2017-2045 Metropolitan Transportation Plan

Addendum

Performance Measurement

Adopted

May, 2019

Introduction

In accordance with Federal regulations, the Morgantown Monongalia Metropolitan Planning Organization recently adopted performance measures established by the West Virginia DOT. The measures provide a set of criteria for evaluating the impact of a project on achieving national goals for pavement condition, bridge condition, system performance (travel time reliability), freight movement, congestion mitigation, and safety.

The primary purpose of the evaluation process developed by MPO staff is to assess the effect of projects included in the MPO's Metropolitan Transportation Plan and Transportation Improvement Program, using the established performance measures. As a part of the evaluation process, a project index and an index/cost ratio are assigned to each project being assessed. Using the index value and index/cost ratio value, two or more transportation projects can be compared in terms of their individual impact to the measures. In addition, the process can also be used to compare the collective impacts of different groups of projects, which include projects currently not in the fiscally constrained portion of the MPO's Metropolitan Transportation Plan and Transportation Improvement Program.

The evaluation outcome can be used to inform MTP project selection and prioritization, complementing with other elements in transportation planning process, such as service deficiency, community preference, environmental justice, transportation equity, and geographic balance.

Performance Measures and Targets

This section fulfills the requirement of 23 CFR 450.324(f)(3): MTP includes a description of the (Federally required) performance measures and performance targets used in assessing the performance of the transportation system.

The MMMPO adopted the following performance measures and performance targets for its Metropolitan Transportation Plan. The measures and targets are those established by the West Virginia Department of Transportation-Division of Highways.

1. Interstate/Non-Interstate NHS Pavement Condition			
National Performance Management Measures for Assessing Pavement Condition 23 CFR 490 (Subpart A & C)			
Performance Measures	**Performance Targets**		
	State Targets		Target Frequency
	2-yr	4-yr	
Percent of pavements on the Interstate system in GOOD condition		75%	4-year (2018-2021)
Percent of pavements on the Interstate system in POOR condition		4.0%	
Percent of pavements on the non-Interstate NHS in GOOD condition	40.0%	45%	2-year (2018-2019) 4-year (2018-2021)
Percent of pavements on the non-Interstate NHS in POOR condition	5%	5%	
2. NHS Bridge Condition			
National Performance Management Measures for Assessing Bridge Condition 23 CFR 490 (Subpart A & D)			
Performance Measures	**Performance Targets**		
	State Targets		Target Frequency
	2-yr	4-yr	
Percent of NHS bridge deck area classified as in GOOD condition	14%	16%	2-year (2018-2019) 4-year (2018-2021)
Percent of NHS bridge deck area classified as in POOR condition	10%	10%	
3. System Performance			
National Performance Management Measures to Assess Performance of the National Highway System 23 CFR 490 (Subpart A & E)			
Performance Measures	**Performance Targets**		
	State Targets		Target Frequency
	2-yr	4-yr	
Percent of person miles traveled on the Interstate system that are reliable (Level of Travel Time Reliability, LOTTR)	98%	96%	2-year (2018-2019) 4-year (2018-2021)
Percent of person miles traveled on the non-Interstate NHS that are reliable (Level of Travel Time Reliability, LOTTR)		87%	

4. Freight Movement			
Performance Measures	**Performance Targets**		
	State Targets		Target Frequency
	2-yr	4-yr	
Travel time reliability of trucks on the Interstate System (Truck Travel Time Reliability = average ratio of 95th percentile travel time to 50th percentile travel time)	1.25	1.30	2-year (2018-2019) 4-year (2018-2021)

5. Congestion Mitigation and Air Quality (CMAQ) Measures			
National Performance Management Measures for Assessing the Congestion Mitigation and Air Quality Improvement Program CFR 490 (Subpart A, G & H)			
Performance Measures	**Performance Targets**		
	State Targets		Target Frequency
	2-yr	4-yr	
On-Road Mobile Source Emissions - CMAQ Emissions Reduction	PM2.s: 0.092 kg/day	PM.o: 0.000 kg/day	2-year (2018-2019) 4-year (2018-2021)

6. Safety Performance	
Performance Measures	**Performance Targets**
Number of fatalities	Reduce five year average fatalities on highways by 50% by 2030
Number of serious injuries	Reduce the five year average number of serious injuries on highways by 66% by 2030
Fatality rate per HMVMT*	Reduce the five year average fatality rate per HMVMT by 50% by 2030
Serious Injury Rate per HMVMT	Reduce the five year average injury rate per HMVMT by 66% by 2030
Number of non-motorized fatalities and serious injuries	Reduce the five year average number of non-motorized fatalities and injuries: a. Reduce fatalities by 50% by 2030 b. Reduce non-motorized serious injuries by 66% by 2030
*Hundred Million Vehicle Miles Traveled	

Performance Measures System Evaluation Report

This section fulfills the requirement of 23 CFR 450.324(f)(4): MTP should include a system evaluation report evaluating the condition and performance of the transportation system with respect to the (Federally required) performance targets including progress achieved by the MPO toward the performance targets.

