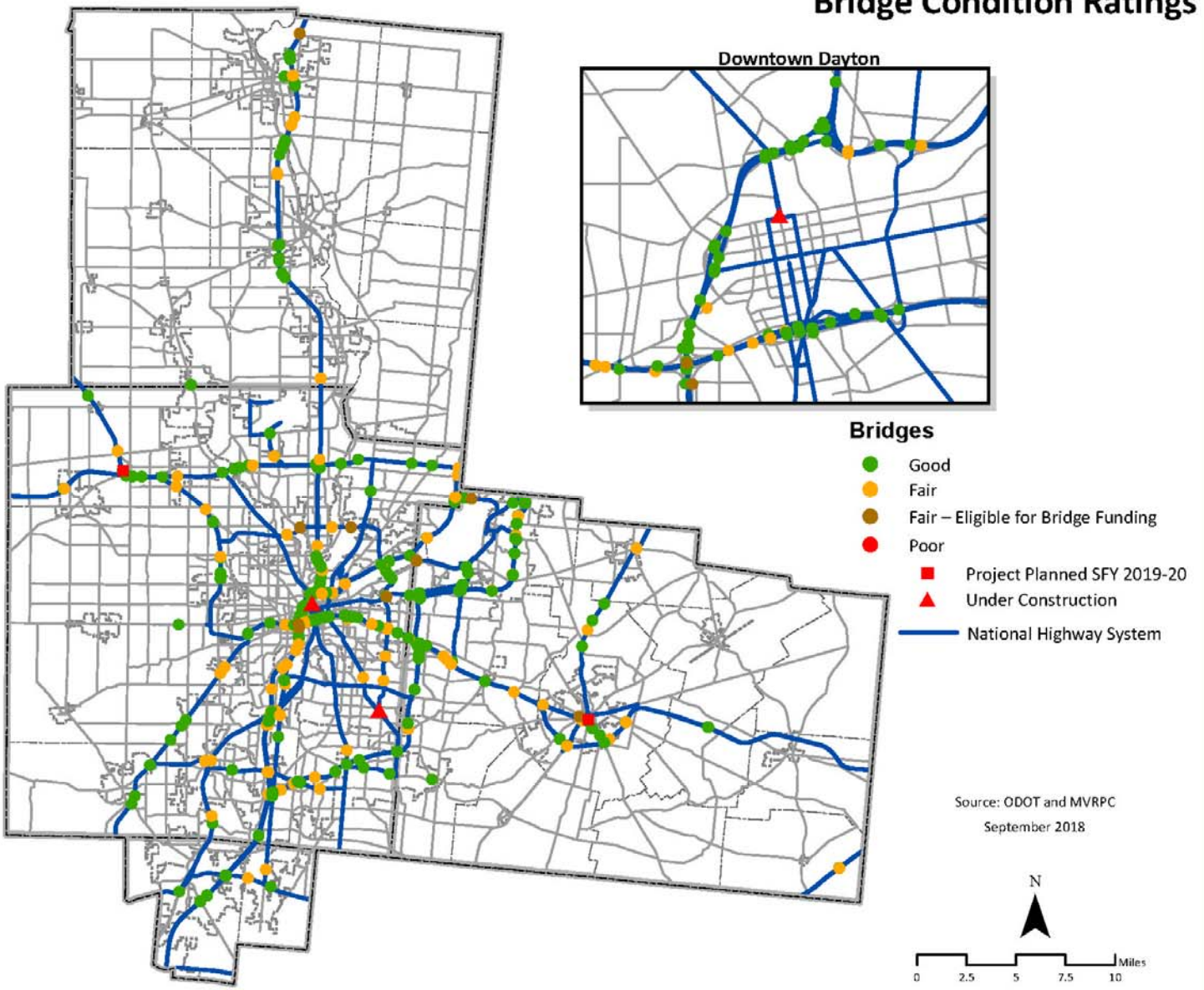
Bridge Condition Thresholds

NBI Rating Scale	9 8 7	6 5	4 3 2 1 0
NBI Items	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

