MAP 21

TRANSPORTATION PERFORMANCE MANAGEMENT

December 2018

- Safety
- Infrastructure Condition
- Congestion Reduction
- System Reliability
- Freight Movement and Economic Vitality
- Environmental Sustainability
- Reduced Project Delivery Delays

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CENTRAL ARKANSAS 2050

Transportation Performance Management

MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), was signed into law by President Obama on July 6, 2012. A key feature of MAP-21 is the establishment of a performance- and outcome-based program. The objective of this performance- and outcome-based program to invest resources in projects that collectively will make progress toward the achievement of the national goals. On December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act (P.L. 114-94) into law. The FAST Act continued the performance-based planning established by MAP-21.

National Performance Goals

Establishes national performance goals for the Federal-aid highway program in seven areas:

[§1203; 23 USC 150(b)]

Goal area	**National goal**
Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
Infrastructure condition	To maintain the highway infrastructure asset system in a state of good repair
Congestion reduction	To achieve a significant reduction in congestion on the National Highway System
System reliability	To improve the efficiency of the surface transportation system
Freight movement and economic vitality	To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
Environmental sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment
Reduced project delivery delays	To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

Performance Measures

MAP-21 requires the Secretary of Transportation, in consultation with States, metropolitan planning organizations (MPOs), and other stakeholders, to establish performance measures in the areas listed below. Provides for State Department of Transportation (DOT) to establish such measures within 18 months of enactment, and prohibits DOT from establishing additional performance measures. [§1203; 23 USC 150(c)]

- Pavement condition on the Interstate System and on remainder of the National Highway System (NHS)
- Performance of the Interstate System and the remainder of the NHS
- Bridge condition on the NHS
- Fatalities and serious injuries—both number and rate per vehicle mile traveled-on all public roads
- Traffic congestion
- On-road mobile source emissions
- Freight movement on the Interstate System
- Transit Asset Management

Time Frame

Safety

No later than August 31, 2017, DOTs are to report their safety targets to Federal Highway Administration (FHWA). MPOs have 180 days to either support the DOT targets or formulate their own. MPOs are required to report targets to their state DOT. Safety targets are set annually.

On or after May 27, 2018, updates or amendments to the Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP) must be developed according to the performance-based provisions of 23 Code of Federal Regulations (CFR) Part 450 and safety performance measure requirements.

Pavement and Bridge Condition Measures

No later than May 20, 2018, DOTs are required to establish targets for the first performance period: State DOTs establish 4-year target only for Interstate System pavement condition measures; and 2-year and 4-year targets for non-Interstate NHS pavement condition measures and NHS Bridge Condition measures for the first performance period. The performance targets are then submitted to FHWA via the Baseline Performance Report due October 1, 2018. MPOs have 180 days to either support the DOT targets or formulate their own. MPOs are required to report targets to their State DOT.

On or after May 20, 2019, updates or amendments to MTP and TIP must be developed according to the performance-based provisions of 23 CFR Part 450 and the pavement and bridge condition performance measure requirements.

Performance of NHS and Freight Measures

No later than May 20, 2018, DOTs are required to establish targets for the first performance period. State DOTs establish 4-year target only for non-Interstate NHS Travel Time Reliability and Peak Hour Excessive Delay (PHED) measures; and both two year and four year targets for Interstate NHS Travel Time Reliability, Freight Reliability, and Percent Non-SOV Travel for the first Performance Period. The performance targets are then submitted to FHWA via the Baseline Performance Report due October 1, 2018. MPOs have 180 days to either support the DOT targets or formulate their own. MPOs are required to report targets to their State DOT.

On or after May 20, 2019, updates or amendments to MTP and TIP must be developed according to the performance-based provisions of 23 CFR Part 450 and the system reliability and freight performance measure requirements.

Transit Asset Management

No later than October, 1 2018, transit agencies are required to establish targets for Transit Assets that they have direct capital responsibility. MPOs must establish targets specific to the MPO planning area for the same performance measures for all public transit providers in the MPO planning area within 180 days of when the transit provider establishes its targets.

Safety Performance Measures

The Safety Performance Management Measures regulation supports the Highway Safety Improvement Program (HSIP) and requires DOT and MPOs to set HSIP targets for 5 safety performance measures.

Safety Performance Measure

1. Number of fatalities
2. Rate of fatalities per 100 million Vehicle Miles Traveled (VMT)
3. Number of serious injuries
4. Rate of serious injuries per 100 million VMT
5. Number of non-motorized fatalities and non-motorized serious injuries

Performance measures are calculated based upon the Fatality Analysis Reporting System -FARS (Fatalities), State Motor Vehicle Crash Database (Series injuries) and Highway Performance Monitoring System - HPMS (Volume Data).

CARTS Baseline Performance Measures

Metroplan's baseline numbers for the region are listed below:

1. Rolling average of fatalities 95.2 (Figure 1)
2. Rolling average of fatality rate 1.18 (Figure 2)
3. Rolling average of serious injuries 631.0 (Figure 3)
4. Rolling average of serious injury rate 7.83 (Figure 4)
5. Rolling average of non-motorized fatalities and serious injuries 34.6 (Figure 5)

Figure 1- CARTS Fatalities

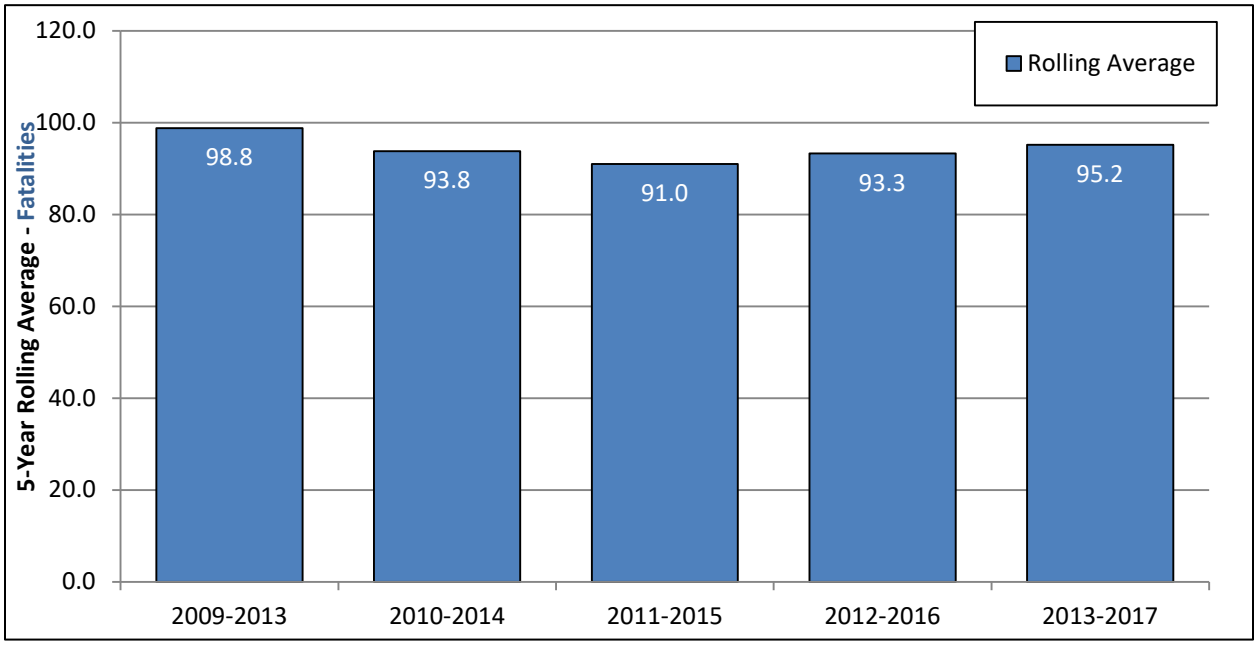


Figure 2- CARTS Fatal Crash Rate

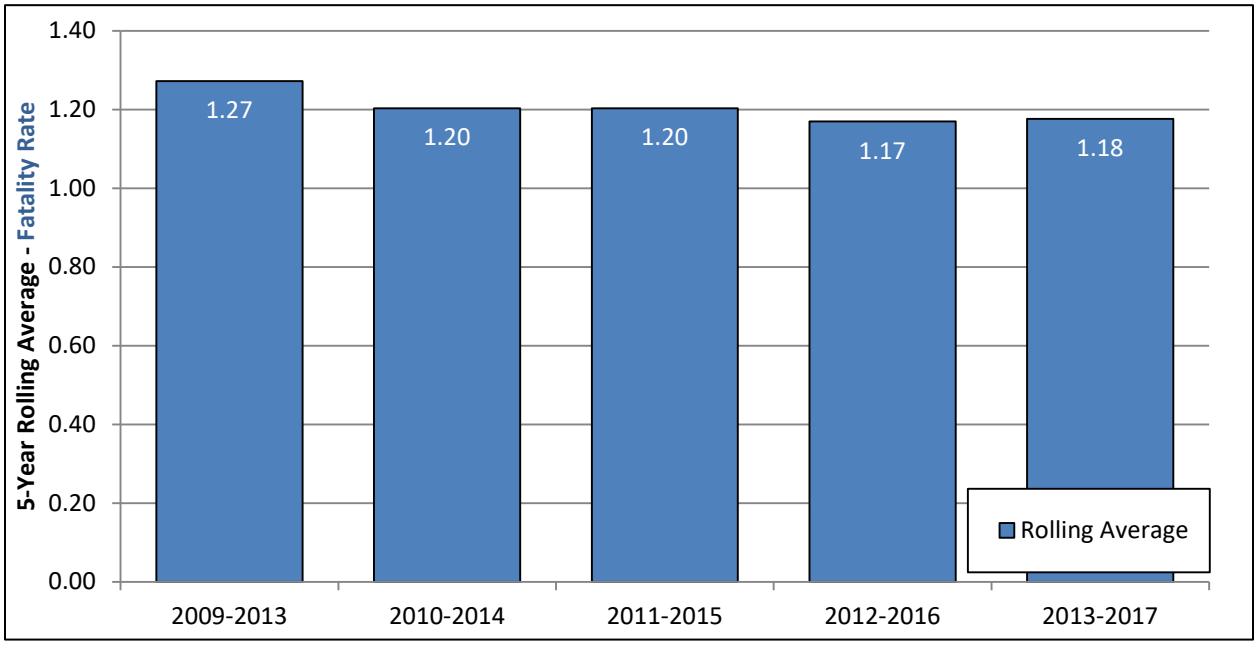


Figure 3- CARTS Serious Injury Crashes

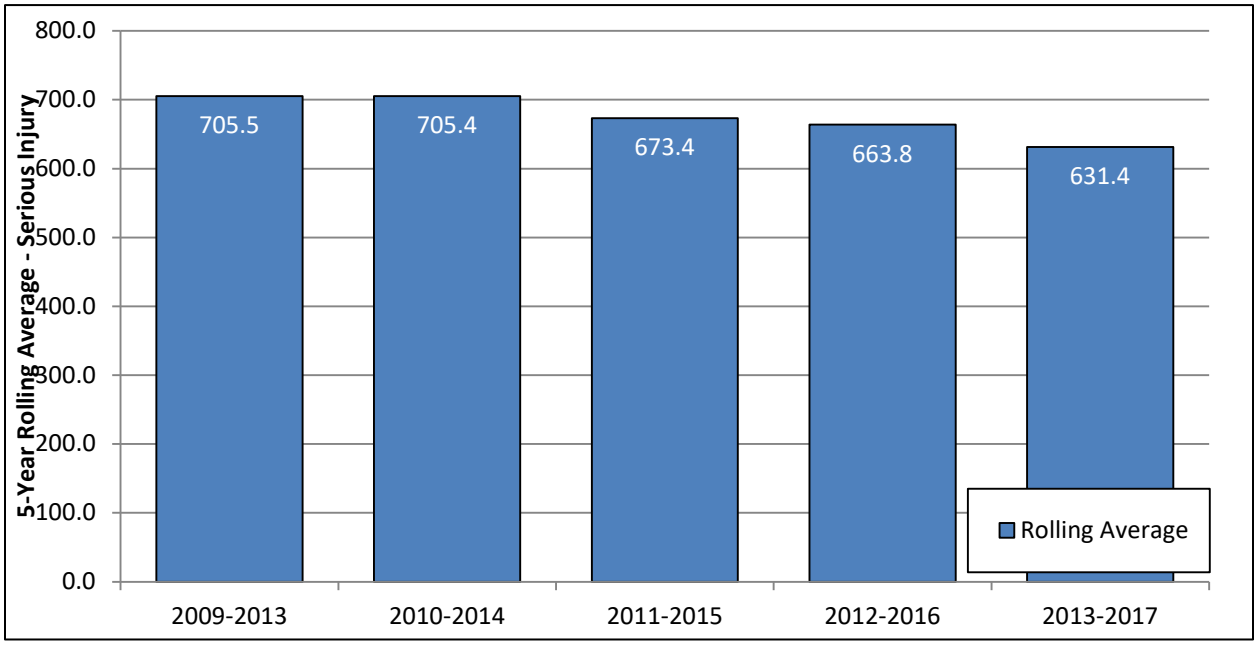


Figure 4- CARTS Serious Injury Crash Rate

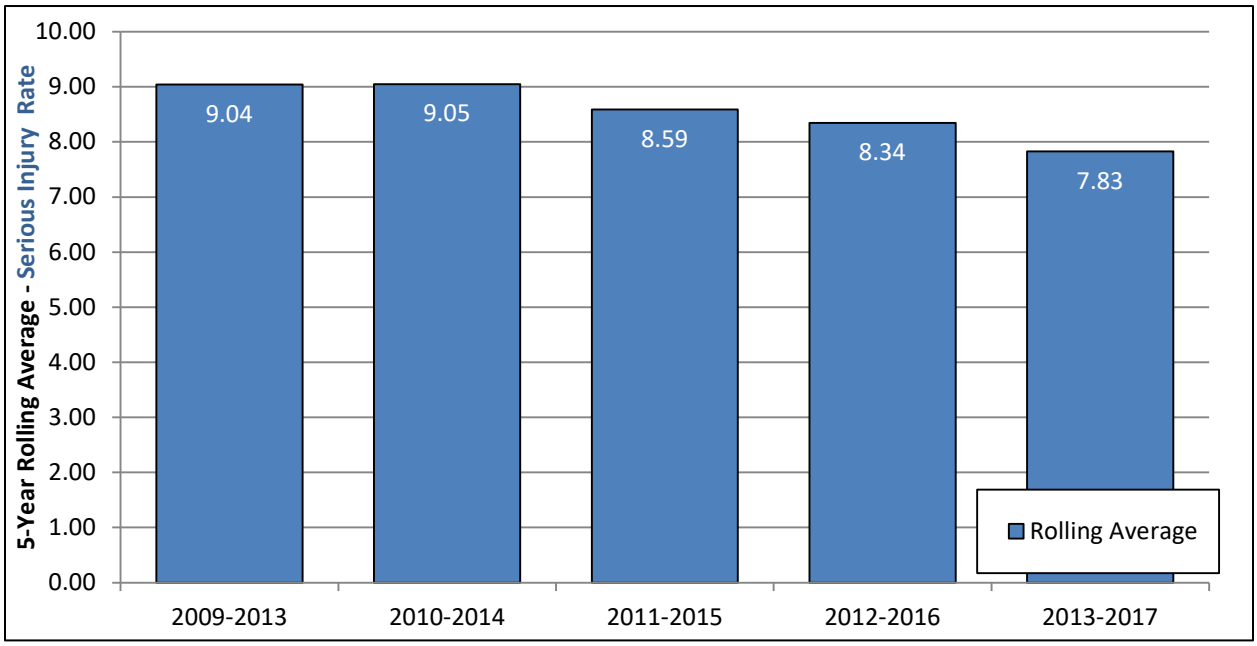
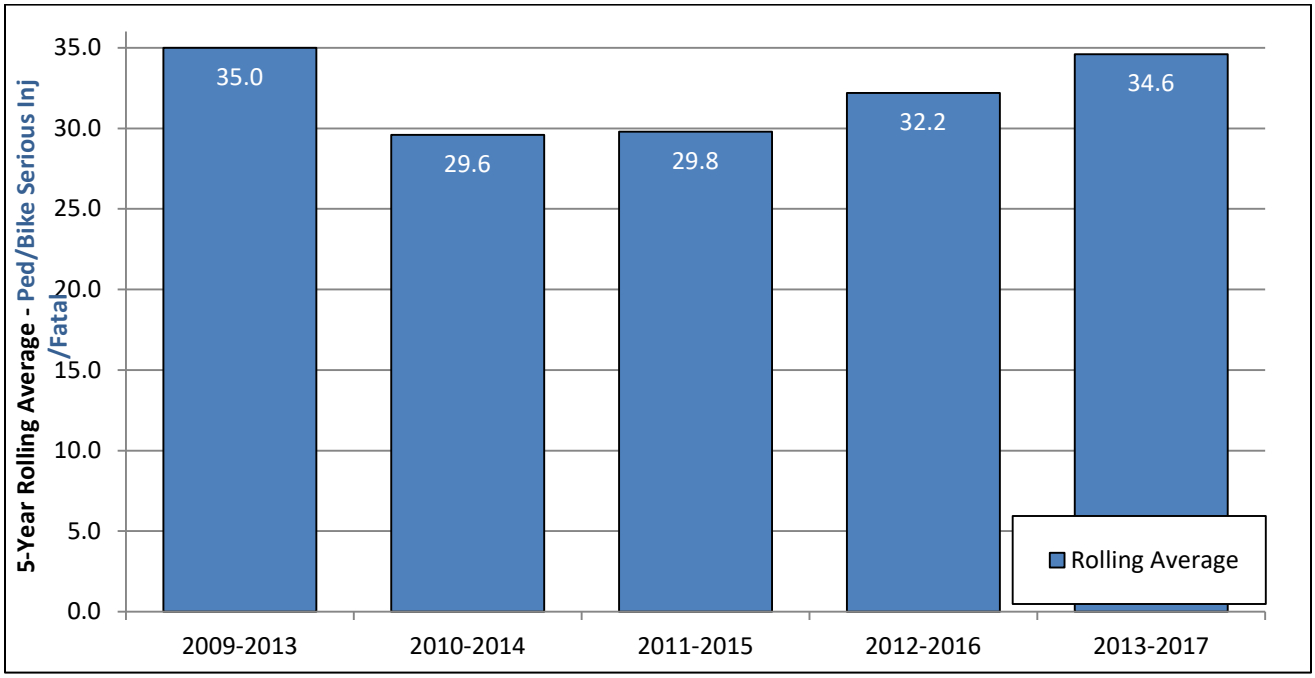


Figure 5- CARTS Pedestrian/Bicycle Fatal and Serious Injury Crashes



Arkansas Department of Transportation Targets

States will establish statewide targets for each of the safety performance measures. States also have the option to establish any number of urbanized area targets and one non-urbanized area target for any or all of the measures. Targets will be established annually, beginning in August 2017 for calendar year 2018. For common performance measures (number of fatalities, rate of fatalities and number of serious injuries), targets must be identical to the targets established for the NHTSA Highway Safety Grants program. The State DOT must also coordinate with the MPOs in the State on establishment of targets, to the maximum extent practicable. States will report targets to the FHWA in the HSIP report due in August of each year.

The following targets were adopted by the Arkansas Department of Transportation for 2019:

1. Number of fatalities 543.
2. Fatality rate 1.615
3. Number of serious injuries 3,637.
4. Serious injury rate 10.824
5. Non-motorized fatalities and serious injuries 170

Met or Made Significant Progress Determination

A state is considered to have met or made significant progress toward meeting its safety targets when at least 4 of the 5 targets are met or the outcome for the performance measure is better than the baseline performance the year prior to the target year. Optional urbanized area or non-urbanized area targets will not be evaluated. Each year that FHWA determines a state has not met or made significant progress toward meeting its performance targets, the State will be required to use obligation authority equal to the baseline year HSIP apportionment only for safety projects. States must also develop a HSIP Implementation Plan.

CARTS Targets

MPOs will establish targets for the same five safety performance measures for all public roads in the MPO planning area within 180 days after the State establishes each target. The targets will be established in coordination with the State, to the maximum extent practicable. The MPO can either agree to support the State DOT target or establish a numerical target specific to the MPO planning area. MPOs' targets are reported to the State DOT, which must be able to provide the targets to FHWA, upon request.

On October 3, 2018 Metroplan selected to support the state targets.

Bridge Performance Measures

In accordance with 23 CFR 490, FHWA established performance measures for DOTs to use in managing bridge performance on the NHS. The following is a list of the required performance measures for bridges.

