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Creating Solutions Across Jurisdictional Boundaries

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**Memo to:** Board of Directors

**From:** Staff

**Subject:** 2018 Regional Performance Targets – Pavement & Bridge, Reliability,  
and On-Road Mobile Source Emissions

**Date:** October 16, 2018

The Fixing America's Surface Transportation (FAST) Act was signed into law on December 4, 2015 and guides how project planning and programming is conducted by state departments of transportation (DOTs) and metropolitan planning organizations (MPOs). The FAST Act continues the National Highway Performance Program (NHPP) established under the Moving Ahead for Progress in the 21st Century Act (MAP-21) which establishes a performance-driven, outcome-based planning and programming process. A crucial element of the NHPP process is the establishment of performance targets and measures to achieve desired outcomes across the transportation system. These performance targets are intended to ensure state DOTs and MPOs invest resources in transportation projects that make progress toward the achievement of national goals including: safety, infrastructure condition/state of good repair, congestion reduction, transportation system reliability, freight movement/economic vitality, environmental sustainability, and reduced project delivery delays.

State DOTs and MPOs are given separate responsibilities for establishing performance targets and using a set of performance measures to track progress toward meeting those targets for safety, bridge and pavement condition, air quality, freight movement, and system reliability. Previously, the Board of Directors set regional performance targets for safety, non-SOV travel, and peak-hour excessive delay. The final targets to be set in the first round of target setting are **pavement and bridge condition, system reliability, and on road mobile source emissions.**

### **Pavement and Bridge Condition**

The pavement and bridge performance measure requires state DOTs and MPOs to establish quantitative targets for:

#### **Pavement Condition**

- Percentage of pavements on the Interstate System in Good condition
- Percentage of pavements on the Interstate System in Poor condition

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- Percentage of pavements on the non-Interstate National Highway System (NHS) in Good condition
- Percentage of pavements on the non-Interstate NHS in Poor condition

**Bridge Condition**

- Percentage of NHS bridges classified as in Good condition
- Percentage of NHS bridges classified as in Poor condition

For the pavement measures, five pavement metrics, derived from the Highway Performance Monitoring System (HPMS), are used to assess condition: International Roughness Index (IRI); Cracking Percent; Rutting; Faulting; and a Present Serviceability Rating (PSR) for lower speed roads.

The bridge measure assesses the condition of a bridge’s deck, superstructure, substructure, and culverts. Bridge data come from the Federal Highway Administration’s (FHWA) annual National Bridge Inventory (NBI). NBI data is available for all bridges that carry NHS routes and that are over twenty feet in length.

After consulting with IDOT and MoDOT on upcoming levels of investment and priorities in preservation, staff recommends gradually improving targets for pavements in Missouri while holding levels of good and poor bridge deck area steady at baseline levels.

For EWG’s Illinois counties, staff recommends targets of slightly increased good interstate pavement condition, a decrease in non-interstate NHS good condition pavements, increases in poor pavements on both interstate and non-interstate NHS, an increase in good bridge deck area percentage, and a decline in poor bridge area percentage.

Pavement and Bridge Condition Targets						
	EWG Illinois Counties			EWG Missouri Counties		
	Baseline	2 Year Target	4 Year Target	Baseline	2 Year Target	4 Year Target
<b>Good Condition - Pavement</b>						
<b>Interstate</b>	54.94%	n/a	56.00%	70.7%	n/a	77.5%
<b>Non-Interstate</b>	49.31%	48.00%	46.00%	39.2%	41.0%	43.0%
<b>Poor Condition - Pavement</b>						
<b>Interstate</b>	0.40%	n/a	1.00%	0.0%	n/a	0.0%
<b>Non-Interstate</b>	0.56%	1.00%	2.00%	3.5%	2.0%	1.0%
<b>Bridges</b>						
<b>% Bridges Good Condition</b>	39.62%	40.00%	40.00%	31.4%	31.4%	31.4%
<b>% Bridges Poor Condition</b>	10.87%	9.00%	8.00%	9.2%	9.2%	9.2%

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### **System Reliability**

The system reliability performance measure requires state DOTs and MPOs to establish quantitative targets for:

- 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
- Truck travel time reliability index

The Level of Travel Time Reliability (LOTTR) is defined as the ratio of longer travel times (80th percentile) to a “normal” travel time (50<sup>th</sup> percentile) for a given roadway segment. The measure is the percentage of person-miles (vehicle miles multiplied by occupancy) traveled on the NHS where this ratio is less than 1.5, which is considered reliable. Using person miles rather than vehicle-miles gives equal weight to all individuals using the roads.