- Minimum condition rating of all NBI items is Good, then bridge rated as Good
- Minimum condition rating of any NBI item is Poor, then bridge rated as Poor
- All Else Fair
- Aggregate Deck Area of Good, Fair, and Poor bridges to determine % Good and % Poor bridges

MVRPC

Bridge Condition Ratings



Bridge TPM Targets

NHS Bridge Condition	State Target 4 Year	MVRPC 2017 Baseline
Percentage of NHS Bridges by deck area in Good Condition	50%	59%
Percentage of NHS Bridges by deck area in Poor Condition	5%	2%

- MVRPC will support ODOT targets for this performance period

Performance Measures: Travel Time Reliability and Freight (PM3)

Measure Area	Performance Measure
Performance of the National Highway System (System Performance)	Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the Interstate that are reliable
	Non-Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the non-Interstate NHS that are reliable
Freight Movement on the Interstate System	Freight Reliability Measure: Truck Travel Time Reliability (TTTR) Index

Travel Time Reliability Calculation

Each Reporting Segment: Metrics	Threshold	Result
Level of Travel Time Reliability (LOTTR) for each time period and reporting segment on: 1. Interstate System 2. Non-Interstate NHS	LOTTR < 1.50 for the reporting segment = reliable	Reporting Segment included / not included in measure

- Data Source: National Performance Management Research Data Set (NPMRDS)
- LOTTR = 80th Percentile Travel Time/50th Percentile Travel Time
- Reliable Person Miles = ∑ (Length of Reliable Segment x Annual Traffic Volume x Occupancy)

$$\%\ of\ person\ miles\ reliable = \frac{\sum \text{(Reliable person-miles)}}{\sum \text{(Total person-miles)}}$$