Congestion Mitigation and Air Quality Measures are NOT a required for performance measure for the MMMPO. However, projects proposed in the MPO's Metropolitan Transportation Plan address traffic congestion issues to various degrees. By including CMAQ measures as a part of the evaluation, the assessment will provide a more comprehensive understanding of the projects impact to the transportation system in the region.

Evaluation Methodology

The following table illustrates the steps used to evaluate the impact of MTP Tier 1 projects to the Performance Measures.

Step 1. Impact Evaluation		
Purpose	Description	Outcome
Understand the impact of a project to each established performance measure.	Assess the impact of a project to each performance measure established by the WV DOT, using a scale of 1-5, where 1 means the lowest impact, and 5 means the highest impact	Impact Value
Step 2. Weight Evaluation		
Purpose	Description	Outcome
Understand the preference and priority of the community with respect to established performance measures.	Decide the weight of performance measure categories, and the weight of performance measures under each category.	Weight Value
Step 3. Index Calculation		
Purpose	Description	Outcome
Prepare for the calculation of Project Index Value in the following step.	Multiplying the Impact Values (Step 1) and Weight Value (Step 2). Index to Cost Ratio is calculated by dividing the index value by the estimated project cost.	Index Value
Step 4. Project Index		
Purpose	Description	Outcome
Understand the impact of a project to performance measure with consideration of community priority.	Calculate the index value of a project by summing up all index value of that project.	Project Index Value
Step 5. Index/Cost Ratio		
Purpose	Description	Outcome
Understand the cost efficiency of each project with reference to its performance measures impact.	Calculate the ratio by dividing the Project Index Value with the estimated project cost of a project.	Index/Cost Ratio
Step 6. System-wide Impact Index		
Purpose	Description	Outcome
Understand the agglomerate impact of all tier 1 projects to established performance measures.	Sum up the Index Value (Step 3) under performance measure category.	

Evaluation Process and Outcome

Step 1. Impact Evaluation

	Est. Cost (Million)	1. Interstate/Non-Interstate NHS Pavement Condition				2. NHS Bridge Condition		3. System Performance		4 Freight Movement		5. Congestion Mitigation and Air Quality Measures	6. Safety Performance					
		1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	4.1	4.2	5.1	6.1	6.2	6.3	6.4	6.5	6.6
I-79 Access Improvement Phase I	110-120	--	--	**5**	**5**	--	--	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**3**	**3**
Grumbein's Island Grade Separation	3	--	--	--	--	--	--	--	**3**	--	--	**3**	--	--	--	--	**5**	**5**
Stewartstown Rd Improvements	12	--	--	**3**	**1**	--	--	--	**3**	--	**1**	**2**	**3**	**3**	**3**	**3**	**1**	**1**
West Run Rd Improvements-Eastern Section	3	--	--	**3**	**1**	--	--	--	**3**	--	--	**2**	**3**	**3**	**3**	**3**	**3**	**3**
Earl Core Road (WV 7)-Northern Section	9	--	--	**3**	**1**	--	--	--	**5**	**4**	**4**	**3**	**3**	**3**	**3**	**3**	**1**	**1**
University Ave Corridor Improvements Phase 1	36	--	--	**3**	**1**	--	--	--	**4**	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**4**	**4**
Fairmont Rd/Holland Ave Improvements Phase I	11	--	--	**3**	**1**	--	--	--	**3**	**4**	**4**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Northside Connector Bus Rapid Transit	1	--	--	--	--	--	--	--	**5**	--	--	**4**	**2**	**2**	**2**	**2**	**5**	**5**
Grant Ave Bicycle/Pedestrian Connector	0.9	--	--	--	--	--	--	--	**1**	--	--	**1**	--	--	--	--	**5**	**5**