Bridges Performance Measures

1. Percent of NHS bridges by deck area classified as “Good” condition
2. Percent of NHS bridges by deck area classified as “Poor” condition

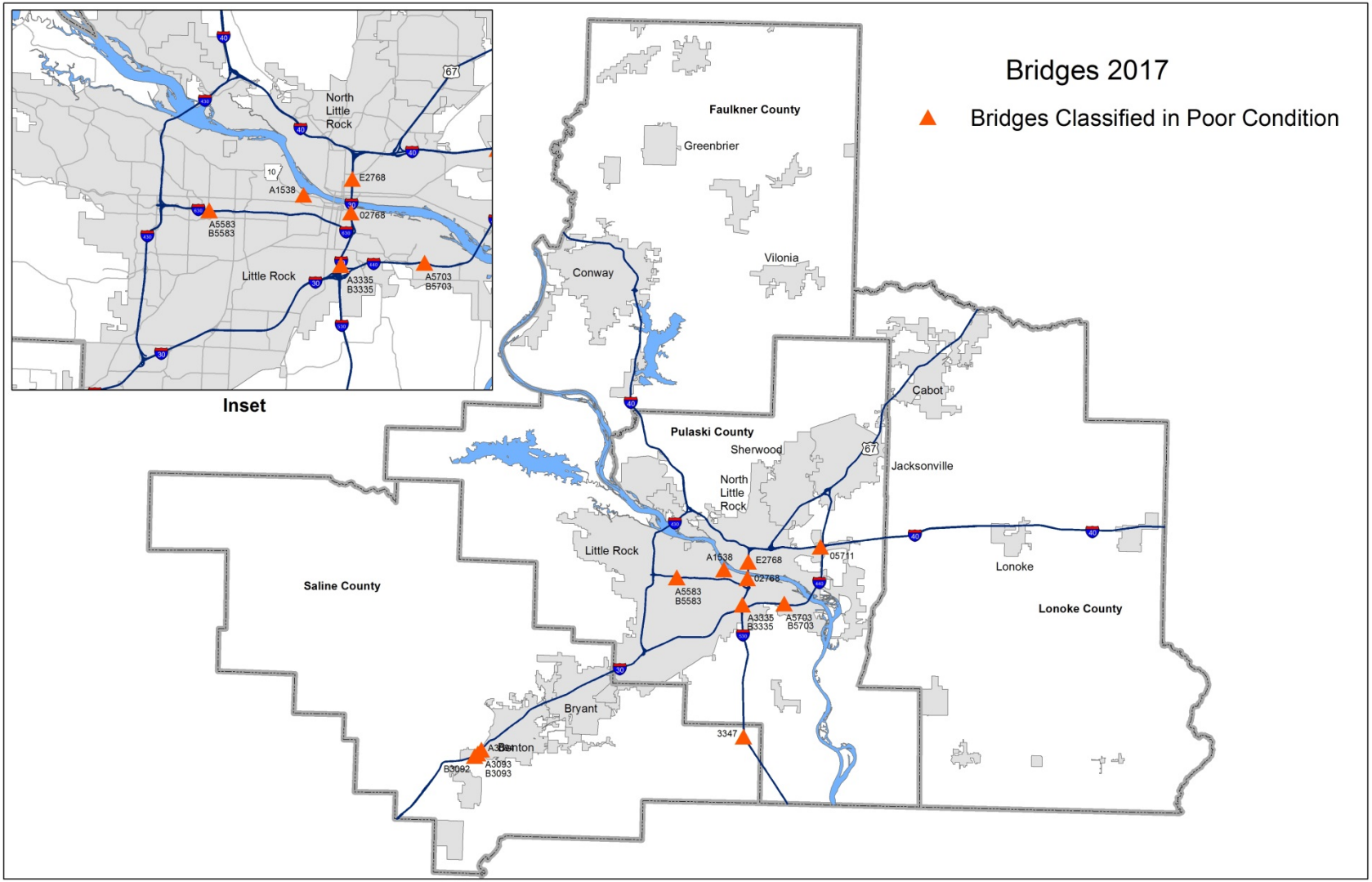
The classification for bridges is determined from the lowest ranking from the deck, superstructure, substructure, or culvert from the National Bridge Inventory (NBI). Ratings greater than or equal to 7 are considered in good condition while ratings of 4 or less are considered poor.

CARTS Baseline Performance Measures

There are eleven bridges on the NHS in the CARTS Area that are classified in poor condition, identified in Figure 7. Following is the percentage of bridges in the CARTS area classified as good or poor in 2017. Of the 15 bridges in the CARTS Region classified as “Poor”, 11 are to be replaced in upcoming projects.

Percent of NHS bridges by deck area classified in “Good” condition	33.5%
Percent of NHS bridges by deck area classified in “Poor”condition	7.5%

Figure 7: CARTS NHS Bridges in Poor Condition



Arkansas Department of Transportation Targets

States must establish targets for all bridges carrying the NHS, which includes on-ramps and off-ramps connected to the NHS, and bridges carrying the NHS that cross a state border, regardless of ownership. States must establish statewide 2- and 4-year targets by May 20, 2018 and report targets by October 1, 2018 in the Baseline Performance Period Report. They may adjust 4-year targets at the Mid Performance Period Progress Report (October 1, 2020). State DOTs shall coordinate with relevant MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

Other Information:

- State DOT targets should be determined from asset management analyses and procedures. The targets reflect investment strategies that aim to achieve a state of good repair over the life cycle of assets at minimum practicable cost.
- If for three consecutive years more than 10% of a State DOT's NHS bridges' total deck area is classified as "Poor", the State DOT must obligate and set aside National Highway Performance Program (NHPP) funds to eligible bridge projects on the NHS.

Adopted Targets by ArDOT

	2-Year	4-Year
Percent of NHS bridges by deck area classified in "Good" condition	50%	50%
Percent of NHS bridges by deck area classified in "Poor" condition	4%	6%

CARTS Targets

MPO's may choose to support the state targets or establish their own within 180 days of the State DOT estimating its target. The MPO is to report its baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

On October 3, 2018 Metroplan selected to support the state targets.

Pavements Performance

In accordance with 23 CFR 490, FHWA established performance measures for DOTs to use in managing pavement performance on the NHS. The following is a list of the required performance measures for pavements.

1. Percent of Interstate pavements in "Good" condition
2. Percent of Interstate pavements in "Poor" condition
3. Percent of non-Interstate NHS pavements in "Good" condition
4. Percent of non-Interstate NHS pavements in "Poor" condition

Starting January 1, 2018, pavement data collected on the Interstate must include International Roughness Index (IRI), percent cracking, rutting, and faulting. This data must be reported in the Highway Performance Monitoring System (HPMS) by April 15, 2019. Data will be gathered and re-submitted every year on a full extent basis. The same requirements become effective for non-Interstate NHS pavement data beginning January 1, 2020 with a HPMS report date of June 15, 2021. Data will be gathered and re-submitted at least every two years on a full extent basis. Pavement conditions will be determined from this data.

Pavement Condition Determination:

Asphalt Pavement	Jointed Concrete Pavement (JCP)	Continuously Reinforced Concrete Pavement (CRCP)
IRI	IRI	IRI
Rutting	Faulting	--
Cracking %	Cracking %	Cracking %

1. Good: All measures are in good condition
2. Poor: 2 or more measures are in poor condition
3. Fair: Everything else

Pavement Condition Thresholds:

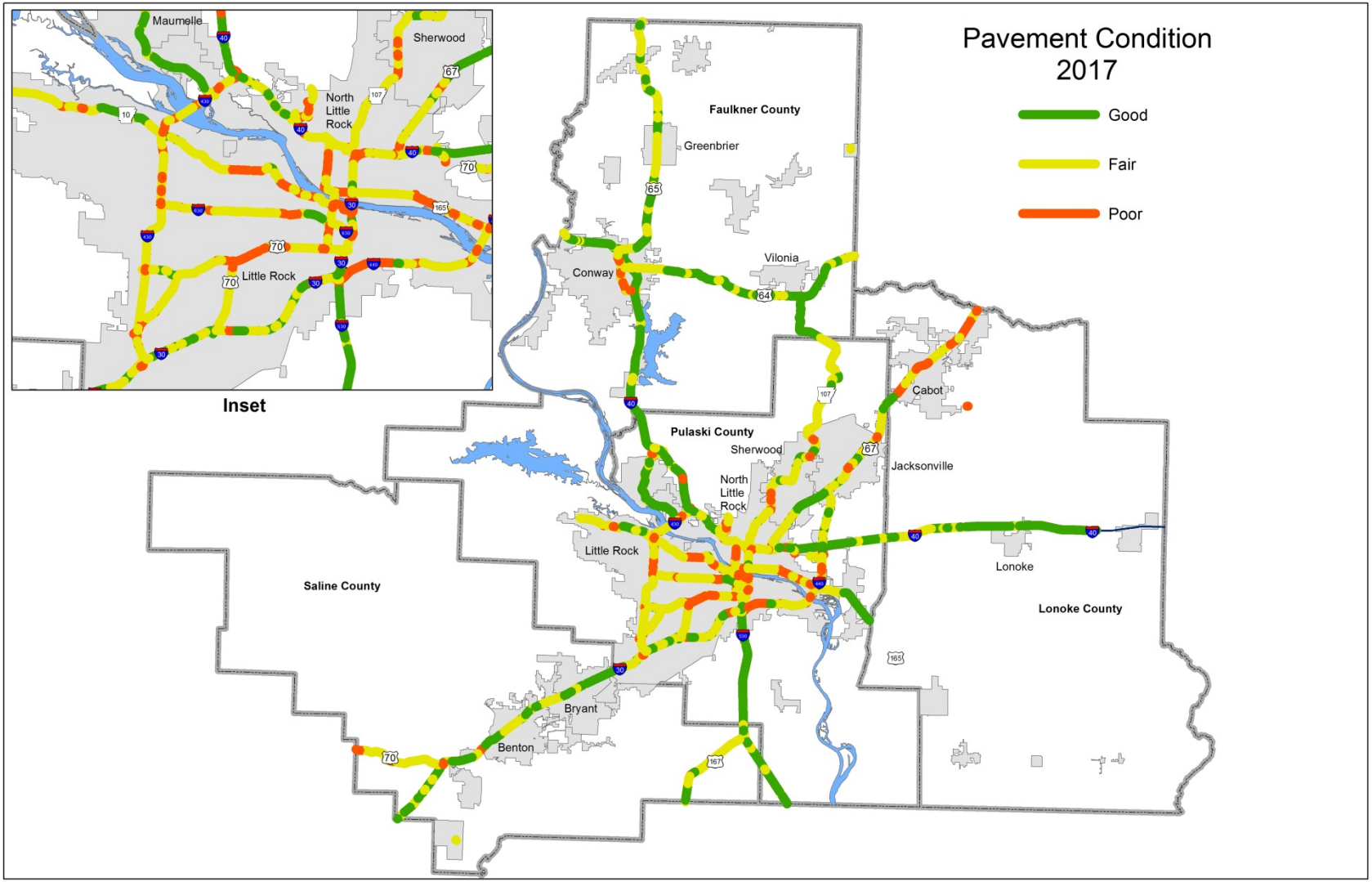
	Good	Fair	Poor
IRI (inches/mile)	<95	95-170	>170
Rutting (inches)	<0.20	0.20-0.40	>0.40
Faulting (inches)	<0.10	0.10-0.15	>0.15
Cracking (%)	<5	5-20 (asphalt) 5-15 (JCP) 5-10 (CRCP)	>20 (asphalt) >15 (JCP) >10 (CRCP)

CARTS Baseline Performance Measures

Baseline data for CARTS region is as follows:

Performance Rating	Current*
Percent of Interstate pavements in “Good” condition	51.3%
Percent of Interstate pavements in “Poor” condition	10.8%
Percent of non-Interstate NHS pavements in “Good” condition	27.6%
Percent of non-Interstate NHS pavements in “Poor” condition	15.2%
*Condition rating based on ArDOT’s 2017 HPMS pavement dataset	

Figure 8: Pavement with the CARTS Region



Arkansas Department of Transportation Targets

State DOTs must establish targets, regardless of ownership, for the full extent of the Interstate and non-Interstate NHS. Two and four year targets must be established for the non-Interstate NHS and 4-year targets for the Interstates by May 20, 2018 and report targets by October 1, 2018 in the Baseline Performance Period Report. They may adjust 4-year targets at the Mid Performance Period Progress Report (October 1, 2020). State DOTs shall coordinate with relevant MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

Other Information:

1. State DOT targets should be determined from asset management analyses and procedures. The targets reflect investment strategies that aim to achieve a state of good repair over the life cycle of assets at minimum practicable cost.
2. The minimum acceptable condition for Interstate pavements is no more than 5% in poor condition. FHWA will make this determination using the data in HPMS by June 15 of each year. Any State DOT that does not meet the minimum condition will be required to obligate a portion of its National Highway Preservation Program (NHPP) and Surface Transportation Program (STP) funds to address Interstate pavement conditions. The first assessment will occur in June 2019.

Statewide Current Conditions

Performance Rating	Current*
Percent of Interstate pavements in “Good” condition	77%
Percent of Interstate pavements in “Poor” condition	4%
Percent of non-Interstate NHS pavements in “Good” condition	52%
Percent of non-Interstate NHS pavements in “Poor” condition	8%
*Condition rating based on ArDOT’s 2017 HPMS pavement dataset	

ArDOT Targets

Performance Targets	2-year	4-year
Percent of Interstate pavements in “Good” condition	N/A	79%
Percent of Interstate pavements in “Poor” condition	N/A	5%
Percent of non-Interstate NHS pavements in ”Good” condition	48%	44%
Percent of non-Interstate NHS pavements in “Poor” condition	10%	12%

CARTS Targets

MPOs may choose to support the state targets or establish their own within 180 days of the State DOT estimating its target. The MPO is to report its baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

On October 3, 2018 Metroplan selected to support the state targets.

Travel Time Reliability

In accordance with 23 CFR 490, FHWA established performance measures for DOTs to use in assessing system performance on the Interstate and non-Interstate NHS. The following is a list of the required performance measures for travel time reliability.

Performance Measures

1. Percent of Person-Miles Traveled on the Interstate that are Reliable
2. Percent of Person-Miles Traveled on the non-Interstate NHS that are Reliable

Condition Based Performance Measures

- Measures are based on the Level of Travel Time Reliability (LOTTR) which is defined as the ratio of the longer travel time (80th percentile) to a "normal" travel time (50th percentile) using data from FHWA's National Performance Management Research Data Set (NPMRDS) or equivalent.
- A LOTTR will be calculated for each of the following time periods for each segment of highway, known as a Traffic Message Channel (TMC):
  - 6:00 AM-10:00 AM Weekdays
  - 10:00 AM-4:00 PM Weekdays
  - 4:00 PM-8:00 PM Weekdays
  - 6:00 AM-8:00 PM Weekends
- If any one of the four time periods has a LOTTR above 1.5, then the TMC will be considered unreliable.
- All TMCs will have their length multiplied by the average daily traffic and a vehicle occupancy factor of 1.7 (released by FHWA on 4/27/2018) to determine the person-miles traveled on that TMC. Then the reliable TMCs will be summed and divided by the total person-miles traveled.

CARTS Baseline Performance Measures

Within CARTS 91.2% of the Person Miles Traveled on interstates are considered reliable while 89.7% of non-freeway NHS is considered reliable.

Percent of Person-Miles Traveled on the Interstate that are Reliable	91.20%
Percent of Person-Miles Traveled on the non-Interstate NHS that are Reliable	89.68%

Figures 9 - 12 show reliability segment by time period.