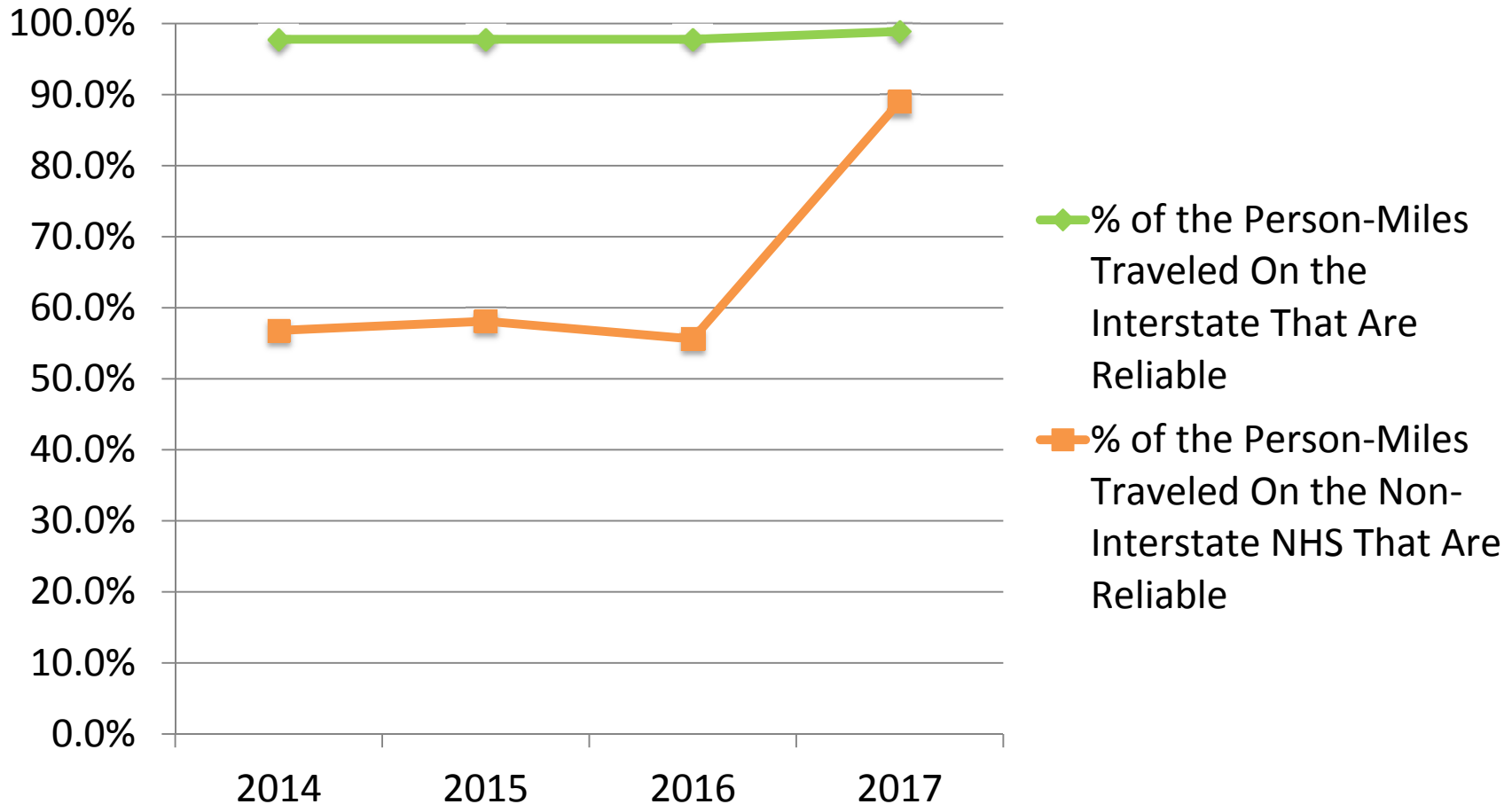
Truck Travel Time Reliability Index

Each Reporting Segment: Metric	Threshold	Result
Truck Travel Time Reliability (TTTR) for each time period and each segment on the Interstate System	No Threshold	Maximum TTTR for each reporting segment