Step 2. Weight Evaluation

Performance Measures	Weight
1. Interstate/Non-Interstate NHS Pavement Condition	12
1.1 Percent of pavement on the Interstate system in GOOD condition	3
1.2 percent of pavement on the Interstate system in POOR condition	3
1.3 Percent of pavement on the non-Interstates NHS in GOOD condition	3
1.4 Percent of pavement on the non-Interstate NHS in POOR condition	3
2. NHS Bridge Condition (Total 12 Points)	12
2.1 Percent of NHS bridge deck area classified as in GOOD condition	6
2.2 Percent of NHS bridge deck area classified as in POOR condition	6
3. System Performance (Total 12 Points)	12
3.1 percent of person miles traveled on the Interstate system that are reliable (Level of Travel Time Reliability)	6
3.2 Percent of person miles traveled on the non-interstate NHS that are reliable (Level of Travel Time Reliability)	6
4 Freight Movement (Total 12 Points)	12
4.1 Travel time reliability of trucks on the Interstate System	6
4.2 Safety Performance Measures	6
5. Congestion Mitigation and Air Quality (CMAQ) Measures (Total 12 Points)	
5.1 On-road mobile source emissions – CMAQ Emissions Reduction	
6. Safety Performance (Total 12 Points)	12
6.1 Number of Fatalities + 6.3 Fatality rate per hundred million vehicles miles traveled (HMVMT)	4
6.2 Number of serious injuries + 6.4 Injury rate per hundred million vehicle miles traveled (HMVMT)	4
6.5 Number of non-motorized fatalities + 6.6 Number of non-motorized serious injuries	4

Step 3. Index Calculation

	Est. Cost (Million)	1. Interstate/Non-Interstate NHS Pavement Condition				2. NHS Bridge Condition		3. System Performance		4 Freight Movement		5. Congestion Mitigation and Air Quality Measures	6. Safety Performance					
		1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	4.1	4.2	5.1	6.1	6.2	6.3	6.4	6.5	6.6
I-79 Access Improvement Phase I	110-120			**15**	**15**			**24**	**30**	**30**	**30**	**60**	**10**	**10**	**10**	**10**	**6**	**6**
Grumbein's Island Grade Separation	3								**18**			**36**					**10**	**10**
Stewartstown Rd Improvements	12			**9**	**3**				**18**		**6**	**24**	**6**	**6**	**6**	**6**	**2**	**2**
West Run Rd Improvements-Eastern Section	3			**9**	**3**				**18**			**24**	**6**	**6**	**6**	**6**	**6**	**6**
Earl Core Road (WV 7)-Northern Section	9			**9**	**3**				**30**	**24**	**24**	**36**	**6**	**6**	**6**	**6**	**2**	**2**
University Ave Corridor Improvements Phase 1	36			**9**	**3**				**24**	**12**	**12**	**36**	**4**	**4**	**4**	**4**	**8**	**8**
Fairmont Rd/Holland Ave Improvements Phase I	11			**9**	**3**				**18**	**24**	**24**	**24**	**4**	**4**	**4**	**4**	**4**	**4**
Northside Connector Bus Rapid Transit	1								**30**			**48**	**4**	**4**	**4**	**4**	**10**	**10**
Grant Ave Bicycle/Pedestrian Connector	0.9								**6**			**12**					**10**	**10**

Step 4. Project Index and Step 5. Index/Cost Ratio

Est. Cost	**Project Name**	**Index**	**Index/Cost Ratio**
120	I-79 Access Improvement Phase I	256	2
9	Earl Core Road (WV 7)-Northern Section	154	17
36	University Ave Corridor Improvements Phase 1	128	4
11	Fairmont Rd/Holland Ave Improvements Phase I	126	11
20	Northside Connector Bus Rapid Transit	114	6*
3	West Run Rd Improvements-Eastern Section	90	30
12	Stewartstown Rd Improvements	88	7
3	Grumbein's Island Grade Separation	74	25
0.9	Grant Ave Bicycle/Pedestrian Connector	38	42

*based on 20 years' operation

Step 6. System-wide Impact Index

1. Interstate/Non-Interstate NHS Pavement Condition				2. NHS Bridge Condition		3. System Performance		4 Freight Movement		5. CMAQ Measures	6. Safety Performance					
1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	4.1	4.2	5.1	6.1	6.2	6.3	6.4	6.5	6.6
0	0	60	30	0	0	24	192	90	96	300	40	40	40	40	58	58
90				0		216		186		300	276					
1068																