Figure 9: CARTS Roadway Segment Reliability Weekdays 6:00AM – 10:00AM

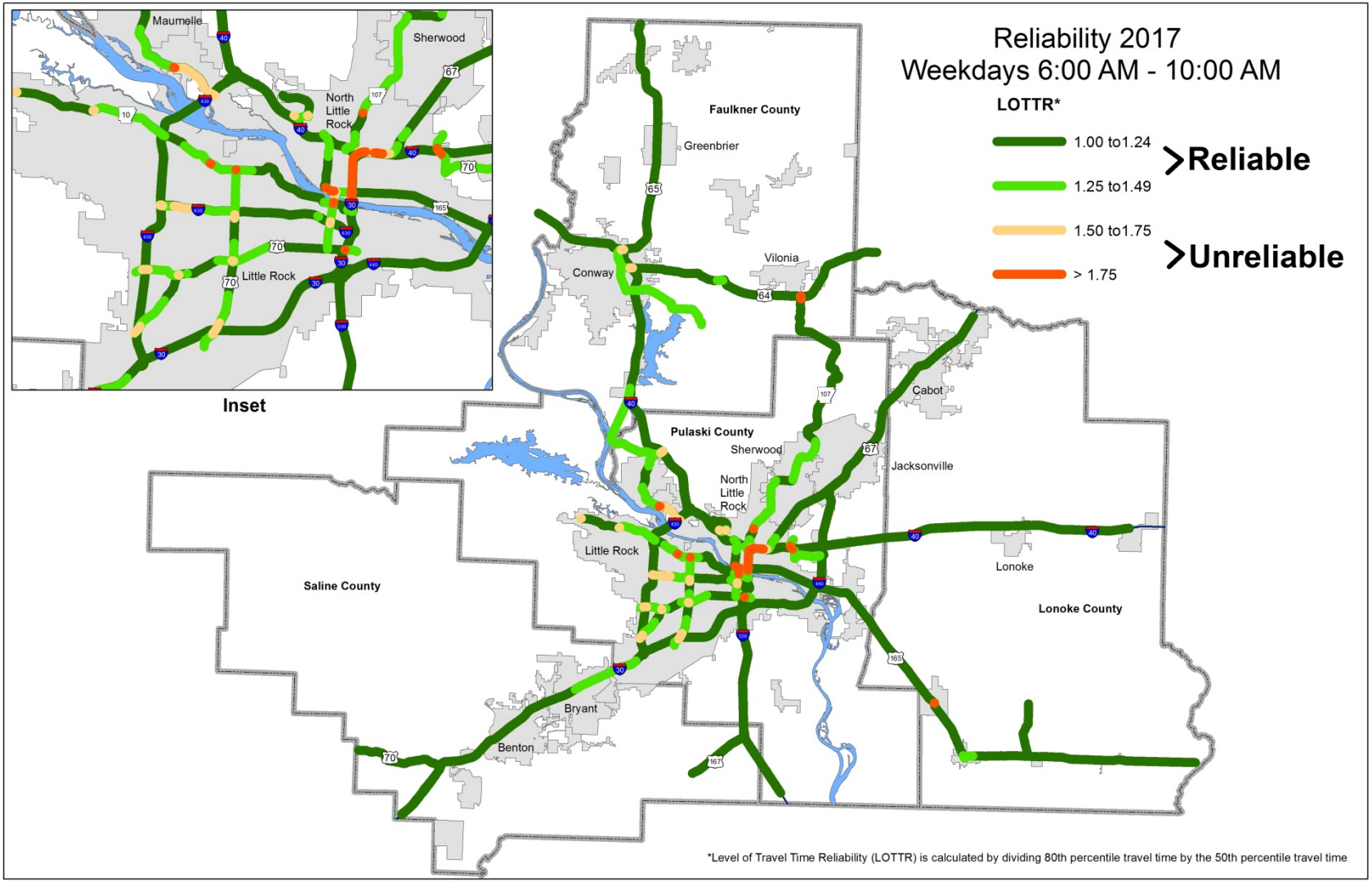


Figure 10: CARTS Roadway Segment Reliability Weekdays 10:00AM – 4:00PM

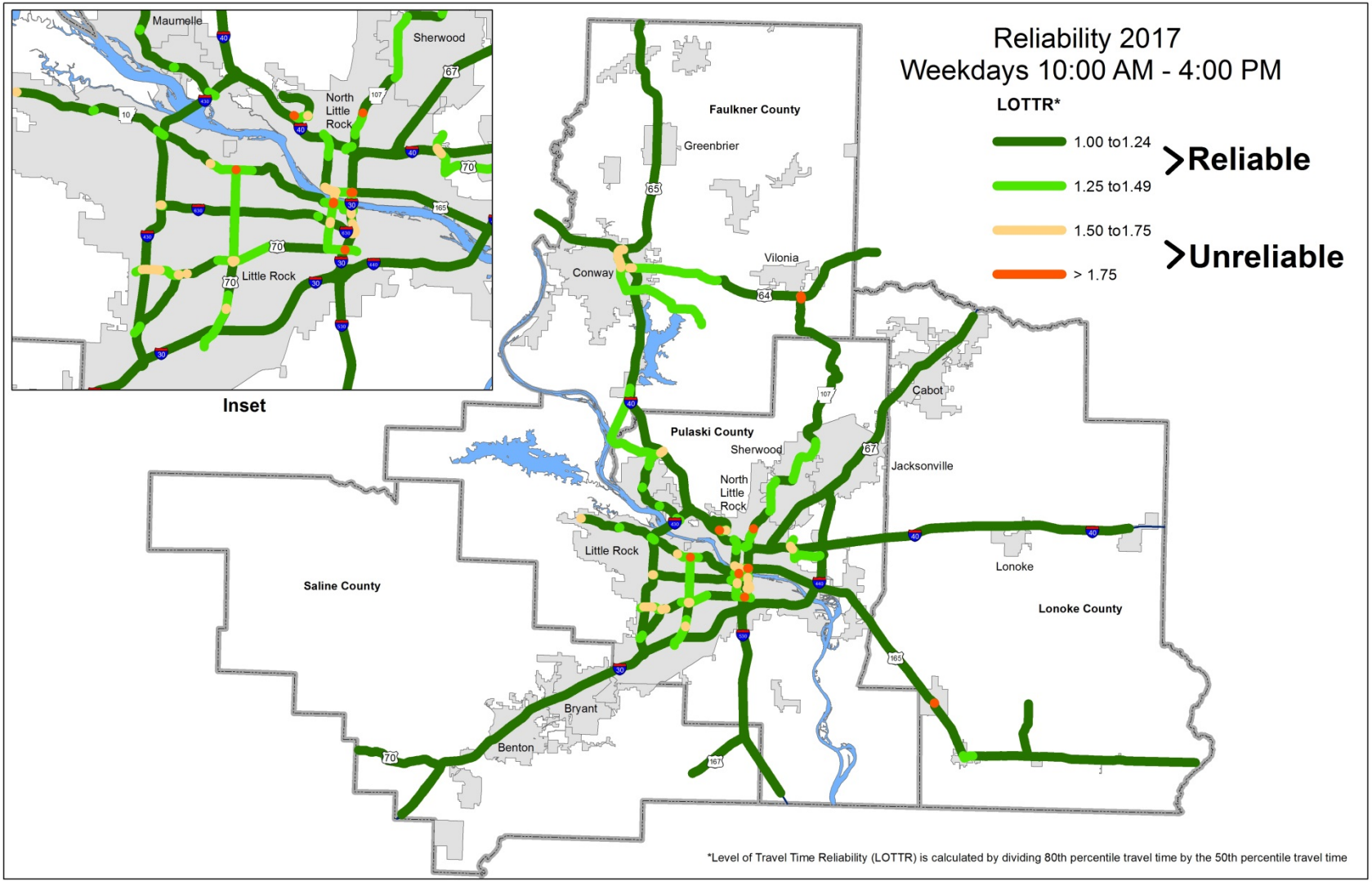


Figure 11: CARTS Roadway Segment Reliability Weekdays 4:00PM – 8:00PM

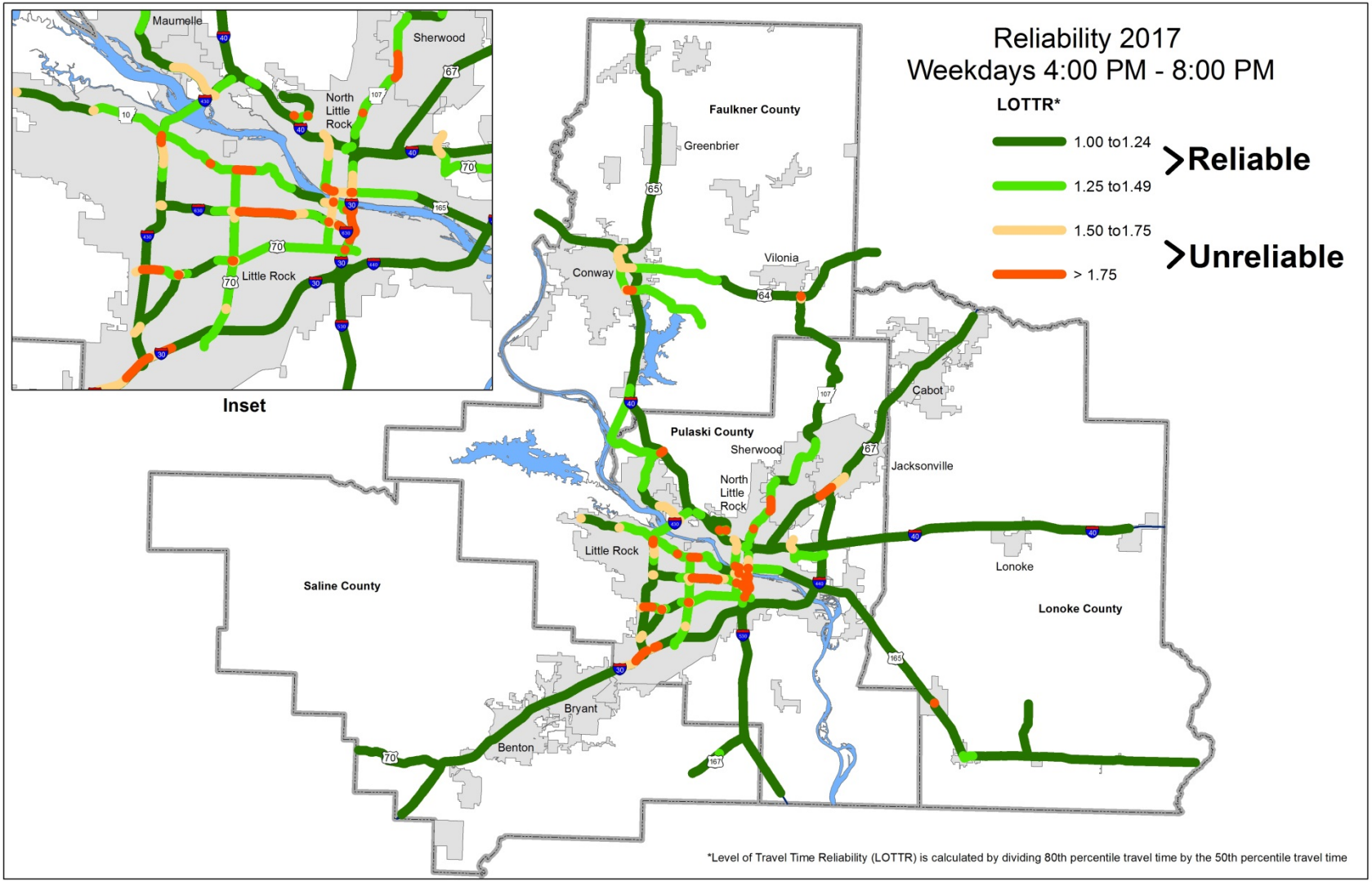
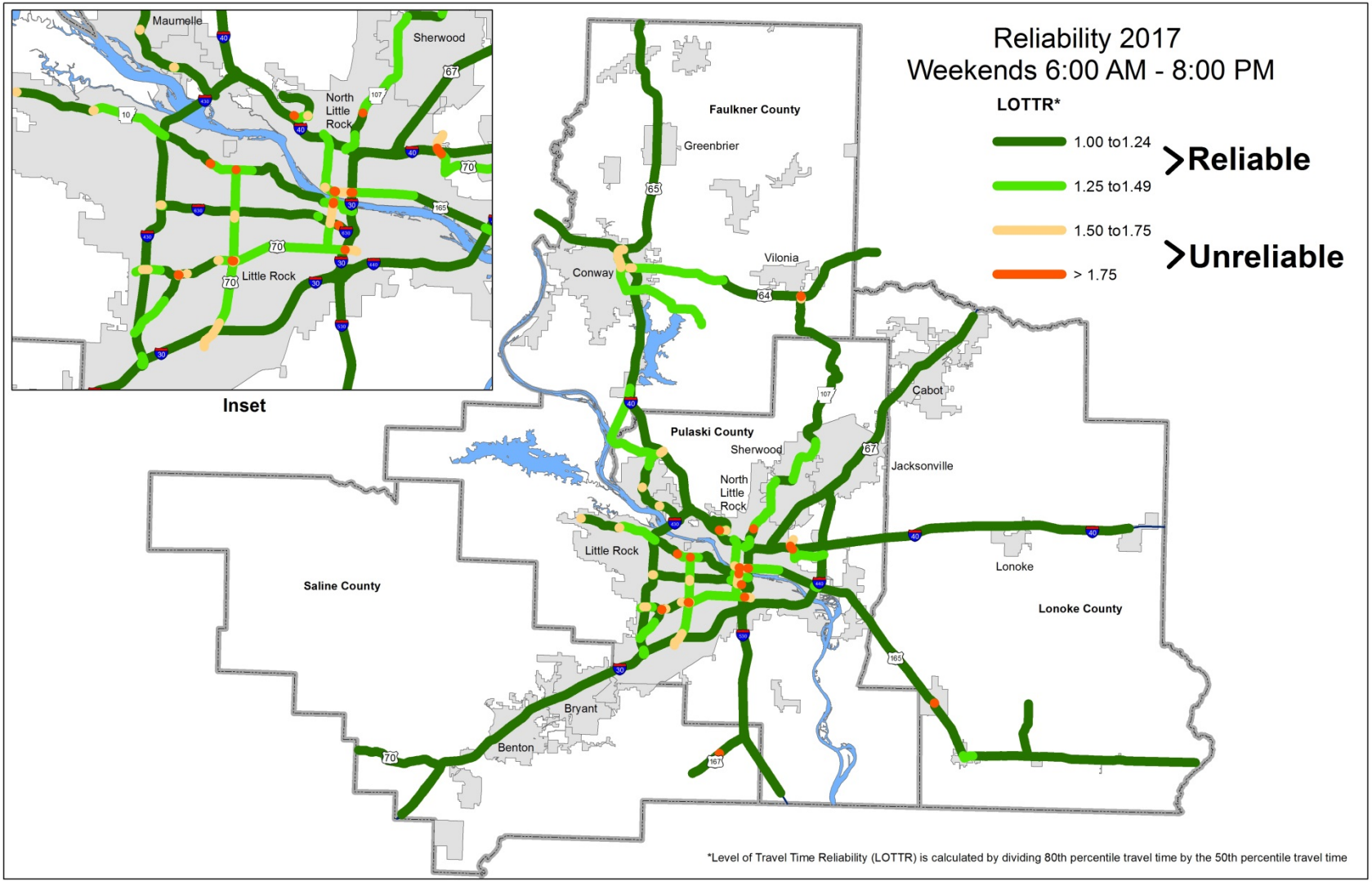


Figure 12: CARTS Roadway Segment Reliability Weekends 6:00AM – 8:00PM



Arkansas Department of Transportation Targets

State DOTs must establish targets, regardless of ownership, for the full extent of the Interstate and non-Interstate NHS. Two and four year targets must be established by May 20, 2018 and reported by October 1, 2018 in the Baseline Performance Period Report. They may adjust 4-year targets at the Mid-Performance Period Progress Report (October 1, 2020). State DOTs shall coordinate with relevant MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

Other Information

- FHWA began introducing the National Performance Management Research Data Set (NPMRDS) provided by HERE in August 2013. The data was considered largely as raw probe data.
- In February 2017, FHWA switched the NPMRDS vendor from HERE to INRIX. Due to different data processing approaches by the vendors, there are inconsistencies in the NPMRDS.
- State DOT targets will be set based on four years of data (2014-2017) and only one year of data (2017) from the current vendor.
- As of March 2018, nationally there is 93 percent data coverage for Interstates and 53 percent for non-Interstate NHS.
- Population growth and increasing travels will affect travel time reliability, particularly in fast growing urban areas.
- A large construction program on the Interstate system could result in multiple major workzones. This scenario would have an effect on the reliability on the Interstates and non-Interstate routes. Arkansas is part of a pooled fund project organized by AASHTO and led by the Rhode Island DOT to provide technical assistance for transportation performance management. As a member, Arkansas has direct access to the NPMRDS Analytics portal through the Regional Integrated Transportation Information System (RITIS) hosted by the University of Maryland. If FHWA determines that a state DOT has not made significant progress toward achieving the target, the State DOT shall document the actions it will take to achieve the NHS travel time targets. There is no financial penalty for not meeting the proposed targets.

Adopted Targets by ArDOT

Performance Targets	2-Year	4-Year
Percent of Person-Miles Traveled on the Interstate that are Reliable	91%	89%
Percent of Person-Miles Traveled on the non-Interstate NHS that are Reliable	-	90%

CARTS Targets

MPOs may choose to support the state targets or establish their own within 180 days of the State DOT estimating its target. The MPO is to report its baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

On October 3, 2018 Metroplan selected to support the state targets.

Truck Travel Time Reliability

In accordance with 23 CFR 490, FHWA established performance measures for DOTs to use in assessing freight movement on the Interstate System. The following is the required performance measure for freight reliability.

Performance Measure

1. Truck Travel Time Reliability of the Interstate System

Condition Based Performance Measures

- Measure is based on the Truck Travel Time Reliability (TTTR) Index.
- The TTTR is defined as the 95th percentile truck travel time divided by the 50th percentile truck travel time using data from FHWA's National Performance Management Research Data Set (NPMRDS) or equivalent.
- The TTTR will be calculated for each of the following five time periods for each segment of Interstate known as a Traffic Message Channel (TMC):
  - 6:00 AM-10:00 AM Weekday
  - 10:00 AM-4:00 PM Weekday
  - 4:00 PM-8:00 PM Weekday
  - 6:00 AM-8:00 PM Weekends
  - 8:00 PM-6:00 AM All Days
- The maximum TTTR for each TMC will be multiplied by the length of the TMC. Then the sum of all length-weighted segments divided by the total length of Interstate will generate the TTTR Index.