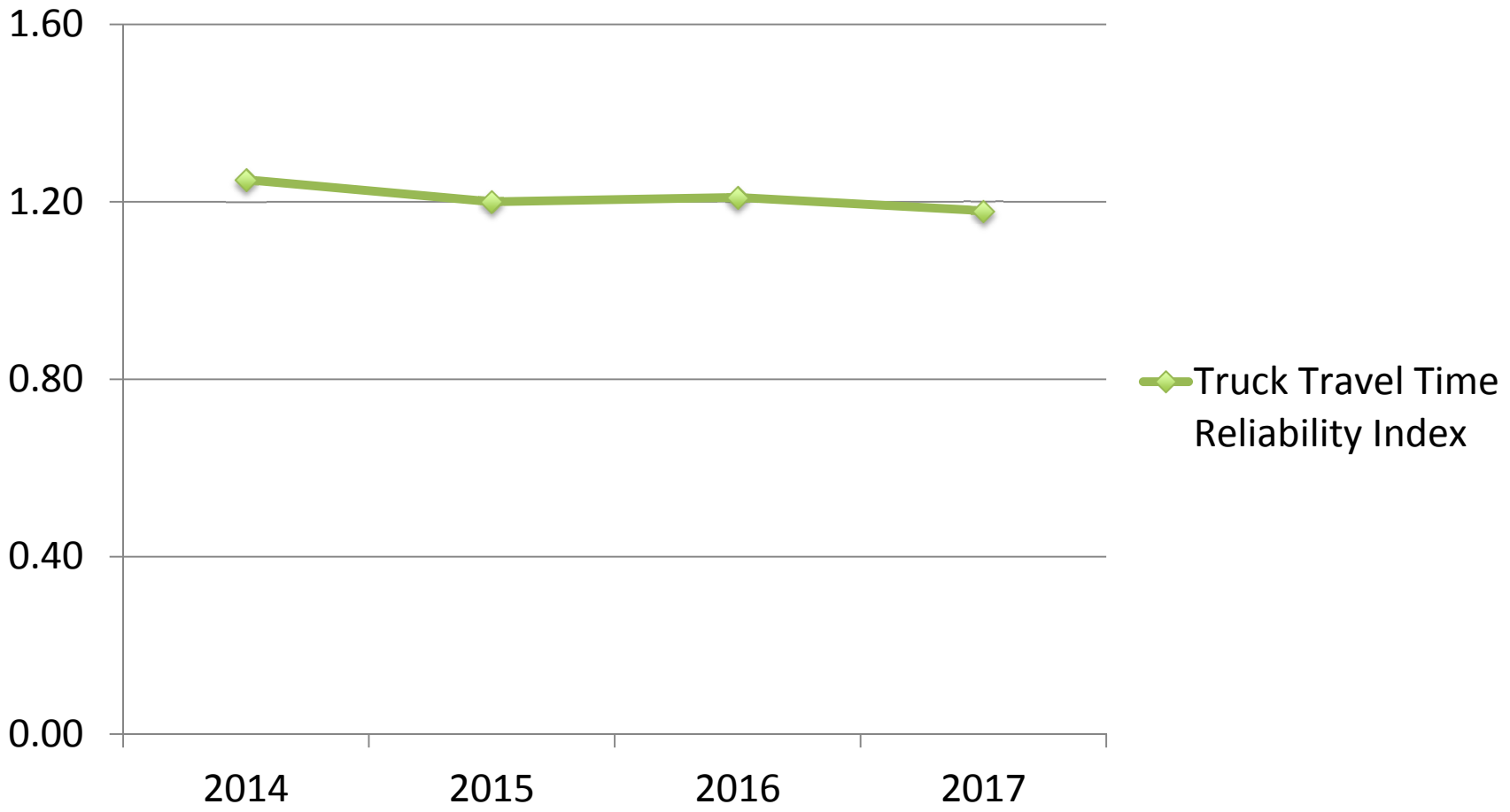
- Data Source: National Performance Management Research Data Set (NPMRDS)
- TTTR Ratio = 95th Percentile Truck Travel Time/50th Percentile Truck Travel Time

$$TTTR\ Index = \frac{\sum \text{(All Segment Length-Weighted TTTR)}}{\sum \text{(All Segment Lengths)}}$$

Travel Time Reliability – MVRPC Region Trend



TTTR Index – MVRPC Region Trend



Travel Time Reliability and Freight Targets

NHS Travel Time Reliability	State Target 4 Year	MVRPC 2017 Baseline
Percent of person-miles traveled on the Interstate that are reliable	85%	98.9%
Percent of person-miles traveled on the Non-Interstate NHS that are reliable	80%	*89.0%**
Interstate Truck Travel Time Reliability	**State Target 4 Year**	**MVRPC 2017 Baseline**
Interstate Truck Travel Time Reliability Index	<1.50	1.18

* Concerns about reliability of source data

- MVRPC will support ODOT targets for this performance period

Performance Measures: CMAQ Program (PM3)

Measure Area	Performance Measure
CMAQ Program (On-Road Mobile Source Emissions)	Total Emission Reductions for CO, VOC, NOX, $PM_{2.5}$ & PM_{10}

CMAQ Targets

Total CMAQ Emission Reduction	State Target* 4 Year	MVRPC 2017 Baseline
VOC Total Emission Reduction	69 kg/day	N/A
NOX Total Emission Reduction	537 kg/day	N/A
PM2.5 Total Emission Reduction	36 kg/day	N/A

* Targets based on review of 2013 – 2016 project emissions data recorded in FHWA's CMAQ Public Access Database and which was averaged to form a trend analysis.

Questions and More Information

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