This measure is calculated using data from the FHWA’s National Performance Management Research Data Set (NPMRDS). The NPMRDS provides travel time by road segment for the NHS in 15-minute intervals. The data for NPMRDS was collected by HERE Technologies from 2014 to 2016. In 2017, the vendor for this data was changed to INRIX. This resulted in data that may not be comparable.

The Truck Travel Time Reliability (TTTR) is defined as the ratio of the longer travel times (95th percentile) to a “normal” travel time (50<sup>th</sup> percentile) for a given segment on the interstate system. Higher values for this measure indicate that interstate travel is more unpredictable for local and national freight companies.

This measure is calculated using data from the FHWA’s National Performance Management Research Data Set (NPMRDS). The NPMRDS provides travel time by road segment for the NHS in 15-minute intervals. The data for NPMRDS was collected by HERE Technologies from 2014 to 2016. In 2017, the vendor for this data was changed to INRIX. This resulted in data that may not be comparable.

Due to the incompatibility of the data and the resulting inability to discern a trend, staff recommends a target of maintaining current levels of travel time reliability, at least

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through the first mid performance period progress report in 2020, at which point there should be better available data to reset targets if necessary.

Reliability Targets			
	Baseline	2 Year Target	4 Year Target
Percent of Reliable Person-Miles Traveled on the Interstate	86.9%	86.9%	86.9%
Percent of Reliable Person-Miles Traveled on the Non-Interstate NH	86.3%	n/a	86.3%
Truck Travel Time Reliability Index	1.54	1.54	1.54

### On-Road Mobile Source Emissions

The on-road mobile source emissions performance measure requires state DOTs and MPOs to establish quantitative targets for:

#### Total emissions reduction (on-road mobile sources)

- Volatile Organic Compounds (VOC)
- Nitrogen Oxides (NO<sub>x</sub>)
- Particulate Matter (PM 2.5)
- Carbon Monoxide (CO<sub>2</sub>)

The on-road mobile source emissions performance measure tracks the emissions reduced by transportation projects funded through the CMAQ program and is referred to as Total Emissions Reduction. The Total Emissions Reduction will need to be shown for the entire St. Louis, MO-IL Urbanized Area. Development of regional emissions targets, per federal law, was conducted collectively between staff, IDOT, and MoDOT and the three agencies recommend setting expected emissions reductions from CMAQ projects in the Transportation Improvement Program (TIP) as regional emissions targets. While programmed projects may be delayed, advanced, added, or removed, accounting for what is in the TIP was considered the most reasonable approach for setting emissions targets.

On-Road Mobile Source Emissions Targets			
	Baseline: FFY 2014-2017 Criteria Pollutants and Applicable Precursors from CMAQ Public Access System	2-year Target (kg/day)	4-year Target (kg/day)
Nitrogen Oxides (NO <sub>x</sub> )	1,202.29	151.9	152.9
Volatile Organic Compounds (VOC)	224.846	21.5	21.6
Particulate Matter (PM <sub>2.5</sub> )	32.121	6.9	6.9
Carbon Monoxide (CO)	0	15.7	201.9

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### **Next Steps**

There will be a mid-performance period progress report due October 1, 2020, through which 4-year targets may be adjusted, and 2-year condition/performance will be reported as baselines.

East-West Gateway will also need to integrate these performance targets into its planning processes by including it in the metropolitan transportation plan, *Connected2045*. In addition, East-West Gateway is required to show how investments in the TIP help achieve all adopted performance targets.

FHWA fact sheets on the pavement and bridge, reliability, and on-road mobile source emissions are attached.

**Staff Recommendation:** Staff recommends approval of 2018 performance targets for pavement & bridge condition, reliability, and on-road mobile source emissions.