CARTS Baseline Performance Measures

Baseline Data for CARTS Region

	2017
Truck Travel Time Reliability on the Interstate System	1.39

Figures 13 – 17 illustrate the TTTR Index for the CARTS Region

Figure 13: CARTS Freight Reliability Weekdays 6:00AM – 10:00AM

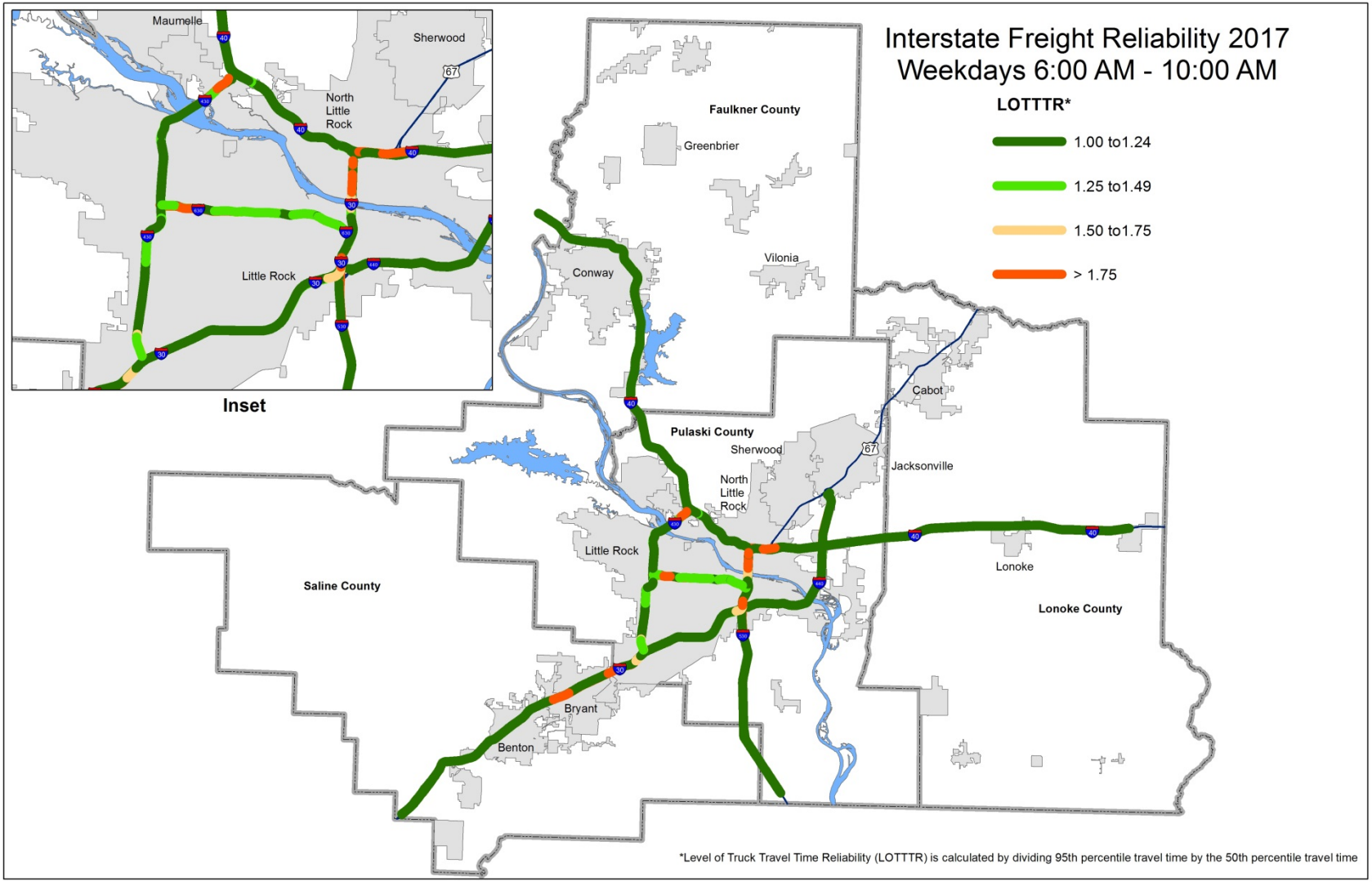


Figure 14: CARTS Freight Reliability Weekdays 10:00AM – 4:00PM

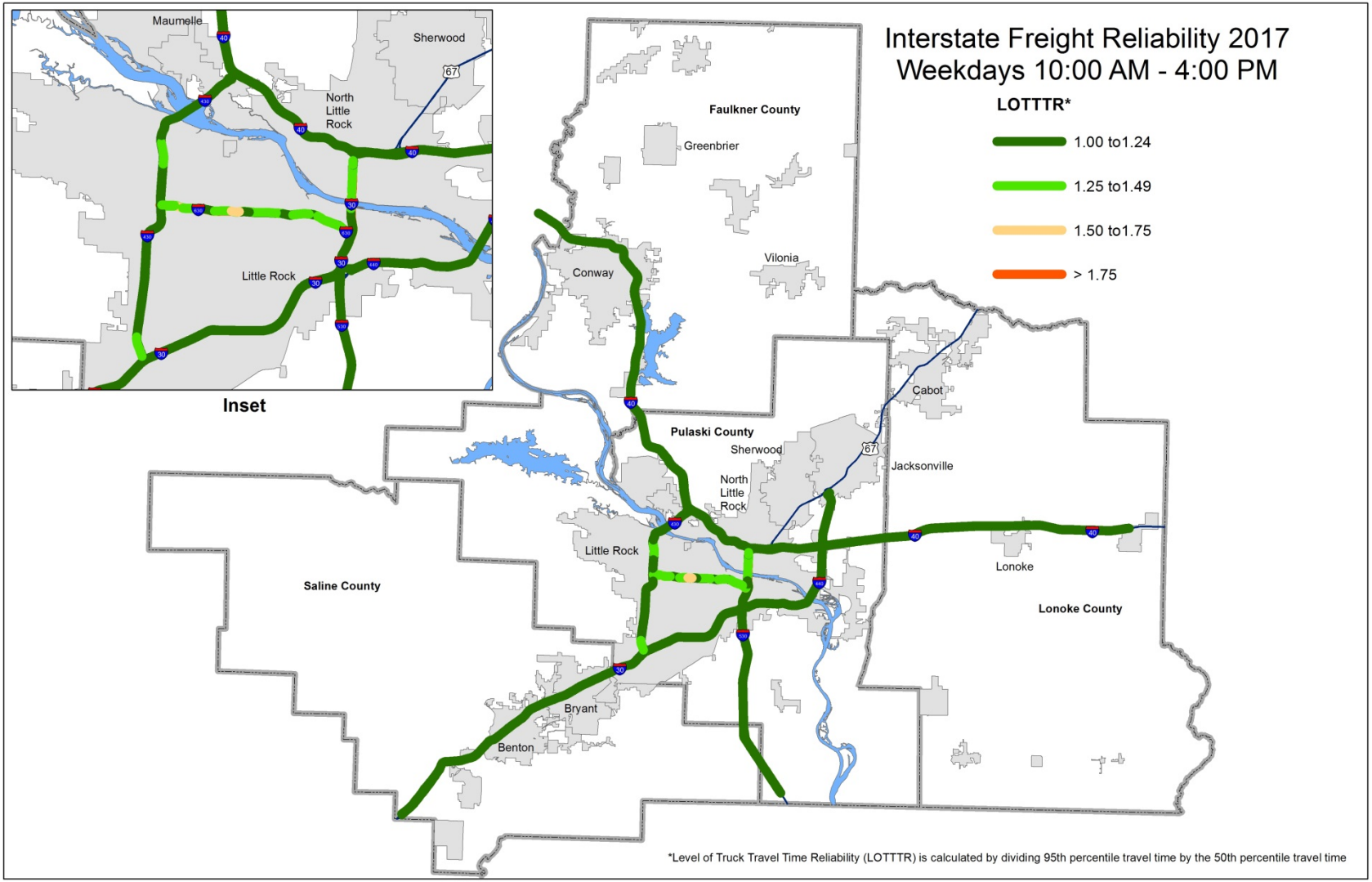


Figure 15: CARTS Freight Reliability Weekdays 4:00PM – 8:00PM

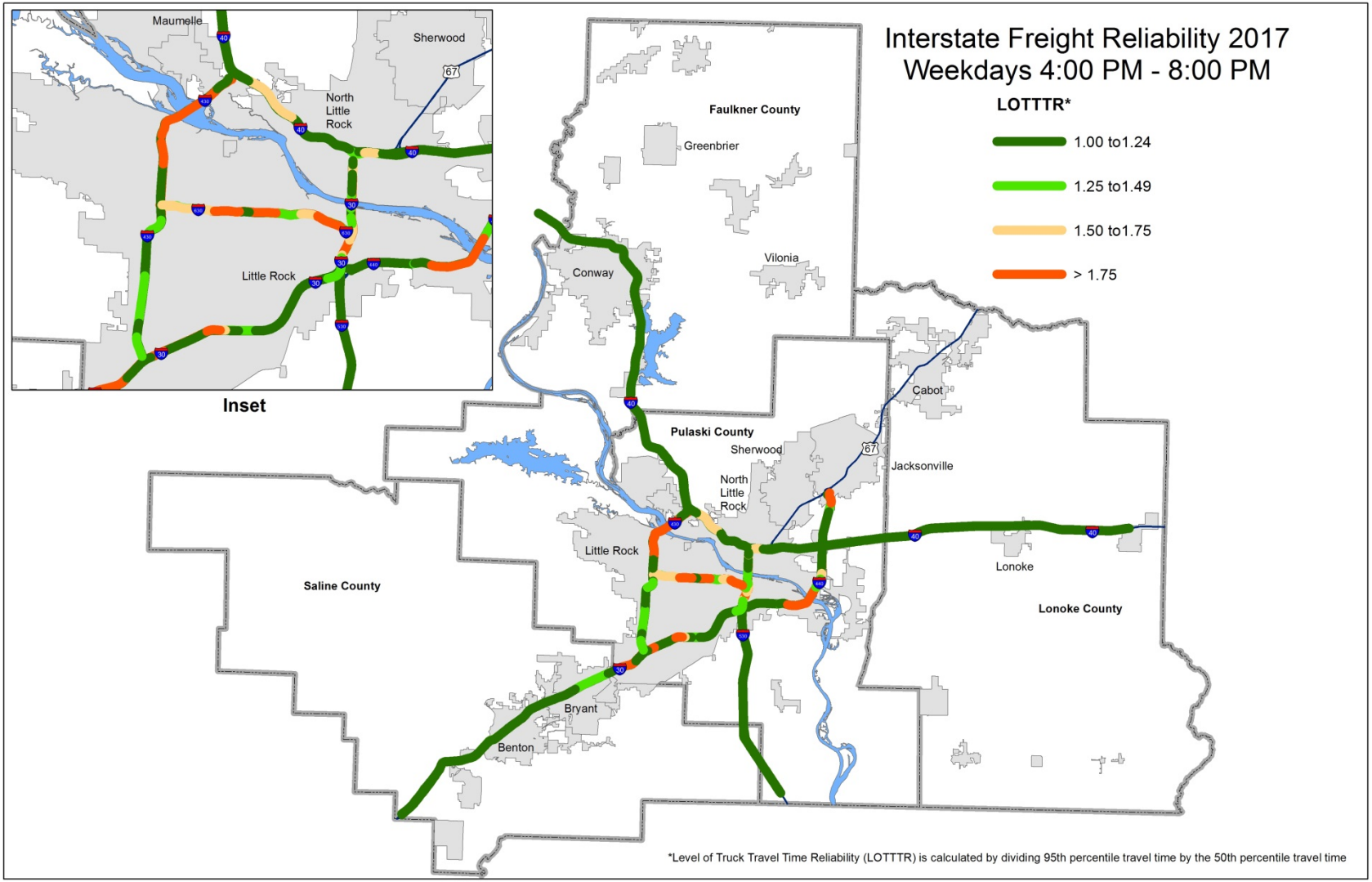


Figure 16: CARTS Freight Reliability Weekends 6:00AM – 8:00PM

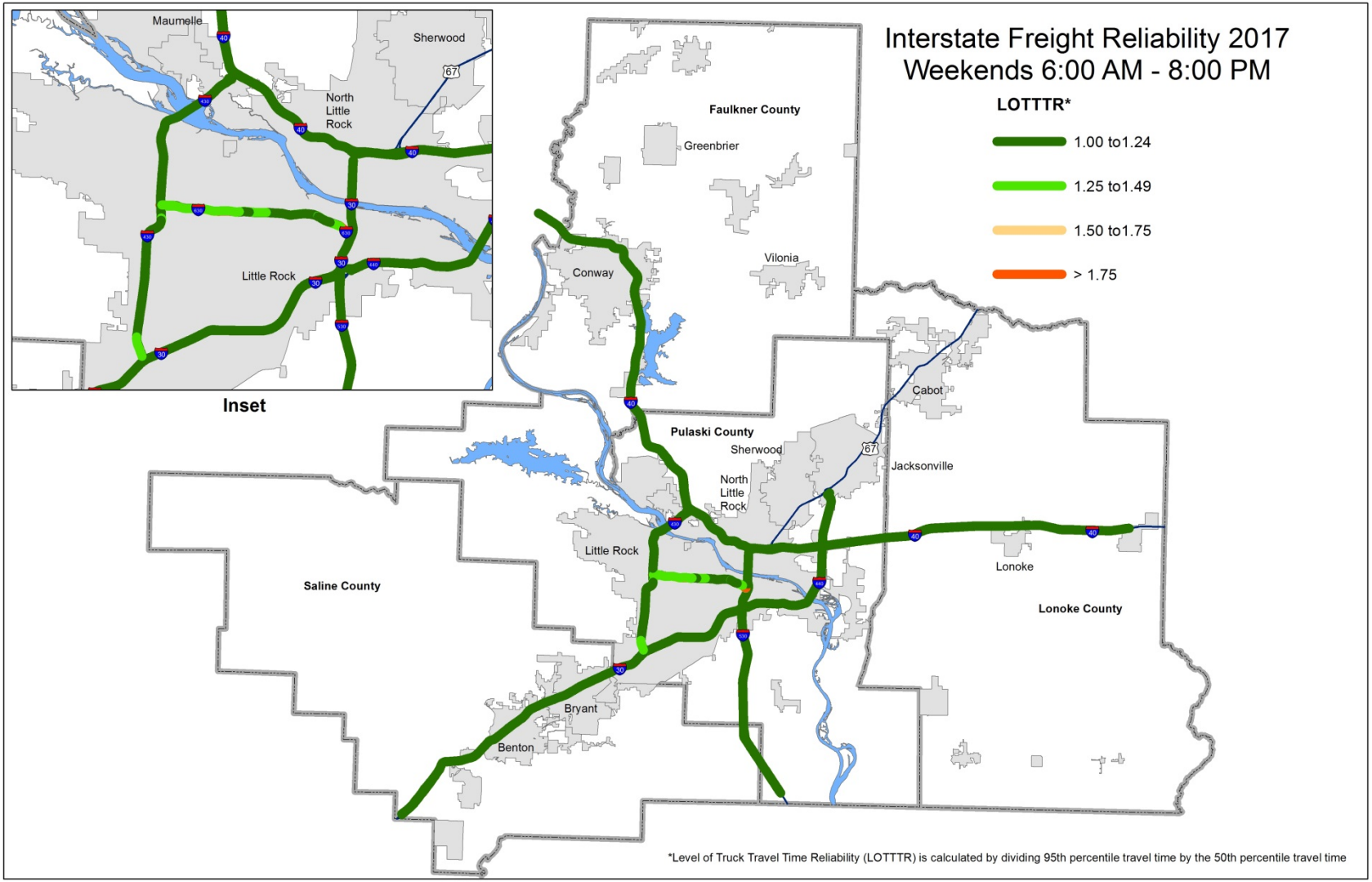
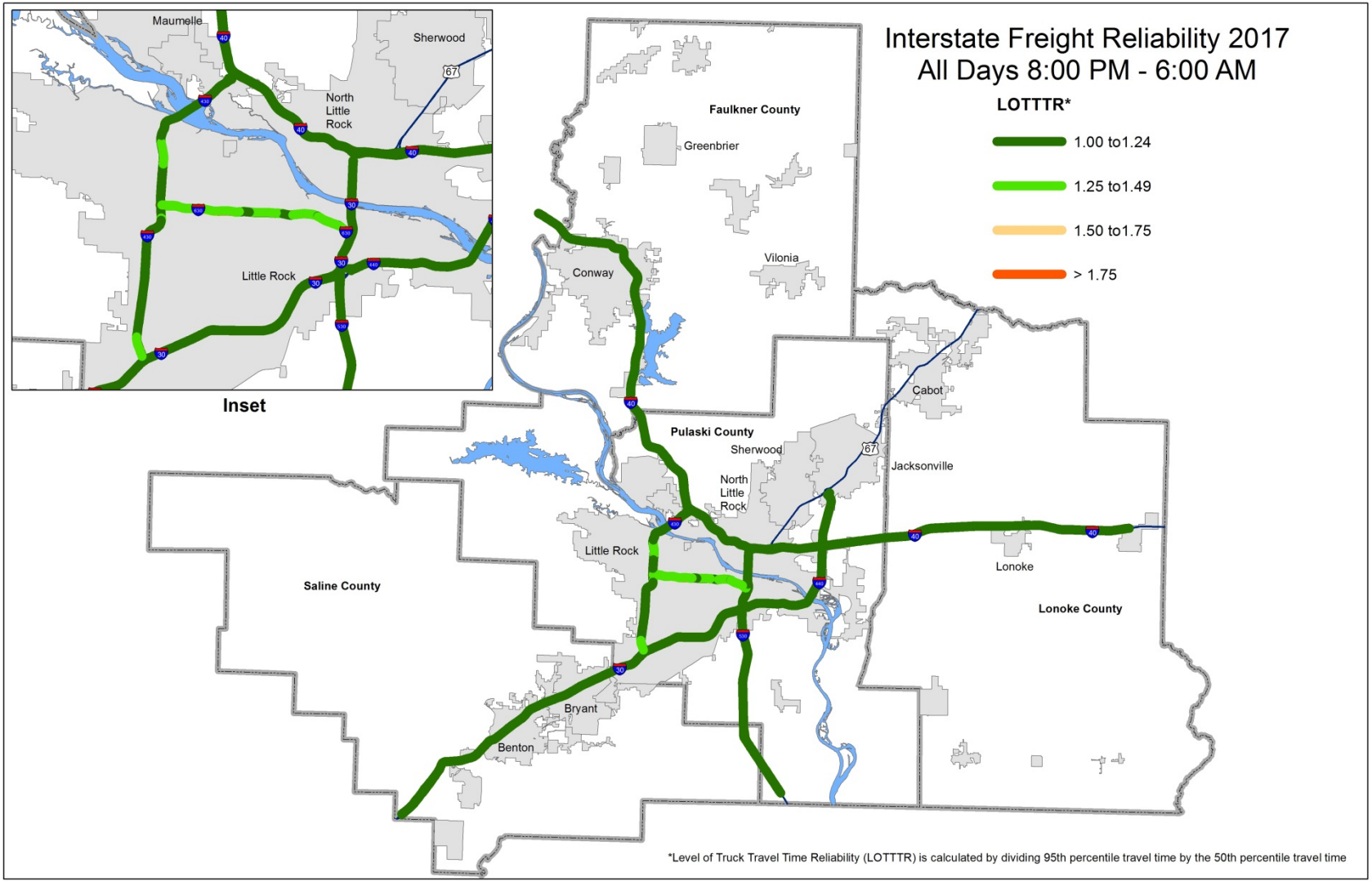


Figure 17: CARTS Freight Reliability All Days 6:00AM – 8:00PM



Arkansas Department of Transportation Targets

State DOTs must establish targets, regardless of ownership, for the full extent of the Interstate. Two and four year targets must be established by May 20, 2018 and reported by October 1, 2018 in the Baseline Performance Period Report. They may adjust 4-year targets at the Mid Performance Period Progress Report (October 1, 2020). State DOTs shall coordinate with relevant MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

Other Information:

- FHWA began introducing the NPMRDS provided by HERE in August 2013. The data was considered largely as raw probe data.
- In February 2017, FHWA switched the NPMRDS vendor from HERE to INRIX. The change in vendor resulted in inconsistencies due to the different approaches in data processing.
- As of March 2018, nationally there is 85 percent freight probe data coverage for Interstates.
- Population growth and increasing travel will affect travel time reliability, particularly in fast growing urban areas.
- Urban congestion often affects freight reliability. For example, twenty of the highest 40 TTTR segments in Arkansas are located on urban Interstates where very little truck traffic exists.
- Arkansas is part a pooled fund project organized by AASHTO and led by the Rhode Island DOT to provide technical assistance for transportation performance management. As a member, Arkansas has direct access to the NPMRDS Analytics portal through the Regional Integrated Transportation Information System (RITIS) hosted by the University of Maryland.
- If FHWA determines that a state DOT has not made significant progress toward achieving the target, the State DOT shall include as part of the next performance target report an identification of significant freight trends, needs, and issues within the State as well as a description of the freight policies and strategies and an inventory of truck freight bottlenecks. There is no financial penalty for not meeting the proposed targets.

Adopted Targets by ArDOT

	2-year	4-year
Truck Travel Time Reliability on the Interstate System	1.45	1.52

CARTS Targets

MPOs may choose to support the state targets or establish their own within 180 days of the State DOT estimating its target. The MPO is to report its baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

On October 3, 2018 Metroplan selected to support the state targets.

Transit Asset Management

In 2012, MAP-21 mandated Federal Transit Administration (FTA) to develop a rule establishing a strategic and systematic process of operating, maintaining, and improving public capital assets effectively through their entire life cycle. The TAM Final Rule 49 USC 625 became effective Oct. 1, 2016 and established four performance measures. The performance management requirements outlined in 49 USC 625 Subpart D are a minimum standard for transit operators. Providers with more data and sophisticated analysis expertise are allowed to add performance measures and utilize those advanced techniques in addition to the required national performance measures.

Performance Measures

- Rolling Stock: The percentage of revenue vehicles (by type) that exceed the useful life benchmark (ULB).
- Equipment: The percentage of non-revenue service vehicles (by type) that exceed the ULB.
- Facilities: The percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale.
- Infrastructure: The percentage of track segments (by mode) that have performance restrictions. Track segments are measured to the nearest 0.01 of a mile.

Data to be Reported:

- Rolling Stock: The National Transit Database (NTD) lists 23 types of rolling stock, including bus and rail modes. Targets are set for each mode an agency, or Group Plan Sponsor, has in its inventory.
- FTA default ULB or Agency customized ULB: Default ULBs represent maximum useful life based on the TERM model. Agencies can choose to customize based on analysis of their data OR they can use the FTA provided default ULBs.
- Equipment: Only 3 classes of non-revenue service vehicles are collected and used for target setting: 1) automobiles, 2) other rubber tire vehicles, and 3) other steel wheel vehicles.
- Facilities: Four types of facilities are reported to NTD. Only 2 groups are used for target setting 1) Administrative and Maintenance and 2) Passenger and Parking.
- Infrastructure: The NTD lists 9 types of rail modes; the NTD collects data by mode for track and other infrastructure assets. BRT and Ferry are NTD fixed guideway modes but are not included in TAM targets.
- TAM Performance Metrics: The NTD collects current year performance data. The NTD will collect additional Asset Inventory Module (AIM) data but targets forecast performance measures in the next fiscal year.
- TAM Narrative Report: The TAM Rule requires agencies to submit this report to the NTD annually. The report describes conditions in the prior year that led to target attainment status.

TERM Scale: Facility condition assessments reported to the NTD have one overall TERM rating per facility. Agencies are not required to use TERM model for conducting condition assessment but must report the facility condition assessment as a TERM rating score.

TERM Rating Condition Description

Term Rating	Condition	Description
Excellent	4.8-5.0	No visible defects, near-new condition.
Good	4.0-4.7	Some slightly defective or deteriorated components.
Adequate	3.0-3.9	Moderately defective or deteriorated components.
Marginal	2.0-2.9	Defective or deteriorated components.
Poor	1.0-1.9	Seriously damaged components in need of immediate repair.

Rock Region Metro Transit Asset Management Plan

Performance Measures and Targets

- Equipment (Only non-revenue vehicles)
    - Measure: % of non-revenue vehicles that have exceeded their useful life benchmark.
    - Target: 20% of non-revenue vehicles will exceed their useful life benchmarks of 8 years.
- Rolling Stock (Must include all revenue vehicles)
    - Measure: % of rolling stock (fixed-route, Links and Streetcar) that have exceeded their useful life benchmark.
    - Target (fixed-route): 5% of fixed-route rolling stock will exceed their useful life benchmarks of 14 years.
    - Target (Links-Cutaway): 0% of Links-CU rolling stock will exceed their useful life benchmarks.
    - Target (Links-Minivan): 0% of Links-MV rolling stock will exceed their useful life benchmarks.
    - Target (Streetcar): 0% of Streetcar rolling stock will exceed their useful life benchmarks of 58 years.
- Infrastructure (Streetcar fixed-guideway track)
    - Measure: % of track segment with performance restrictions due to the track segment not being in a state of good repair.
    - Target: 0% of track segment will require speed restrictions due to the track not being in a state of good repair.
- Facilities (All facilities with direct capital responsibility)
    - Measure: % of facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) scale.
    - Target (Support Facilities): 0% of the support facilities will have a condition rating below 3.0 on the FTA TERM scale.
    - Target (Passenger Facilities): 0% of the passenger facilities will have a condition rating below 3.0 on the FTA TERM scale.

CARTS Targets

MPOs must establish targets specific to the MPO planning area for the same performance measures for all public transit providers in the MPO planning area within 180 days of when the transit provider establishes its targets.

On October 3, 2018 Metroplan selected to adopt the Rock Region Metro's targets as its own.

Appendix H-1 - Arkansas Department of Transportation Performance Measures Fact Sheets

Appendix H-2 - Rock Region METRO TAM Plan

TRANSPORTATION PERFORMANCE MANAGEMENT

APPENDIX H-1

Arkansas Department of Transportation
Performance Measures Fact Sheets

6/7/2018

Concur: Scott B. Bennett

Date: 6-12-2018

TARGET SETTING FOR 2019

SAFETY PERFORMANCE MEASURES

ARDOT ARKANSAS DEPARTMENT OF TRANSPORTATION

In accordance with 23 CFR 490.207, the national performance measures for State Departments of Transportation (DOTs) to use in managing the Highway Safety Improvement Program (HSIP) for all public road are shown below.

Performance Measures
Number of Fatalities
Rate of Fatalities (per 100 million vehicle miles traveled)
Number of Serious Injuries
Rate of Serious Injuries (per 100 million vehicle miles traveled)
Number of Non-Motorized Fatalities and Serious Injuries

DATA SOURCES

Fatality Data: Fatality Analysis Reporting System (FARS).

Serious Injury Data: State motor vehicle crash database. Definition for "Suspected Serious Injury (A)" from the *Model Minimum Uniform Crash Criteria* (MMUCC) 4th edition must be used by April 15, 2019.

Number of Non-motorized Fatalities and Non-motorized Serious Injuries: FARS and State motor vehicle crash database. Fatalities with attribution codes for pedestrian, bicyclist, other cyclist, and person on personal conveyance are included. Serious injuries are associated with pedestrians or pedalcyclists as defined in *American National Standard Manual on Classification of Motor Vehicle Traffic Accidents* (ANSI D16.1-2007).

Volume Data: State Vehicle Miles Traveled (VMT) data is derived from the Highway Performance Monitoring System (HPMS).

TARGET SETTING REQUIREMENTS

State DOTs:

- Must establish targets for all public roads.
- Must establish statewide annual targets by June 30th of each year and report targets by August 31st of each year in the HSIP Report.
- State DOTs shall coordinate with the State Highway Safety Office to set identical targets on three common performance measures (Number of Fatalities, Rate of Fatalities, and Number of Serious Injuries).
- State DOTs shall coordinate with MPOs when establishing targets, to the maximum extent practicable.

Metropolitan Planning Organizations (MPOs):

- Shall support the relevant State DOT annual target or establish their own targets within 180 days after the State DOT target is established.
- Shall report their established targets to their respective State DOT in a manner that is documented and mutually agreed upon by both parties.
- Shall report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

METHODOLOGY

Through extensive coordination with the Arkansas Highway Safety Office, FHWA, NHTSA, all MPOs, and other stakeholders, a methodology to determine the targets was developed. This methodology is similar to the previous year's methodology.

The first step in the methodology was to calculate the moving average for the last five years. A moving average "smooths" the variation from year to year, which accounts for variation of the data. The actual data numbers shown in Attachment A. Next, an average of each value was calculated.

Performance – Moving Averages						
	2008-2012	2009-2013	2010-2014	2011-2015	2012-2016	Average
Number of Fatalities	576	555	530	526	525*	542
Rate of Fatalities	1.731	1.667	1.583	1.557	1.528	1.613
Number of Serious Injuries	3,392	3,311	3,203	3,115	3,073	3,219
Rate of Serious Injuries	10.200	9.938	9.564	9.231	8.961	9.579
Number of Non-Motorized Fatalities and Serious Injuries	144	141	145	140	141*	142

Note:
*The preliminary fatality number in FARS shows 545 for 2016, which is used for the 2012-2016 moving average calculation. The FARS data typically get adjusted prior to being finalized. As a result, the National Safety Council (NSC) data for 2016 is reviewed to determine the level of adjustment to account for potential corrections made to the FARS data later in the year. The NSC fatality number shows 560 for 2016.

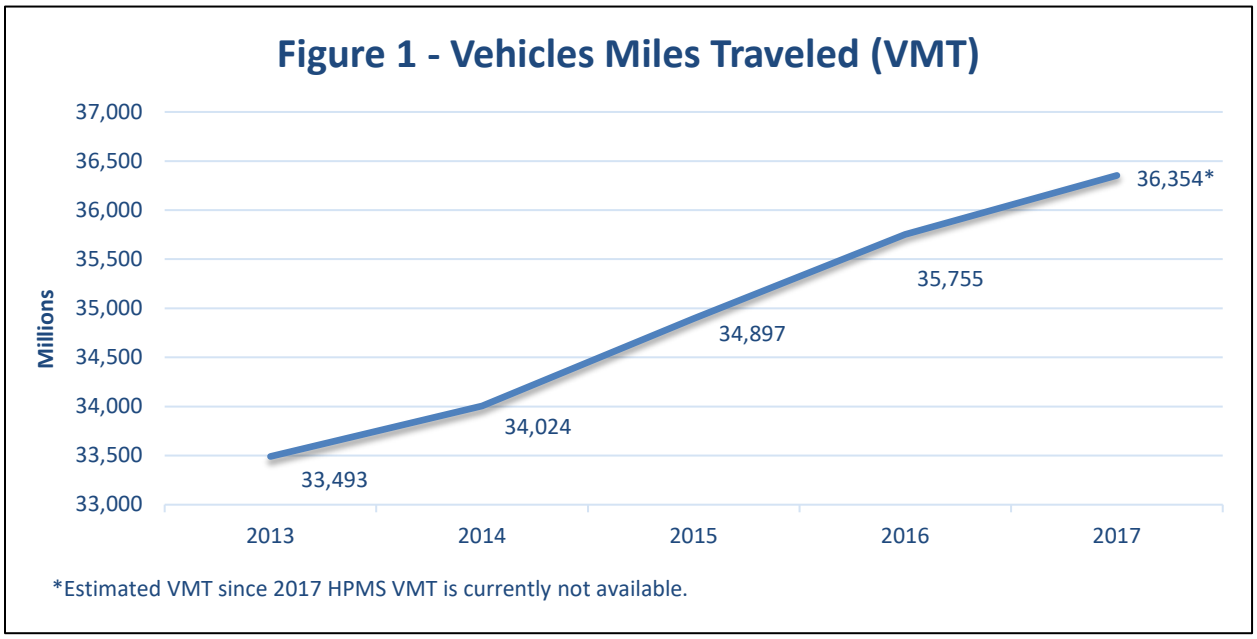
Once the average of the moving averages was calculated for each performance measure, external factors were considered to determine if and how they would impact safety performance. These **external factors** include the following:

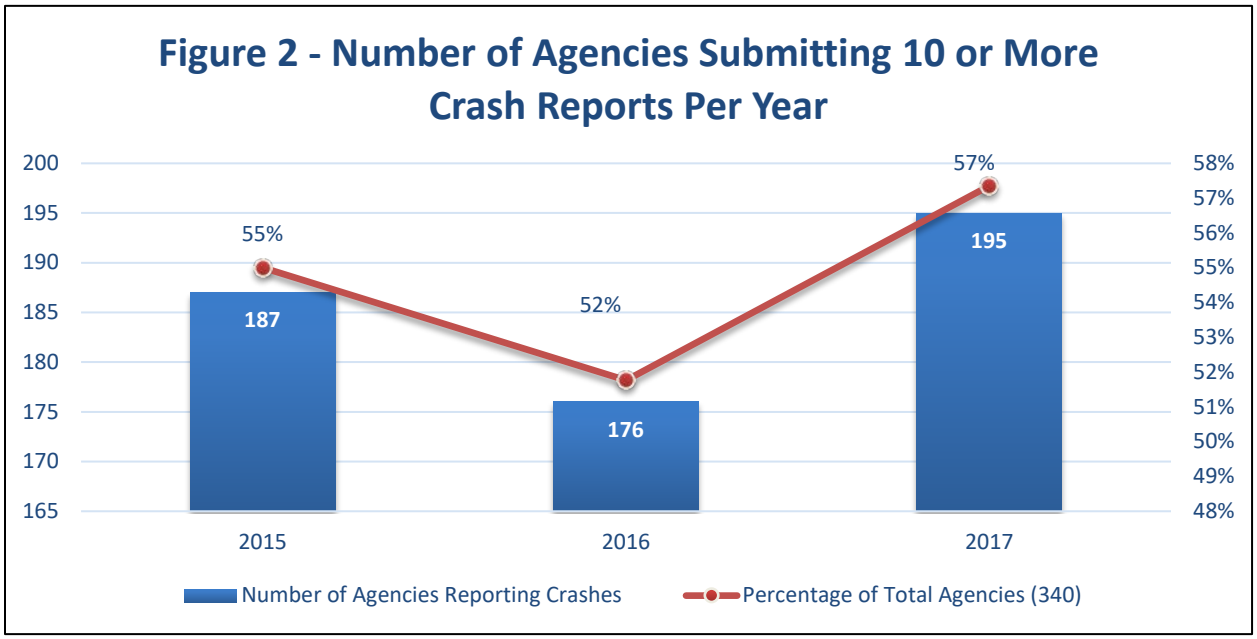
- The recent state legalization of medical marijuana.
- The possible increase in speed limit on freeways/expressways.
- Update to the definition of Suspected Serious Injury in 2017.
- Continued increase in vehicle miles traveled (see Figure 1).

In addition to the above external factors, crash reporting is another major consideration. As shown in Figure 2, the number of crashes being captured in the database has been increasing, which impacts serious

injury crash data. Fatal crash data is not as greatly impacted because FARS reporting system. These **crash reporting factors** include the following:

- The phased rollout of the eCrash system statewide.
- Increased emphasis by the Arkansas State Police to ensure crash reporting compliance.





Note: According to the Arkansas State Police, there should be a total of 340 law enforcement agencies reporting crashes.

In addition to these identified factors, statistical analysis of the data was conducted. Although using a five-year moving average accounts for data variation, there is a need to consider additional **statistical factors** that account for variability of data. As shown in Attachment B, the variation of the non-motorized fatalities and serious injuries data is greater than the other four performance measures.

TARGETS

Based on the methodology described above, targets for each of the five performance measures along with the factors considered are shown below.

2019 Performance Targets						
	Avg.	Application of Factors			Adjust.	Target
		External	Crash Reporting	Statistical		
Number of Fatalities	542	YES	NO	NO	+0.13%	**543**
Rate of Fatalities	1.613	YES	NO	NO	+0.13%	**1.615**
Number of Serious Injuries	3,219	YES	YES	NO	+13%	**3,637**
Rate of Serious Injuries	9.579	YES	YES	NO	+13%	**10.824**
Number of Non-Motorized Fatalities and Serious Injuries	142	YES	YES	YES	+20%	**170**

A comparison of the averages, adjustments, and targets for 2018 and 2019 is shown below. The 2018 numbers are from last year's report.

Performance Targets – Comparison						
	2018 Average	2018 Adjust.	2018 Target	2019 Average	2019 Adjust.	2019 Target
Number of Fatalities	555	--	555	542	+0.13%	**543**
Rate of Fatalities	1.662	--	1.662	1.613	+0.13%	**1.615**
Number of Serious Injuries	3,305	+5.0%	3,470	3,219	+13%	**3,637**
Rate of Serious Injuries	9.923	+5.0%	10.419	9.579	+13%	**10.824**
Number of Non-Motorized Fatalities and Serious Injuries	142	+5.0%	149	142	+20%	**170**

FHWA ASSESSMENT

FHWA will conduct an assessment to determine whether states have met or made significant progress toward meeting their previous year's targets in December of each year. For 2018, the assessment will be made by comparing the actual 2014-2018 performance to the 2018 targets and the 2012-2016 baseline performance. At least four of the five targets must be either met (i.e., equal to or less than the target) or is better than the baseline performance to make significant progress. As shown in the following table, it is predicted that the Department will meet all of the targets except the number of non-motorized fatalities and serious injuries, and therefore be considered by FHWA as having "made significant progress."

Estimated Performance Assessment						
	2014-2018 Average	2018 Targets	2012-2016 Baseline	Meets Target?	Better than Baseline?	Met or Made Significant Progress?
Number of Fatalities	513.2[1]	555	528[3]	Yes	Yes	**YES** (4 out of 5 targets met or made significant progress)
Rate of Fatalities	1.439[1]	1.662	1.528[3]	Yes	Yes	
Number of Serious Injuries	2,943.6[2]	3,470	3,073	Yes	Yes	
Rate of Serious Injuries	8.310[2]	10.419	8.961	Yes	Yes	
Number of Non-Motorized Fatalities and Serious Injuries	156.2[2]	149	141	No	No	

Notes:

[1]Value is based on the actual fatality numbers for 2014 and 2015, the preliminary NSC numbers for 2016 and 2017, and an assumed number for 2018.
Example: Number of Fatalities = (470+550+560+493+493)/5=513.2

[2]Value is based on the actual serious injury numbers for 2014-2016, the preliminary number for 2017, and an assumed number for 2018.
Example: Number of Serious Injuries = (3,154+2,888+3,032+2,822+2,822)/5=2,943.6

[3]Value is calculated assuming the final 2016 fatality number will resemble the preliminary NSC number, which is 560.

For 2019, FHWA will conduct a similar assessment in December 2020 using the five-year average of 2015-2019 and a baseline of 2013-2017. To get an idea of the performance that needs to be achieved in order to meet the 2019 performance targets, the analysis shown below was conducted. These values are also shown in Attachment C.

- Average annual total number of fatalities for 2018 and 2019: **556** or less
- Average total rate of fatalities for 2018 and 2019: **1.810** or less
- Average annual total number of serious injuries for 2018 and 2019: **4,723** or less
- Average total rate of serious injuries for 2018 and 2019: **14.801** or less
- Average annual total non-motorized fatality/serious injuries for 2018 and 2019: **200** or less

ATTACHMENT A

Year	Number of Fatalities	Rate of Fatalities	Number of Serious Injuries	Rate of Serious Injuries	Number of Non-Motorized Fatalities and Serious Injuries
2008	600	1.809	3,471	10.466	163
2009	596	1.798	3,693	11.139	123
2010	571	1.704	3,331	9.942	138
2011	551	1.672	3,239	9.829	149
2012	560	1.671	3,226	9.624	147
2013	498	1.487	3,066[4]	9.154[4]	149
2014	470	1.381	3,154	9.270	141
2015	550	1.576	2,888[4]	8.276[4]	112
2016	545[1]	1.524[1]	3,032	8.480	154
2017	493[2]	1.356[2,3]	2,822[5]	7.763[3,5]	187[5]

Notes:

[1]Preliminary 2016 FARS number. The NSC fatality number is 560 for 2016.

[2]Preliminary 2017 FARS number is not available as of 6/4/2018. The preliminary NSC fatality number is 493 for 2017.

[3]Calculation is based on the estimated VMT since 2017 HPMS VMT is currently not available.

[4]Value is different than the value shown in last year's safety target setting report due to a correction made to the crash database. The 2013 serious injury number was changed from 3,070 to 3,066; the 2015 serious injury number was changed from 3,594 to 2,888 (as of 6/4/2018).

[5]Value is based on the preliminary 2017 crash database as of 6/4/2018.

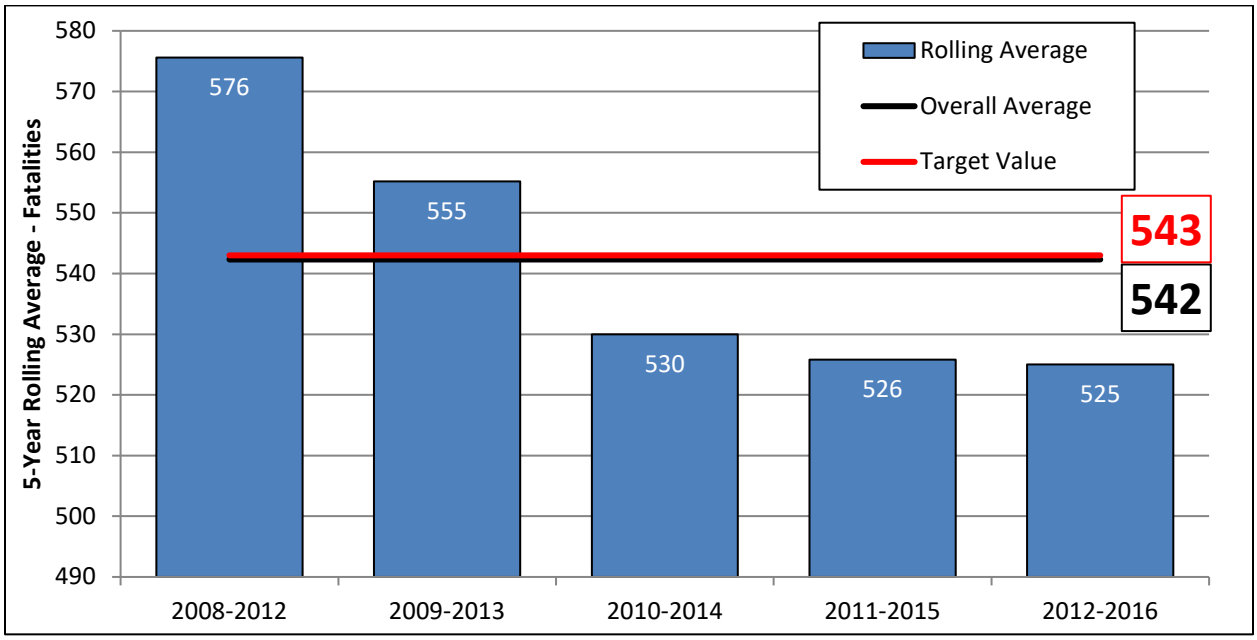
ATTACHMENT B

Data Variability Analysis

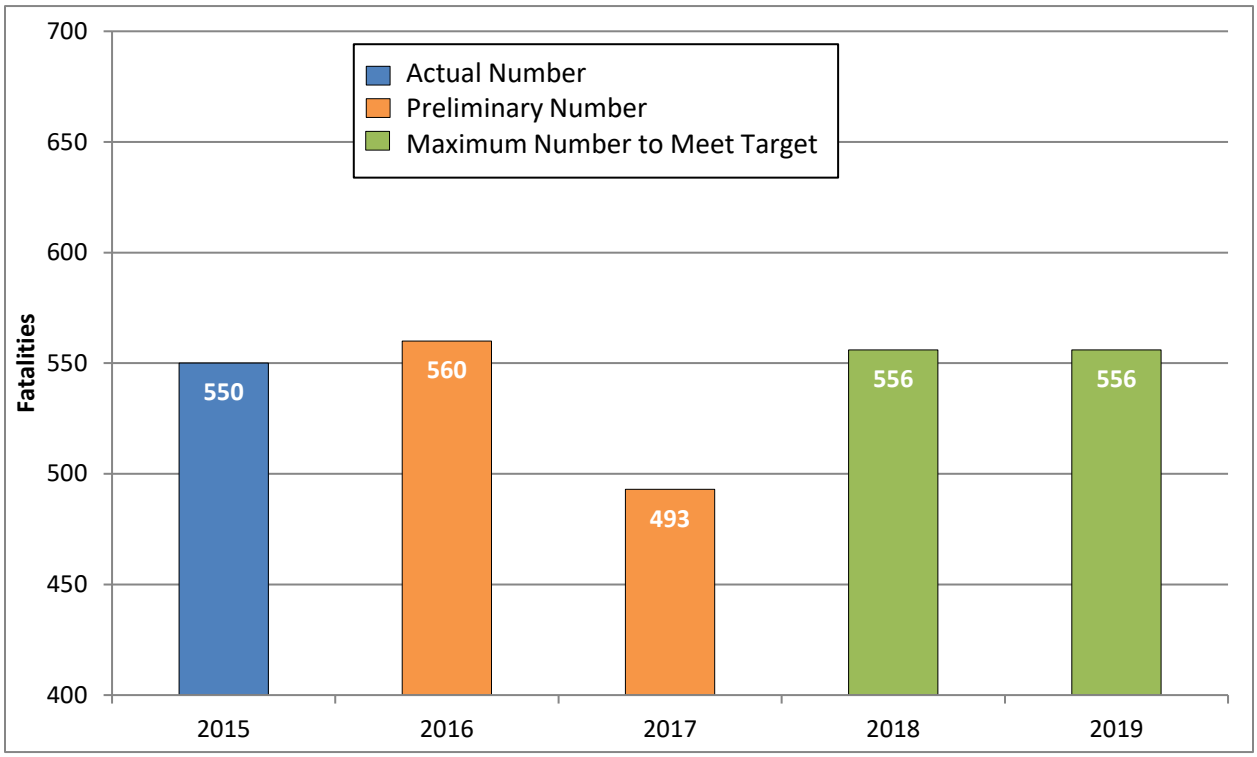
Number of Fatalities			
2012	560		
2013	498	Mean	525
2014	470	Standard Deviation	35
2015	550	Coefficient of Variation	0.07
2016	545		
Rate of Fatalities			
2012	1.671		
2013	1.487	Mean	1.528
2014	1.381	Standard Deviation	0.096
2015	1.576	Coefficient of Variation	0.06
2016	1.524		
Number of Serious Injuries			
2012	3,226		
2013	3,066	Mean	3,073
2014	3,154	Standard Deviation	115
2015	2,888	Coefficient of Variation	0.04
2016	3,032		
Rate of Serious Injuries			
2012	9.624		
2013	9.154	Mean	8.961
2014	9.270	Standard Deviation	0.505
2015	8.276	Coefficient of Variation	0.06
2016	8.480		
Number of Non-Motorized Fatalities and Serious Injuries			
2012	147		
2013	149	Mean	141
2014	141	Standard Deviation	15
2015	112	Coefficient of Variation	0.11
2016	154		

ATTACHMENT C

HSIP 2019 Target – Number of Fatalities

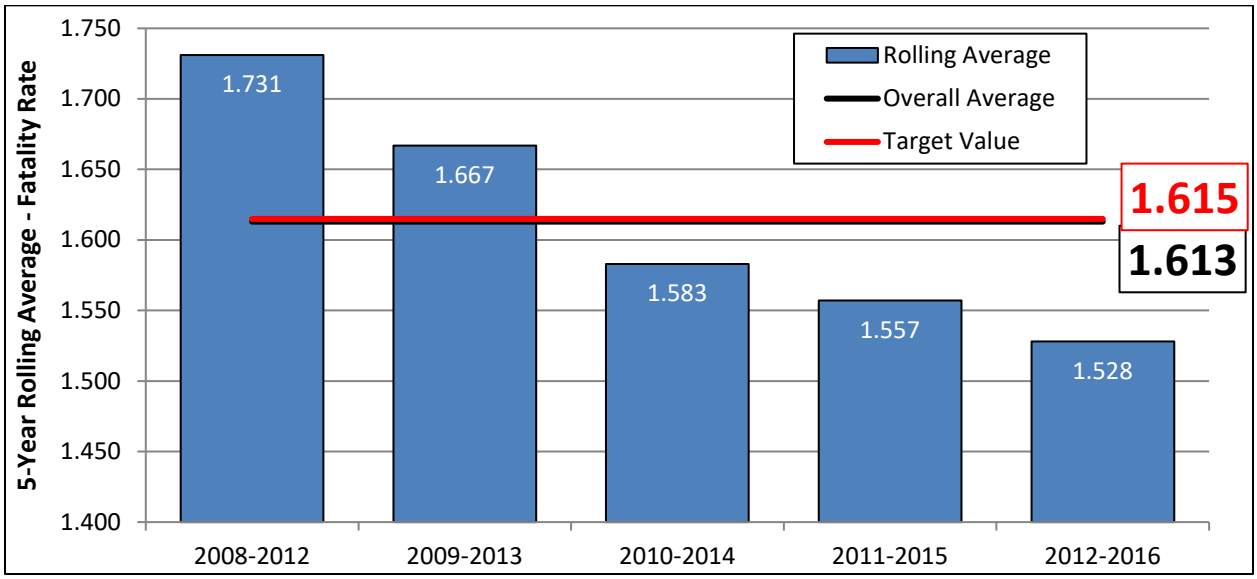


Maximum Numbers to Meet Target – Number of Fatalities

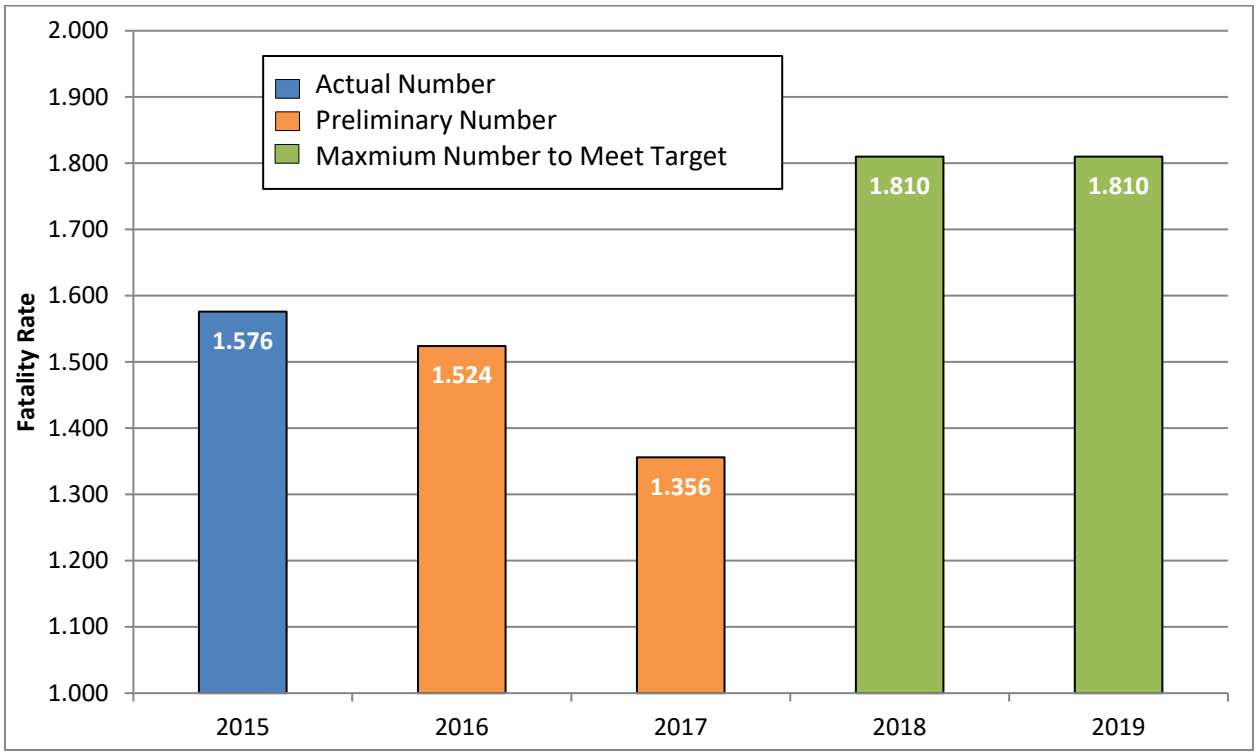


Note:
Maximum numbers are determined based on the actual fatality numbers for 2014 and 2015, and the preliminary NSC numbers for 2016 and 2017.

HSIP 2019 Target – Fatality Rate



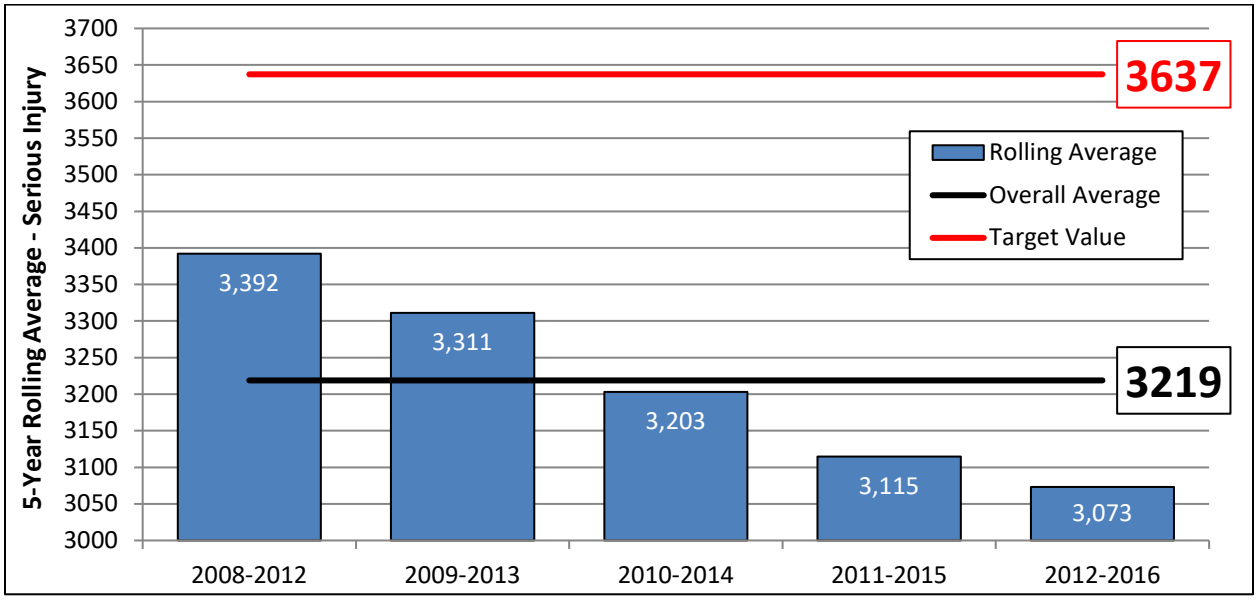
Maximum Numbers to Meet Target – Fatality Rate



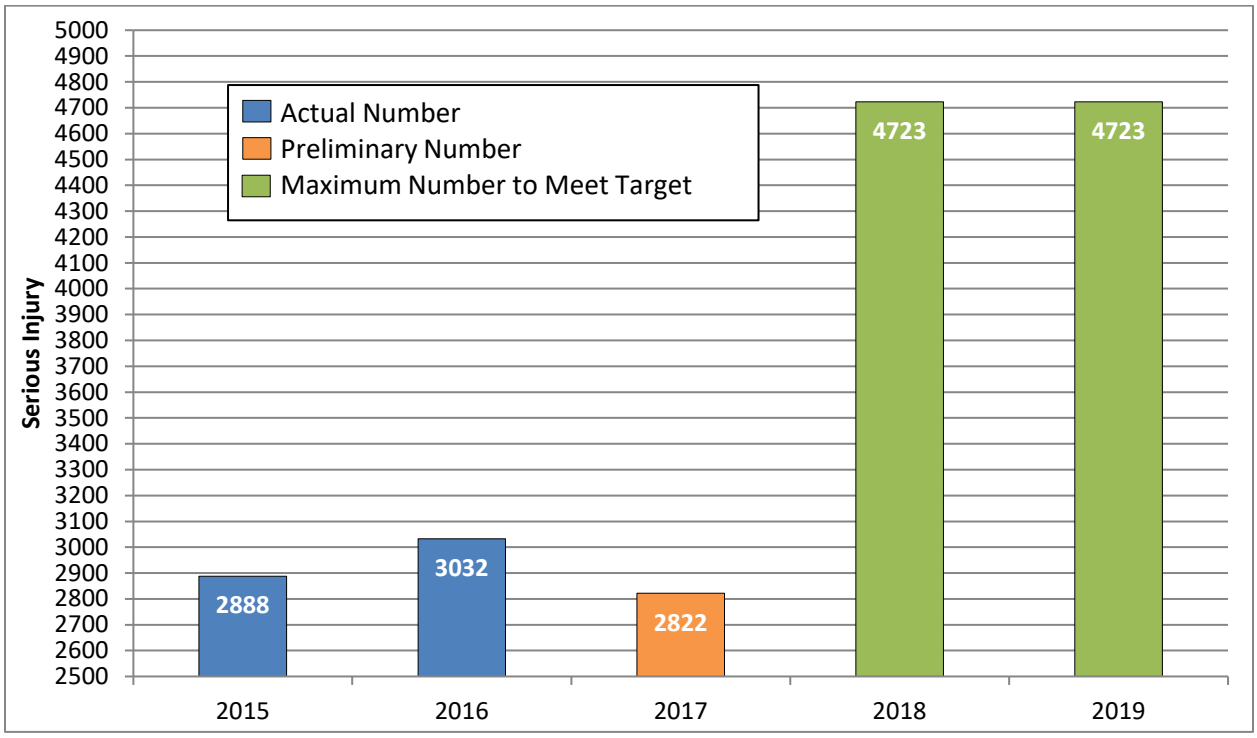
Notes:
Maximum rates are determined based on:

- The actual fatality numbers for 2014 and 2015, and the preliminary NSC numbers for 2016 and 2017.
- The actual FHWA HPMS VMTs for 2014-2016 and the Department's VMT estimation for 2017.
- VMTs for 2018 and 2019 are assumed the same as 2017.

HSIP 2019 Target – Number of Serious Injuries

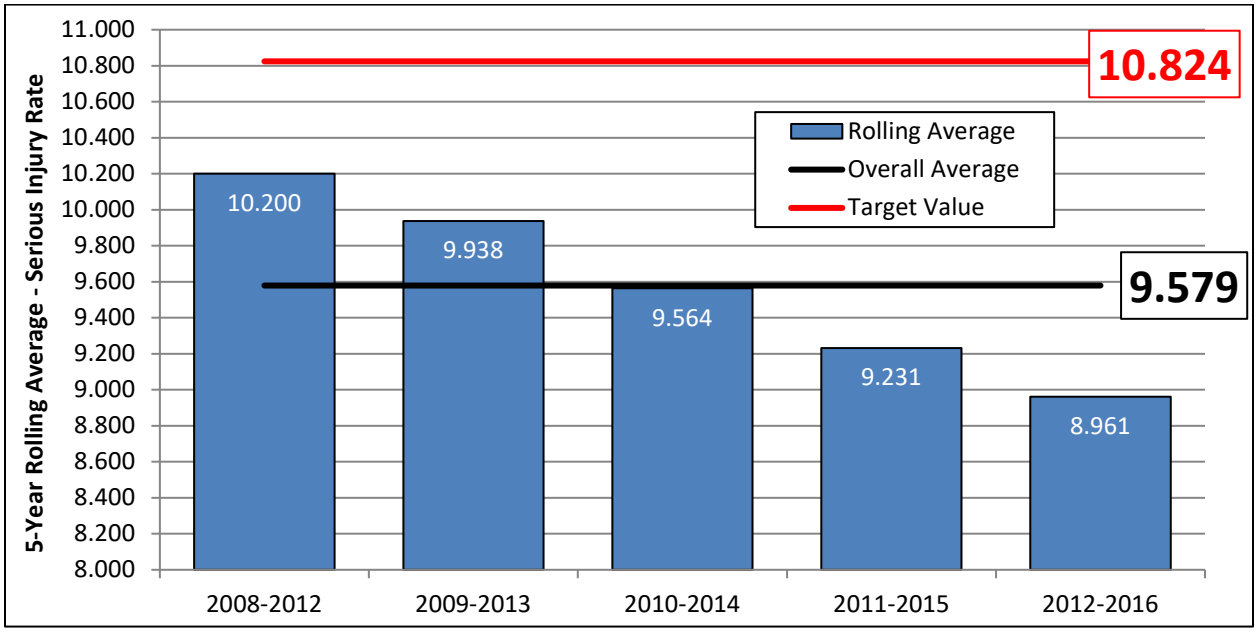


Maximum Numbers to Meet Target – Number of Serious Injuries

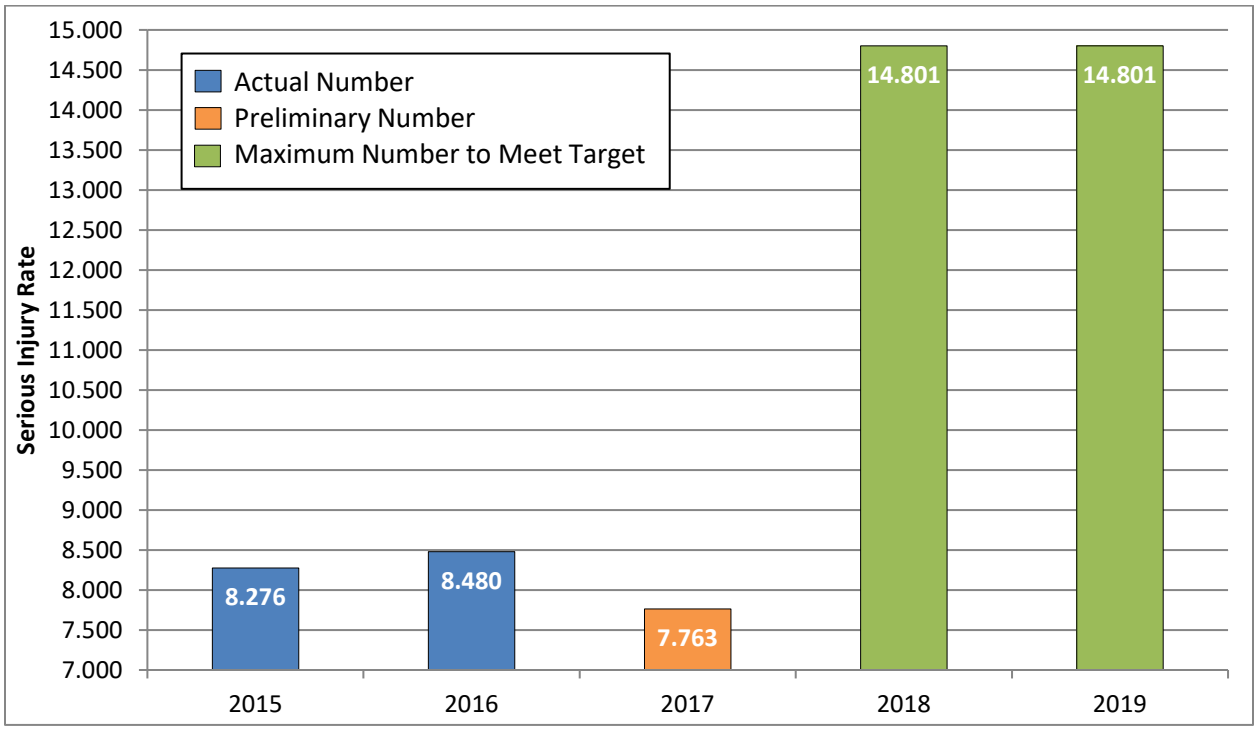


Note:
Maximum numbers are determined based on the actual serious injury numbers for 2014-2016, and the preliminary number for 2017.

HSIP 2019 Target – Serious Injury Rate



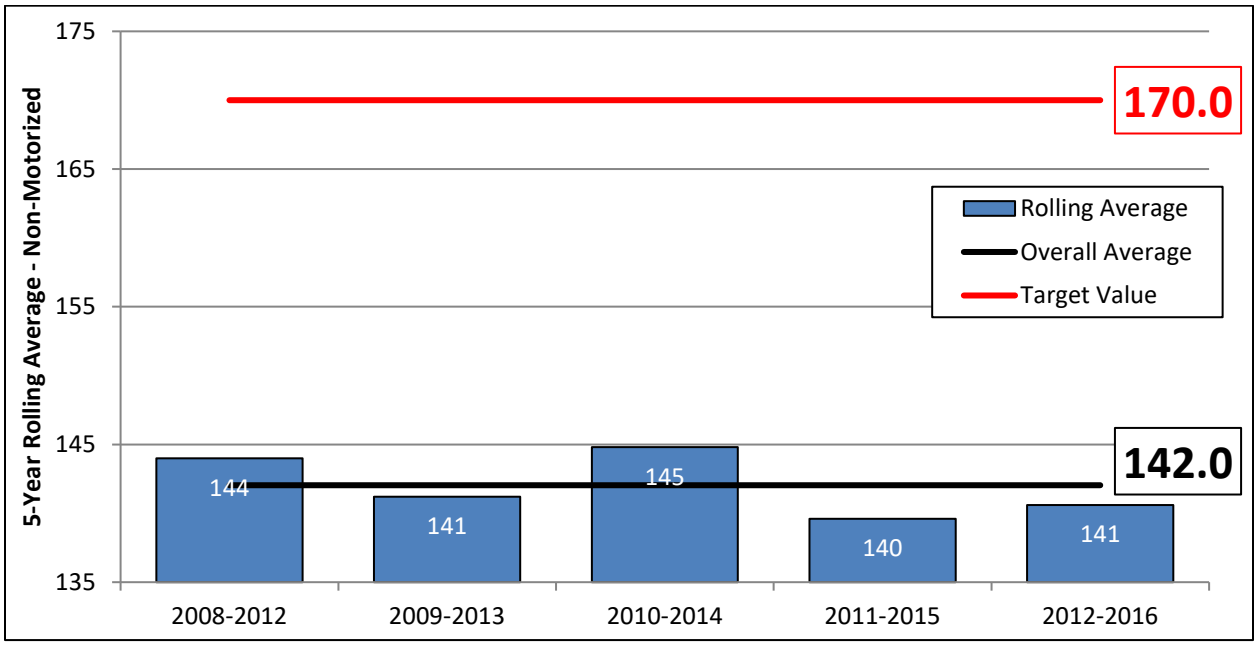
Maximum Numbers to Meet Target – Serious Injury Rate



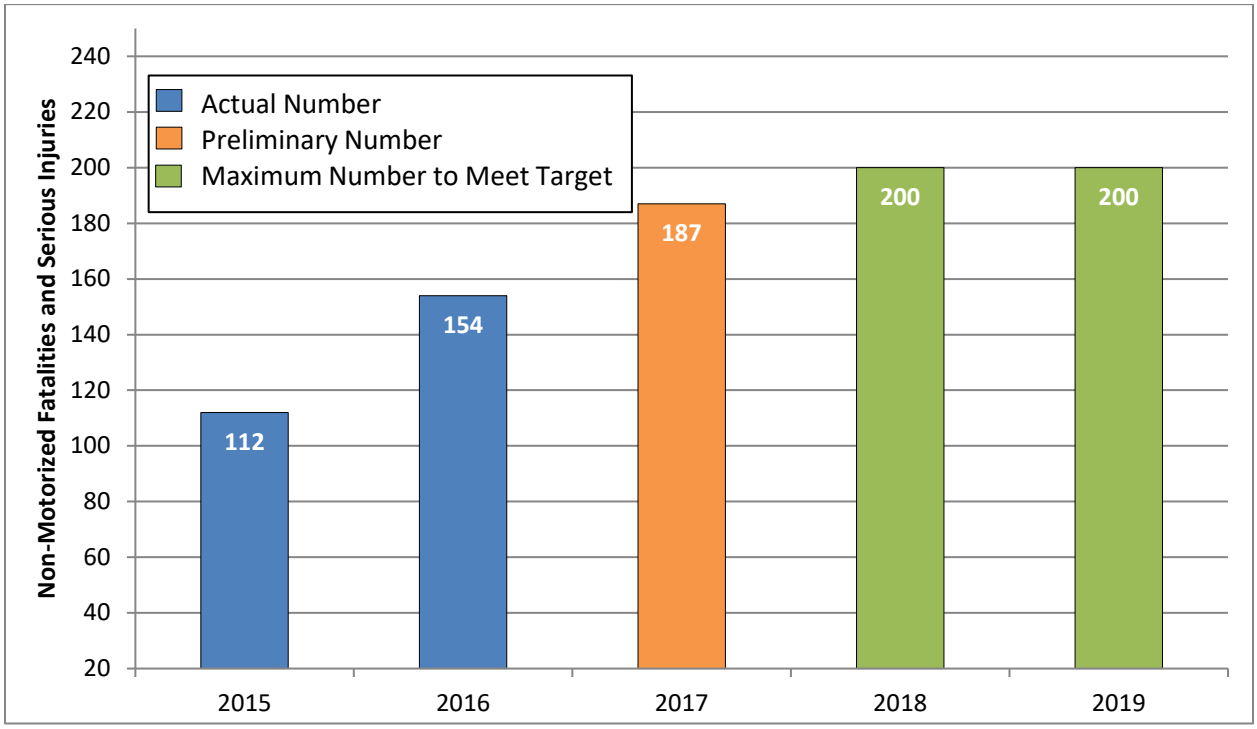
Notes:
Maximum rates are determined based on:

- The actual serious injury numbers for 2014-2016, and the preliminary number for 2017.
- The actual FHWA HPMS VMTs for 2014-2016 and the Department's VMT estimation for 2017.
- VMTs for 2018 and 2019 are assumed the same as 2017.

HSIP 2019 Target –
Number of Non-Motorized Fatalities and Serious Injuries



Maximum Numbers to Meet Target – Number of Non-Motorized Fatal and Serious Injuries



Note:
Maximum numbers are determined based on the actual serious injury numbers for 2014-2016, and the preliminary number for 2017.

TARGET SETTING

BRIDGE
PERFORMANCE MEASURES

In accordance with 23 CFR 490, the Federal Highway Administration (FHWA) established performance measures for State Departments of Transportation (DOTs) to use in managing bridge performance on the National Highway System (NHS). The following is a list of the required performance measures for bridges.

Performance Measures
Percent of NHS bridges by deck area classified as Good condition
Percent of NHS bridges by deck area classified as Poor condition

CONDITION BASED PERFORMANCE MEASURES

- Measures are based on deck area.
- The classification is based on National Bridge Inventory (NBI) condition ratings for deck, superstructure, substructure, and bridge length culverts.
- Condition is determined by the lowest rating of deck, superstructure, substructure, or culvert.
    - If the lowest rating is greater than or equal to 7, the structure is classified as good.
    - If it is less than or equal to 4, the classification is poor.
    - Structures rated below 7 but above 4 will be classified as fair.
- Deck area is computed using structure length, and deck width or approach roadway width (for bridge length culverts).

TARGET SETTING REQUIREMENTS

State DOTs:

- Must establish targets for all bridges carrying the NHS, which includes on-ramps and off-ramps connected to the NHS, and bridges carrying the NHS that cross a State border, regardless of ownership.
- Must establish statewide 2- and 4-year targets by May 20, 2018 and report targets by October 1, 2018 in the Baseline Performance Period Report.
- May adjust 4-year targets at the Mid Performance Period Progress Report (October 1, 2020).
- State DOTs shall coordinate with relevant MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

Metropolitan Planning Organizations (MPOs):

- Shall support the relevant State DOT 4-year target or establish their own within 180 days after the State DOT target is established.
- Shall report their established targets to their respective State DOT in a manner that is documented and mutually agreed upon by both parties.
- Shall report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

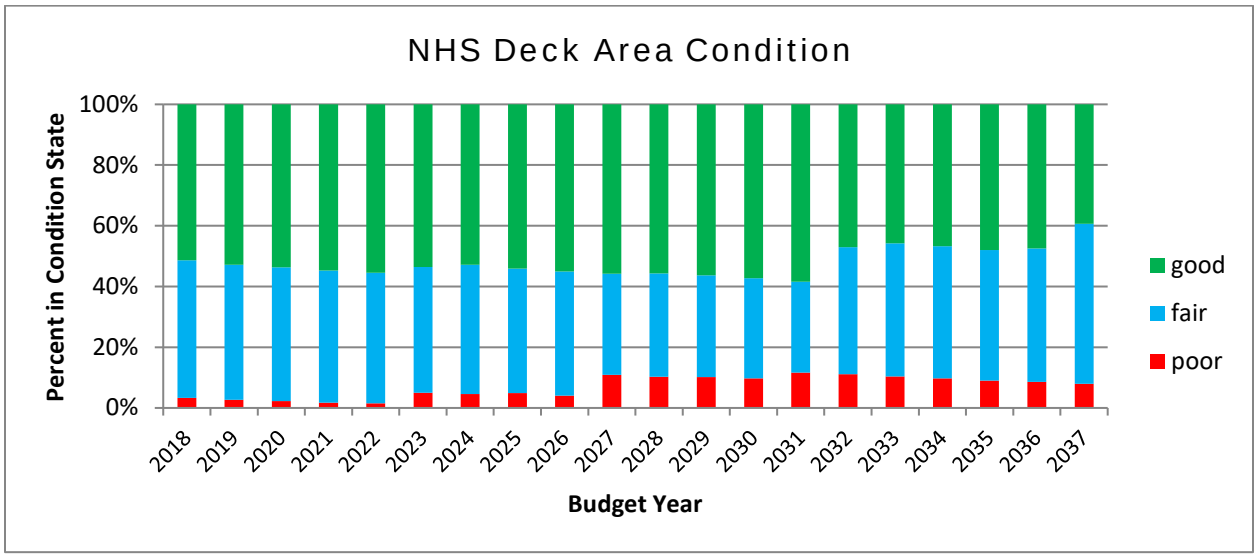
Other Information:

- State DOT targets should be determined from asset management analyses and procedures. The targets reflect investment strategies that aim to achieve a state of good repair over the life cycle of assets at minimum practicable cost.
- If for three consecutive years more than 10% of a State DOT's NHS bridges total deck area is classified as Poor, the State DOT must obligate and set aside National Highway Performance Program (NHPP) funds to eligible bridge projects on the NHS.

METHODOLOGY

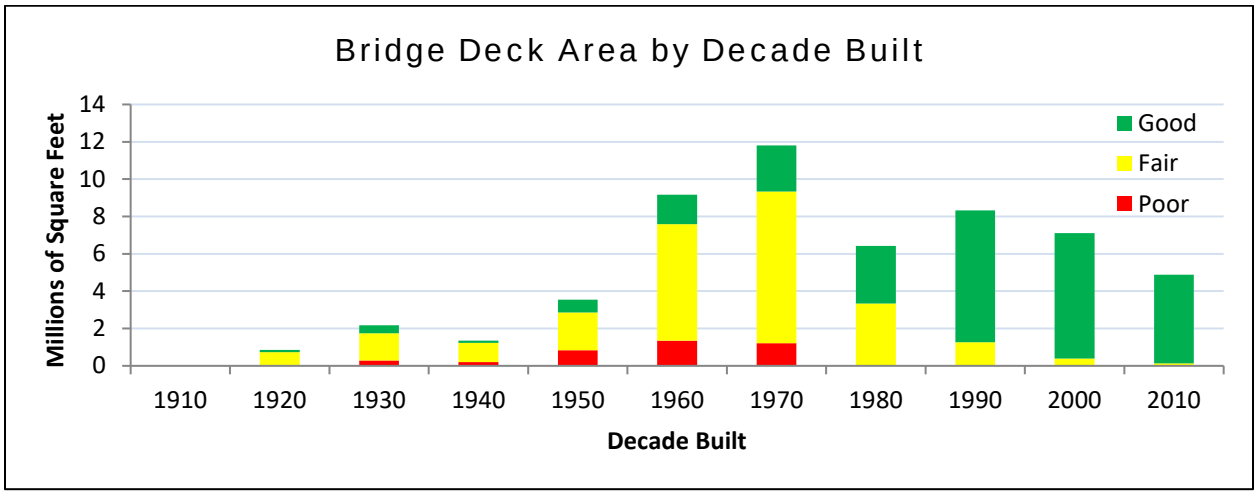
In order to develop the performance targets, a bridge model is required to forecast future conditions based on anticipated funding. In October of 2015, Heavy Bridge Maintenance (HBM) entered into an agreement to use Deighton's dTIMS software as ARDOT's bridge modeling platform[1].

Based on a $90-million budget for all state-owned bridges, the model provides a 20-year condition forecast[2] for NHS bridges as shown below:



[1] While the model is still being refined, the projections seem reasonable and the proposed performance targets are based on those projections.
[2] The bridge model does not consider the additional funding made available for the 30 Crossing project. The 30 Crossing project will address over one percent of the poor deck area currently in the NHS bridges.

As shown in the 20-year condition forecast chart, the poor deck area is currently at 3.3 percent while the good deck area is at 51.3 percent. There is a jump in percent poor deck area in 10 years. This jump can be explained by the large inventory of bridges that were built in the 1960s and 1970s (as shown in the following figure) and will reach the end of their 50-year design life within the next 10 years. With additional planned model calibration, the jump may be less severe. However, additional deck area could be rated poor earlier than year 2027.



TARGETS

The proposed targets are not intended to be "aspirational", but rather reflect a "realistic" approach to minimizing deterioration of the existing bridge infrastructure in an environment where available resources are less than optimal. The targets represent what is attainable if the strategies and funding estimates in the Transportation Asset Management Plan (TAMP) are implemented.

Performance Targets		
	2-year	4-year
Percent of NHS bridges by deck area classified as Good condition	50%	50%
Percent of NHS bridges by deck area classified as Poor condition	4%	6%

It should be noted that the shift toward bridge preservation in the last couple of years should enabled the Department to stay below 10 percent of NHS bridges classified as poor for the state-wide bridge inventory at the anticipated 90-million funding level according to the model. Future model calibrations will allow better performance forecasting, which would enable ARDOT to make adjustments in funding and/or strategies to stay below the penalty threshold for NHS bridges.

BRIDGE
PERFORMANCE MEASURES

TPM
HOW WE GET THERE

Final Rulemaking

The Federal Highway Administration (FHWA) published in the *Federal* Register (82 FR5886) a final rule establishing performance measures for State Departments of Transportation (DOTs) to use in managing pavement and bridge performance on the National Highway System (NHS). The National Performance Management Measures; Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition for the National Highway Performance Program Final Rule addresses requirements established by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and reflects passage of the Fixing America's Surface Transportation (FAST) Act. The rule is effective **May 20, 2017**.

Performance Measures
✓ % of NHS bridges by deck area classified as in Good condition
✓ % of NHS bridges by deck area classified as in Poor condition

Condition-Based Performance Measures

- Measures are based on deck area.
- The classification is based on National Bridge Inventory (NBI) condition ratings for item 58 - Deck, 59 - Superstructure, 60 - Substructure, and 62 - Culvert.
- Condition is determined by the lowest rating of deck, superstructure, substructure, or culvert. If the lowest rating is greater than or equal to 7, the bridge is classified as good; if is less than or equal to 4, the classification is poor. (Bridges rated below 7 but above 4 will be classified as fair; there is no related performance measure.)
- Deck area is computed using NBI item 49 - Structure Length, and 52 - Deck Width or 32 - Approach Roadway Width (for some culverts).

Target Setting

State DOTs:

- Must establish targets for all bridges carrying the NHS, which includes on- and off-ramps connected to the NHS within a State, and bridges carrying the NHS that cross a State border, regardless of ownership.
- Must establish statewide 2- and 4-year targets by May 20, 2018, and report targets by October 1, 2018, in the Baseline Performance Period Report.
- May adjust 4-year targets at the Mid Performance Period Progress Report (October 1, 2020).

Metropolitan Planning Organizations (MPOs):

- Support the relevant State DOT(s) 4-year target or establish their own by 180 days after the State DOT(s) target is established.

U.S. Department of Transportation
Federal Highway Administration

BRIDGE
PERFORMANCE MEASURES

TPM
HOW WE GET THERE

Key Dates	
May 20, 2017	Final rule effective date.
January 1, 2018	1st 4- year performance period begins.
May 20, 2018	Initial 2- and 4-year targets established.
October 1, 2018	Baseline Performance Period Report for the 1st Performance Period due. State DOTs report 2-year and 4-year targets; etc.
Within 180 days of relevant State DOT(s) target establishment	MPOs must commit to support State target or establish separate quantifiable target.
October 1, 2020	Mid Performance Period Progress Report for the 1st Performance Period due. State DOTs report 2-year condition/performance; progress toward achieving 2-year targets; etc.
December 31, 2021	1st 4-year performance period ends.
October 1, 2022	Full Performance Period Progress Report for 1st performance period due. State DOTs report 4-year condition/ performance; progress toward achieving 4-year targets; etc. Baseline report due for 2nd performance period due. State DOTs report 2- and 4-year targets; baseline condition, etc.

Other Specifics

- State DOT targets should be determined from asset management analyses and procedures and reflect investment strategies that work toward achieving a state of good repair over the life cycle of assets at minimum practicable cost. State DOTs may establish additional measures and targets that reflect asset management objectives.
- The rule applies to bridges carrying the NHS, including bridges on on- and off-ramps connected to the NHS.
- If for 3 consecutive years more than 10.0% of a State DOT's NHS bridges' total deck area is classified as Structurally Deficient, the State DOT must obligate and set aside National Highway Performance Program (NHPP) funds for eligible projects on bridges on the NHS.
- Deck area of all border bridges counts toward both States DOTs' totals.

Visit www.fhwa.dot.gov/tpm/ to learn about training, guidance, and other implementation-related information.

U.S. Department of Transportation
Federal Highway Administration

TARGET SETTING

PAVEMENTS
PERFORMANCE MEASURES

In accordance with 23 CFR 490, the Federal Highway Administration (FHWA) established performance measures for State Departments of Transportation (DOTs) to use in managing pavement performance on the National Highway System (NHS). The following is a list of the required performance measures for pavements.

Performance Measures
Percent of Interstate pavements in Good condition
Percent of Interstate pavements in Poor condition
Percent of non-Interstate NHS pavements in Good condition
Percent of non-Interstate NHS pavements in Poor condition

CONDITION BASED PERFORMANCE MEASURES

Data Collection Requirements:

- Starting January 1, 2018, pavement data collected on the Interstate must include International Roughness Index (IRI), percent cracking, rutting, and faulting. This data must be reported in the Highway Performance Monitoring System (HPMS) by April 15, 2019. This data will be gathered and re-submitted every year on a full extent basis.
- The same requirements become effective for non-Interstate NHS pavement data beginning January 1, 2020 with a HPMS report date of June 15, 2021. This data will be gathered and re-submitted at least every two years on a full extent basis.

Pavement Condition Determination:

Asphalt Pavement	Jointed Concrete Pavement (JCP)	Continuously Reinforced Concrete Pavement (CRCP)
IRI	IRI	IRI
Rutting	Faulting	--
Cracking %	Cracking %	Cracking %

- Good: All measures are in good condition
- Poor: 2 or more measures are in poor condition
- Fair: Everything else

Pavement Condition Thresholds:

	Good	Fair	Poor
IRI (inches/mile)	<95	95-170	>170
Rutting (inches)	<0.20	0.20-0.40	>0.40
Faulting (inches)	<0.10	0.10-0.15	>0.15
Cracking (%)	<5	5-20 (asphalt) 5-15 (JCP) 5-10 (CRCP)	>20 (asphalt) >15 (JCP) >10 (CRCP)

TARGET SETTING REQUIREMENTS

State DOTs:

- Must establish targets, regardless of ownership, for the full extent of the Interstate and non-Interstate NHS.
- Must establish statewide 2- and 4-year targets for the non-Interstate NHS and 4-year targets for the Interstates by May 20, 2018 and report targets by October 1, 2018 in the Baseline Performance Period Report.
- May adjust 4-year targets at the Mid Performance Period Progress Report (October 1, 2020).
- State DOTs shall coordinate with relevant MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

Metropolitan Planning Organizations (MPOs):

- Shall support the relevant State DOT 4-year target or establish their own within 180 days after the State DOT target is established.
- Shall report their established targets to their respective State DOT in a manner that is documented and mutually agreed upon by both parties.
- Shall report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

Other Information:

- State DOT targets should be determined from asset management analyses and procedures. The targets reflect investment strategies that aim to achieve a state of good repair over the life cycle of assets at minimum practicable cost.
- The minimum acceptable condition for interstate pavements is no more than 5% in poor condition. FHWA will make this determination using the data in HPMS by June 15 of each year. Any State DOT that does not meet the minimum condition will be required to obligate a portion of its National Highway Preservation Program (NHPP) and Surface Transportation Program (STP) funds to address interstate pavement conditions. The first assessment will occur in June 2019.

METHODOLOGY

The Current Condition and 2- and 4-Year Pavement Performance Targets for the non-Interstate NHS pavements were developed in accordance with the methodology presented in Appendix C of *FHWA*

Computation Procedure for the Pavement Condition Measures (FHWA-HIF-18-022) for use during the "transition" period. This methodology was also used to establish the Current Condition for Interstate pavements in Arkansas. Based on the *Discussion of Section 490.105(e)(7) Phase-in Requirements for Interstate Pavement Measures* the 4-Year Pavement Performance Target for Arkansas' Interstate pavements was estimated. Factors that were taken into consideration as part of this estimation included the calculated Current Condition, Interstate projects that are anticipated to be completed by 2021, estimated deterioration rates for Interstate pavements, and the anticipated level of available funding.

Performance Rating	
	Current*
Percent of Interstate pavements in Good condition	77%
Percent of Interstate pavements in Poor condition	4%
Percent of non-Interstate NHS pavements in Good condition	52%
Percent of non-Interstate NHS pavements in Poor condition	8%
* Condition rating based on ARDOT's 2017 HPMS pavement dataset.	

TARGETS

The proposed targets are not intended to be "aspirational", but rather reflect a "realistic" approach to minimizing deterioration of the existing pavements on the Interstate and non-Interstate NHS in an environment where available resources are less than optimal. The targets represent what is attainable if the strategies and funding estimates in the Transportation Asset Management Plan (TAMP) are implemented.

Performance Targets		
	2-year	**4-year**
Percent of Interstate pavements in Good condition	N/A	79%
Percent of Interstate pavements in Poor condition	N/A	5%
Percent of non-Interstate NHS pavements in Good condition	48%	44%
Percent of non-Interstate NHS pavements in Poor condition	10%	12%

TARGET SETTING

TRAVEL TIME RELIABILITY PERFORMANCE MEASURES

In accordance with 23 CFR 490, the Federal Highway Administration (FHWA) established performance measures for State Departments of Transportation (DOTs) to use in assessing system performance on the Interstate and non-Interstate National Highway System (NHS). The following is a list of the required performance measures for travel time reliability.

Performance Measures
Percent of Person-Miles Traveled on the Interstate that are Reliable
Percent of Person-Miles Traveled on the non-Interstate NHS that are Reliable

CONDITION BASED PERFORMANCE MEASURES

- Measures are based on the Level of Travel Time Reliability (LOTTR) which is defined as the ratio of the longer travel time (80th percentile) to a "normal" travel time (50th percentile) using data from FHWA's National Performance Management Research Data Set (NPMRDS) or equivalent.
- A LOTTR will be calculated for each of the following time periods for each segment of highway, known as a Traffic Message Channel (TMC):
    - 6:00 AM-10:00 AM Weekday
    - 10:00 AM-4:00 PM Weekday
    - 4:00 PM-8:00 PM Weekday
    - 6:00 AM-8:00 PM Weekends
- If any one of the four time periods has a LOTTR above 1.5, then the TMC will be considered unreliable.
- All TMCs will have their length multiplied by the average daily traffic and a vehicle occupancy factor of 1.7 (released by FHWA on 4/27/2018) to determine the person-miles traveled on that TMC. Then the reliable TMCs will be summed and divided by the total person-miles traveled.

TARGET SETTING REQUIREMENTS

State DOTs:

- Must establish targets for the Interstate and non-Interstate NHS.
- Must establish statewide 2- and 4-year targets by May 20, 2018 and report targets by October 1, 2018 in the Baseline Performance Period Report.
- May adjust 4-year targets at the Mid Performance Period Progress Report (October 1, 2020).
- State DOTs shall coordinate with relevant MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

Metropolitan Planning Organizations (MPOs):

- Shall support the relevant State DOT 4-year target or establish their own targets within 180 days after the State DOT target is established.
- Shall report their established targets to their respective State DOT in a manner that is documented and mutually agreed upon by both parties.
- Shall report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

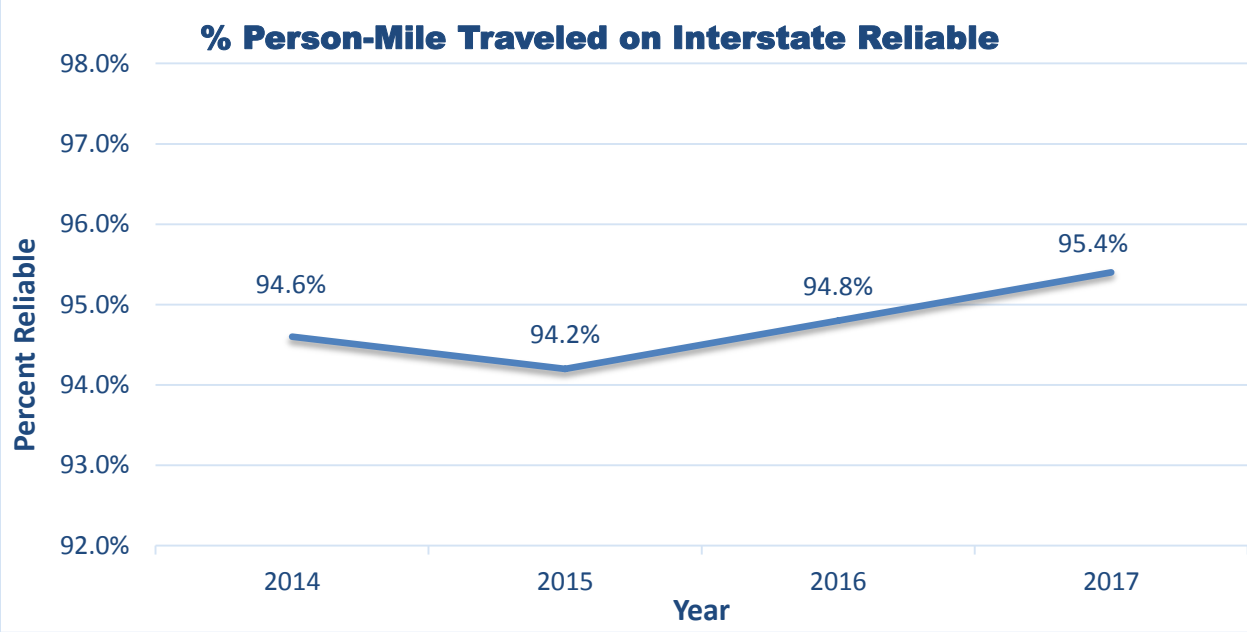
Other information

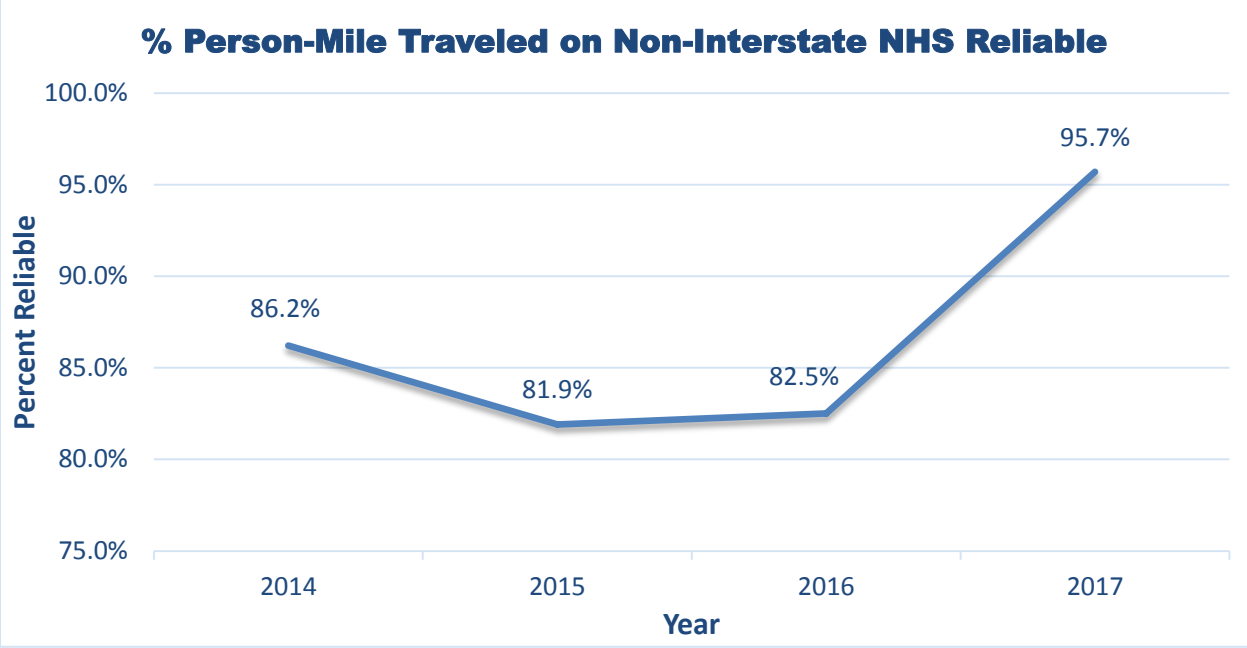
- FHWA began introducing the NPMRDS provided by HERE in August 2013. The data was considered largely as raw probe data.
- In February 2017, FHWA switched the NPMRDS vendor from HERE to INRIX. Due to different data processing approaches by the vendors, there are inconsistencies in the NPMRDS.
- State DOT targets will be set based on four years of data (2014-2017) and only one year of data (2017) from the current vendor.
- As of March 2018, nationally there is 93 percent data coverage for Interstates and 53 percent for non-Interstate NHS.
- Population growth and increasing travels will affect travel time reliability, particularly in fast growing urban areas.
- A large construction program on the Interstate system could result in multiple major workzones. This scenario would have an effect on the reliability on the Interstates and non-Interstate routes.
- Arkansas is part a pooled fund project organized by AASHTO and led by the Rhode Island DOT to provide technical assistance for transportation performance management. As a member, Arkansas has direct access to the NPMRDS Analytics portal through the Regional Integrated Transportation Information System (RITIS) hosted by the University of Maryland.
- If FHWA determines that a state DOT has not made significant progress toward achieving the target, the State DOT shall document the actions it will take to achieve the NHS travel time targets. There is no financial penalty for not meeting the proposed targets.

METHODOLOGY

In order to develop the performance targets, the current and past travel time reliability conditions were reviewed for Interstates and non-Interstate NHS. As shown on the figures on the next page, travel times on Arkansas' Interstates and non-Interstate NHS are largely considered reliable. However, without additional historical data, setting 2- and 4-year targets is difficult. Due to the data variation between vendors, historical trend was not considered appropriate for target setting.

After the review of the travel time reliability condition for 2014-2017, targets were developed by first identifying significant construction projects located on the Interstate and non-Interstate NHS systems. These project limits were identified and all TMCs within the project limits were considered unreliable to account for the workzones. For large construction projects, additional TMCs located near the project or on logical diversion routes were also considered unreliable. To account for the growth of traffic, TMCs located in urban areas that are currently reliable but have a LOTTR of 1.4 or greater (and no improvements planned) were considered unreliable as well.





TARGETS

The proposed targets are not intended to be “aspirational”, but rather reflect a “realistic” approach to understanding system reliability in an environment where available resources are less than optimal and various additional factors could affect travel such as the economy, trade policies, population growth, and land development patterns.

The proposed targets reflect a best estimate to account for major construction projects, anticipated traffic growth, data quality and availability, and other uncertainties.

Performance Targets		
	2-year	4-year
Percent of Person-Miles Traveled on the Interstate that are Reliable	91%	89%
Percent of Person-Miles Traveled on the non-Interstate NHS that are Reliable	-	90%

TARGET SETTING

FREIGHT RELIABILITY PERFORMANCE MEASURE

In accordance with 23 CFR 490, the Federal Highway Administration (FHWA) established performance measures for State Departments of Transportation (DOTs) to use in assessing freight movement on the Interstate System. The following is the required performance measure for freight reliability.

Performance Measure
Truck Travel Time Reliability on the Interstate System

CONDITION BASED PERFORMANCE MEASURES

- Measure is based on the Truck Travel Time Reliability (TTTR) Index.
- The TTTR is defined as the 95th percentile truck travel time divided by the 50th percentile truck travel time using data from FHWA's National Performance Management Research Data Set (NPMRDS) or equivalent.
- The TTTR will be calculated for each of the following five time periods for each segment of Interstate known as a Traffic Message Channel (TMC):
    - 6:00 AM-10:00 AM Weekday
    - 10:00 AM-4:00 PM Weekday
    - 4:00 PM-8:00 PM Weekday
    - 6:00 AM-8:00 PM Weekends
    - 8:00 PM-6:00 AM All Days
- The maximum TTTR for each TMC will be multiplied by the length of the TMC. Then the sum of all length-weighted segments divided by the total length of Interstate will generate the TTTR Index.

TARGET SETTING REQUIREMENTS

State DOTs:

- Must establish targets for all Interstates.
- Must establish statewide 2- and 4-year targets by May 20, 2018 and report targets by October 1, 2018 in the Baseline Performance Period Report.
- May adjust the 4-year target at the Mid Performance Period Progress Report (October 1, 2020).
- State DOTs shall coordinate with relevant MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

Metropolitan Planning Organizations (MPOs):

- Shall support the relevant State DOT 4-year target or establish their own targets within 180 days after the State DOT target is established.
- Shall report their established targets to their respective State DOT in a manner that is documented and mutually agreed upon by both parties.
- Shall report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

Other Information:

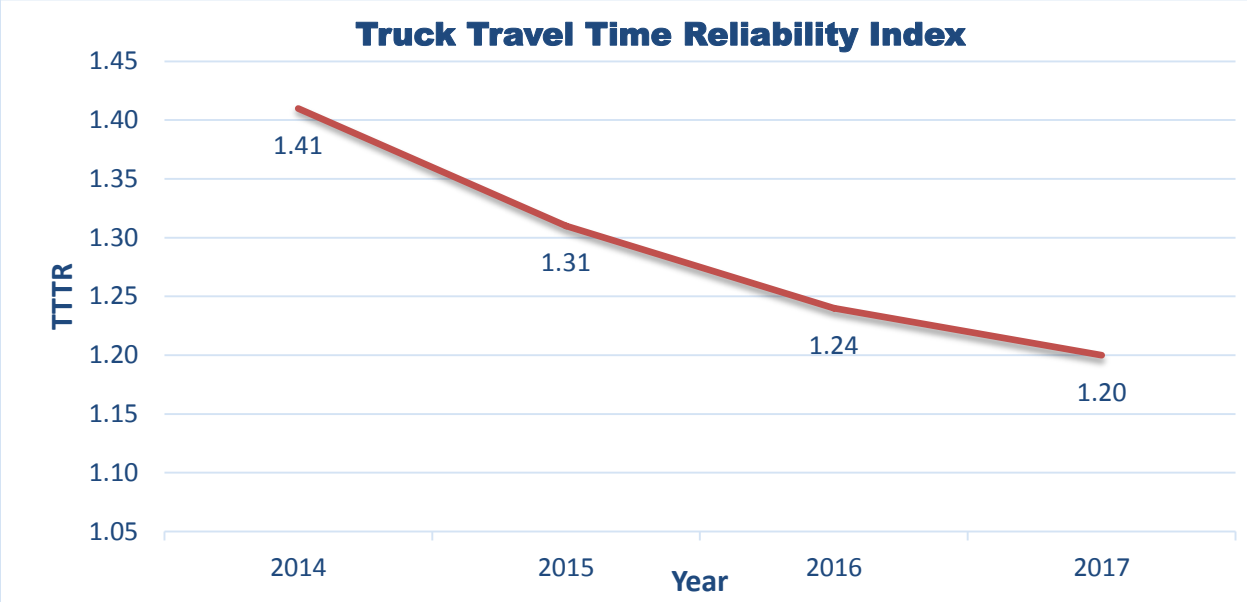
- FHWA began introducing the NPMRDS provided by HERE in August 2013. The data was considered largely as raw probe data.
- In February 2017, FHWA switched the NPMRDS vendor from HERE to INRIX. The change in vendor resulted in inconsistencies due to the different approaches in data processing.
- As of March 2018, nationally there is 85 percent freight probe data coverage for Interstates.
- Population growth and increasing travel will affect travel time reliability, particularly in fast growing urban areas.
- Urban congestion often affects freight reliability. For example, twenty of the highest 40 TTTR segments in Arkansas are located on urban Interstates where very little truck traffic exists.
- Arkansas is part a pooled fund project organized by AASHTO and led by the Rhode Island DOT to provide technical assistance for transportation performance management. As a member, Arkansas has direct access to the NPMRDS Analytics portal through the Regional Integrated Transportation Information System (RITIS) hosted by the University of Maryland.
- If FHWA determines that a state DOT has not made significant progress toward achieving the target, the State DOT shall include as part of the next performance target report an identification of significant freight trends, needs, and issues within the State as well as a description of the freight policies and strategies and an inventory of truck freight bottlenecks. There is no financial penalty for not meeting the proposed targets.

METHODOLOGY

In order to develop the performance targets, the current and past truck travel time reliability was reviewed for the Interstate system. As shown on the figure on the next page, truck travel times on Arkansas' Interstates are largely considered reliable. However, without additional historical data, setting 2- and 4-year targets is difficult. Due to the data variation between vendors, historical trend was not considered appropriate for target setting.

After the review of the travel time reliability condition for 2014-2017, targets were developed by first identifying significant construction projects located on the Interstates. All TMCs within the anticipated project limits were assigned an assumed TTTR of 5 to account for a potential decrease in reliability for those segments during construction. TTTR of 5 represents the travel time on the worst day of the week

is five times greater than the travel time on an average day. Based on a freight trend analysis (Arkansas State Freight Plan, 2017), it is anticipated that the freight growth by truck will increase by 44 percent by 2040. To account for the anticipated growth, the maximum TTTR for each TMC was increased by five percent.



It is anticipated with additional data becoming available and analytics continuously to improve, estimates would become more refined in the future.

TARGETS

The proposed targets are not intended to be "aspirational", but rather reflect a "realistic" approach to understanding system reliability in an environment where available resources are less than optimal and various additional factors could affect freight movement such as the economy, trade policies, population growth, and land development patterns.

The proposed targets reflect a best estimate to account for major construction projects, anticipated freight growth, data quality and availability, and other uncertainties.

Performance Targets		
	2-year	4-year
Truck Travel Time Reliability on the Interstate System	1.45	1.52

TRANSPORTATION PERFORMANCE MANAGEMENT

APPENDIX H-2

Rock Region METRO TAM Plan

ROCK REGION METRO

TRANSIT ASSET MANAGEMENT PLAN

PLAN YEAR
2018-2021

TABLE OF CONTENTS

SECTION 1: INTRODUCTION

EXECUTIVE SUMMARY

Transit Asset Management (TAM) is the strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risk, and costs over their life cycles for the purpose of providing safe, cost-effective, and reliable public transportation. The purpose of developing the TAM plan is to aid Rock Region METRO (METRO) in achieving and maintaining a state of good repair (SGR) of all public transportation assets. **SGR is the condition in which a capital asset is able to operate at a full level of performance. This means that the asset is able to perform its designed function, does not pose a known unacceptable risk and its lifecycle investments have been met or recovered.**

In July 2016, the Federal Transit Administration (FTA) issued a final rule requiring transit agencies to maintain and document minimum TAM standards. Federal law requires recipients and sub-recipients of Federal financial assistance to develop a TAM plan that is due to be completed on October 1, 2018.

The Executive Director (or designee) is responsible for overseeing the development of asset management plans and procedures, in cooperation with staff, and reporting to the Board on the status of asset management for METRO. The TAM Improvement Team is comprised of the assistant director of finance, procurement manager, director of maintenance and assistant director of finance. However, the entire organization plays a role in putting the TAM plan into action.

Transit Asset Management Plan Elements

The Federal Transit Administration (FTA) defines METRO as a Tier I agency and, as such, METRO has implemented a TAM plan that includes the following elements:

- Inventory of assets – a detailed listing of major capital assets as defined by the FTA and information about those assets
- Condition assessment – a rating of the asset's physical state for which METRO has direct financial responsibility
- Decision support tools – analytical process or tool to assist in capital asset investment prioritization needs
- Prioritized project list – a investment prioritization list of projects or programs to manage or improve the SGR of capital assets
- TAM and SGR policy – executive-level direction regarding expectations for transit asset management
- Implementation strategy – operational actions to achieve METRO TAM goals and policies
- Key annual activities – TAM activity four-year plan
- Identification of resources – list of resources needed to carry out the TAM plan
- Evaluation plan – monitor and update to support continuous TAM improvement

Inventory of Assets

This TAM plan includes objectives and strategies that will optimize the management of METRO's fleet, facilities, equipment and rail line to ensure alignment with the FTA reporting requirements for the National Transit Database (NTD). METRO's TAM assets are registered and monitored in a hierarchy of asset categories and asset classes. The categories include fleet, equipment, facilities and infrastructure. Under each category there are asset classes that include for example: buses, maintenance equipment, support vehicles, service facilities, and fixed guideway infrastructure. Table 1 illustrates the hierarchy of METRO's current TAM asset categories and asset classes.

TABLE 1: HIERARCHY OF ASSET CATEGORIES AND CLASSES			
FLEET	**EQUIPMENT**	**FACILITIES**	**INFRASTRUCTURE**
BUSES	SUPPORT VEHICLES	SUPPORT FACILITIES	FIXED GUIDEWAY
CUTAWAYS	MAINTENANCE EQUIPMENT	PASSENGER FACILITIES	
MINIVANS	SECURITY EQUIPMENT		
STREETCARS	COMPUTER SOFTWARE		

During asset procurement and receipt or acceptance, specific asset identification, useful life, warranty and maintenance interval information data is collected from the Original Equipment Manufacturer (OEM). Fleet and facilities maintenance programs are updated with multiple scheduled maintenance activities required to meet Original Equipment Manufacturer (OEM) recommended maintenance intervals, along with safety and regulatory compliance. This practice ensures the asset data is properly recorded for effective and efficient lifecycle management.

Condition Assessment – Fleet and Support Vehicles

Condition ratings for vehicles are expressed in terms of the percentage of assets that are at or beyond the Useful Life Benchmark (ULB) based on FTA Circular 9030.1D, paragraph 4.a.

Condition Assessment – Facilities and Facility Equipment

In order to determine an asset's condition, the FTA's Transit Economic Requirements Model (TERM) scale is being used. A TERM scale condition rating ranges from (5) Excellent to (1) Poor. Per the FTA TAM Final Ruling, assets with a condition rating score of 3.0 and above are in a state of good repair. Assets with a condition score lower than 2.9 are not in a state of good repair, and may require prioritization during capital programing to ensure safe, efficient, and reliable transit service. Table 2 shows the TERM scale used by METRO during the condition assessment phase for non-vehicle equipment.

TABLE 2: EQUIPMENT CONDITION ASSESSMENT RATING CRITERIA			
Rating		**Assessment**	**Criteria**
5		Excellent	Asset performs its designed function Asset is new and within the warranty period Asset does not pose a known, unacceptable risk
4		Good	Asset performs its designed function Asset has not met its useful life Asset does not pose a known, unacceptable risk
3		Adequate	Asset performs its designed function Asset has not met its useful life Asset does not pose a known, unacceptable risk
2		Marginal	Asset performs its designed function Asset has met its useful life Asset does not pose a known, unacceptable risk
1		Poor	Asset does not perform its designed funtion Asset has met its useful life Asset poses a known, unacceptable risk

Table 3, shown on the following page, will be used for all facility condition assessments. METRO staff conducted the facility condition assessment using the rating scale worksheet below for each facility. Each employee that conducted the internal assessment completed the worksheet for each facility asset. Each sub-component is rated using a 1-5 scale and all ratings are weighted the same. The aggregate total of the rating for each asset is shown in the condition assessment section.

TABLE 3: FACILITY CONDITION ASSESSMENT RATING CRITERIA					
Component	**Sub-Components**	**1-5 Rating**	**Component**	**Sub-Components**	**1-5 Rating**
Substructure	Foundation		Fire Protection	Sprinklers	
	Basement			Standpipes	
Shell	Superstructure			Hydrants	
	Roof		Electrical	Distribution	
	Exterior			Wiring	
	Shell appurtenances			Communications	
Interiors	Partitions			Other	
	Stairs		Site	Roadways	
	Finishes			Signage	
Conveyance	Elevators			Parking lots	
	Escalators			Pedestrian Areas	
	Lifts			Fences/Walls	
Plumbing	Fixtures			Landscaping	
	Water Distribution			Site Utilities	
	Sanitary Waste				
	Rain water drainage				
HVAC	Energy supply				
	Generation/distribution				
	Controls				
	Chimneys/Vents				

Score	Rating	Description
5	Excellent	New construction, no visible defects
4	Good	Minor improvements to superficial repairs need to be addressed through routine maintenance. No significant visible damage such as cracking, spalling, sagging, rust or shifting.
3	Adequate	Needs some repair. There may be surface cracking, rust, shifting and spalling on components. Components may need maintenance but are cosmetically "fair" and functioning as designed within useful life.
2	Marginal	Components need extensive repair at a minimum. They show signs of significant cracking, sagging, rust, shifting or spalling/decay. Component issues are present. There are no apparent safety issues. Components are functional but have exceeded their useful life.
1	Poor	Components show critical defects affecting function, health or safety. They are visibly in poor condition. They cannot be repaired and must be replaced. They have exceeded their useful life and warrant structural review.

Decision Support Tools and Investment Prioritization

Part of the asset management process is optimizing how funds are allocated based on the assessed asset inventory to help achieve and maintain a state of good repair. This includes both capital and operating funds. METRO's capital budget funds the planning, design, acquisition, capital maintenance and rehabilitation of all assets subject to the TAM plan. The operating budget funds the use and routine maintenance of those same assets, including the staff needed to perform those functions.

TABLE 4: MULTI-YEAR CAPITAL INVESTMENT PLAN PROCESS				
STEP 1	**STEP 2**	**STEP 3**	**STEP 4**	**STEP 5**
Asset Inventory and Condition	**Project Request Creation**	**Funding Projections**	**Prioritization**	**Capital Budget**

Table 4, shown above, illustrates the capital investment plan process followed by METRO. Major capital project requests (those that would create a capital asset under the TAM plan) are created by the executive staff. Asset inventory condition assessments are conducted annually by the TAM Implementation Team and external consultants (if necessary). After the condition assessment, the team discusses possible risks associated with assets that are not considered to be in a state of good repair. If an asset is determined to pose an unacceptable risk (safety, service level, ridership, etc.) it is placed on the Prioritized Project List. The Prioritized Project list is reviewed by the executive staff during weekly Executive Leadership Team Meetings. Here, the executive staff ranks the projects in order from high priority to low priority. The higher priority items are then added to the transit asset management project list depending on the availability of funds and the immediate need for action. Those projects that already have existing funding are included in the capital budget. Those projects that do not have an existing funding source are included in considerations for the following year's program of projects.

Implementation Strategy, Resources and Monitoring

Key annual activities supporting the TAM plan and asset lifecycle management are detailed within the Fleet and Facilities Maintenance Plans and Standard Operating Procedures. These activities align with METRO's business goals and objectives providing organizational alignment to ensure a consistent collection and analysis of data as a fundamental element of METRO's TAM plan implementation approach.

Asset lifecycle management is an ever-changing environment with advances in technology, changes in regulation, funding availability and asset management best practices. Therefore, the TAM plan will be considered a "living document" reviewed and revised, as necessary, on an annual basis. Revisions will come from the TAM Improvement Team, the Executive Leadership Team and the Executive Director with inputs from various internal and external stakeholders. Initial and ongoing training of METRO employees on the TAM plan will become part of the business culture to ensure employees are equipped to execute the deliverables of the TAM plan and facilitate a continuous TAM improvement process.

OVERVIEW OF THE ORGANIZATION

In 1972, Metroplan, as trustee for the cities of Little Rock and North Little Rock and Pulaski County, purchased from Twin City Transit, Inc. all of the existing assets used to operate and maintain the public mass transportation bus system in central Arkansas. In 1986, Central Arkansas Transit Authority (CATA) was chartered by a group of municipalities pursuant to the provisions of Arkansas Code Annotated 14-334-101. Following CATA's creation, all assets, interest, and obligations incurred by Metroplan, as Trustee, were transferred to CATA. In 2015, the Board of Directors voted to change the agency name to Rock Region METRO.

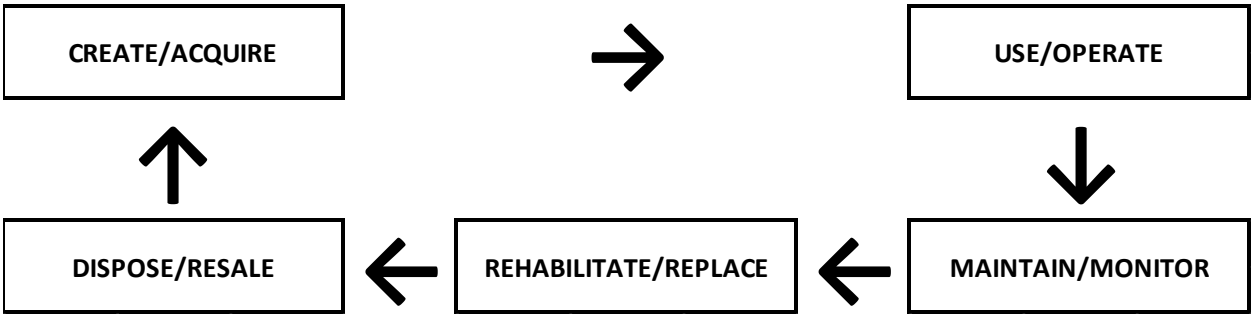
METRO is a public transit agency serving the central Arkansas area, including the cities and communities of Little Rock, North Little Rock, Pulaski County, Sherwood, Maumelle and Jacksonville. **Its mission is to provide dependable, safe, accessible and economical public transportation services for the residents of and visitors to central Arkansas, creating economic development and environmental benefits for everyone in our service area.**

TAM APPROACH

The final TAM rule requires transit organizations to designate an "accountable executive", who must approve the TAM plan, which includes the performance measure targets. **METRO has designated its Executive Director, Charles Frazier, as its accountable executive.** The assistant director of finance, director of maintenance, and procurement manager are responsible for maintaining, monitoring, updating and implementing the TAM plan. This master document sets agency-wide objectives and strategies for delivering all commitments in METRO's TAM Policy and its mission. In addition, this TAM plan identifies priority projects to improve METRO's TAM capabilities across the agency, and specifies the lifecycle management activities outlined in the Fleet and Facilities Maintenance plans for each department that is responsible for the operations and/or maintenance of a given asset class.

METRO's mission is to provide dependable, safe, accessible and economical public transportation services for the residents of and visitors to central Arkansas, creating economic development and environmental benefits for everyone in our service area. To accomplish this, METRO must continually improve its management of fleet, equipment, facilities and infrastructure. When executed properly, TAM improves coordination of all departments across all phases of an asset's lifecycle as shown in Table 5 on the following page.

TABLE 5: TYPICAL LIFECYCLE PHASES OF A TRANSIT ASSET



The TAM plan aims to optimize the costs, risks, and performance of the transit system, and provide a range of benefits to METRO through an ongoing planning effort.

Federal regulations currently require that all assets used in the provision of public transit be subject to this TAM plan. This TAM plan includes objectives and strategies to optimize the management of fleet and facilities assets that align with FTA reporting requirements for the NTD.

TAM REQUIREMENTS

As part of MAP-21 and the subsequent Fixing America's Surface Transportation (FAST) Act, the FTA has enacted regulations for transit asset management that require transit service providers to establish asset management performance measures and targets, and develop a TAM plan.

The final TAM Rule was published on July 26, 2016 and went into effect on October 1, 2016. The rule itself amended the United States (U.S.) Code of Federal Regulations (CFR) Title 49 Parts 625 and 630, which relate to TAM and the NTD respectively. The TAM Final Rule distinguishes requirements between larger and smaller or rural transit agencies. Based on the criteria, and the type of service provided, METRO is a Tier 1 provider. FTA defines a Tier I provider as:

- "Owns, operates, or manages either 101 or more vehicles in revenue service during peak regular service or in any one non-fixed route mode" Or,
- "Operates rail transit."

The TAM Rule requires that transit agencies establish state of good repair (SGR) performance measures and targets for each asset class. As a Tier I provider, METRO must report on the SGR measures for the following asset categories:

- Rolling stock (revenue vehicles): Percent of vehicles that have either met or exceeded their ULB
- Equipment (only non-revenue service vehicles): Percent of vehicles that have either met or exceeded their ULB
- Facilities: Percent of facilities rated below condition 3 on the FTA TERM scale

- Infrastructure: Percent of track segment that requires speed restrictions due to the track not being in a state of good repair.

The FTA requires transit providers to update TAM plans in their entirety at least once every four (4) years, with the first completed TAM plan required by October 1, 2018.

The TAM rule requires that agencies annually report on their progress towards meeting SGR performance targets and any change in condition from the previous year.
Reference: 49 CFR Part 625 Subpart E Section 625.55(a)(2) "Each provider must submit…(2) An annual narrative report to the National Transit Database that provides a description of any change in the condition of the provider's transit system from the previous year and describes the progress made during the year to meet the performance targets set in the previous reporting year."

The final rule states that a TAM plan should cover a planning horizon of at least four (4) years. METRO may amend the TAM plan at any time but this should be initiated following any major change to the asset inventory, condition assessment, or capital investment. The TAM plan should also be updated following any change to the prioritization processes affecting the timing of future projects. Although TAM plans are required to be updated in their entirety at least once every four (4) years, METRO currently plans to review its TAM plan annually and update it as needed to reflect current conditions.

In addition to the performance targets and TAM plan, the TAM final rule requires that two (2) additional asset management reports be submitted to the NTD annually. The following reports are due to the NTD no later than four months after METRO's fiscal year end:

- The Data Report should describe the condition of the transportation system currently and the SGR performance targets for the upcoming year.
- The Narrative Report should describe changes in the transportation system condition and report progress on meeting the performance targets from the prior year.

TAM POLICY, GOALS AND OBJECTIVES

METRO is committed to implementing a strategic process for acquiring, operating, maintaining, upgrading, and replacing its transit assets to directly support the agency's mission of providing dependable, safe, accessible and economical public transportation services for the residents of and visitors to central Arkansas, creating economic development and environmental benefits for everyone in our service area. METRO's policy is to promote a culture that supports asset management at all levels of the organization, to employ effective asset management business practices and tools, to ensure optimal asset performance and useful life, and to use timely,

quality data to support transparent and cost-effective decision-making for resource allocation and asset preservation.

METRO shall emphasize people. Through coaching, training, the application of state-of-the-art technology, and improved processes, we shall ensure our workforce's ability to identify and meet the METRO's asset management needs, incorporate sustainability and accessibility into our business practices, and to deliver to our customers the best service.

This policy outlines METRO's direction and vision to establish and continually improve asset management, strategies, and plans. This policy directly aligns with METRO's agency goals to improve the customer experience and focus on the professional development of staff. In support of the asset management policy, the TAM plan includes specific goals, objectives, and implementing actions. METRO has identified four agency-wide asset management goals:

- Policy – Provide agency-wide direction and leadership to increase METRO's asset management maturity
    - Policy is critical to establishing a vision of and support for an asset management culture.
- People – Establish an asset management culture and support it through talent management practices.
    - Improving staff and leadership asset management skills and knowledge sharing within the agency enhances employees' lifecycle management competencies.
- Tools – Provide infrastructure and tools to support data driven decision-making for asset management.
    - This ensures that investment decisions are based on the assessment of business benefits, are transparent, and clearly communicated.
- Business Practices – Manage whole lifecycle costs, risks, and performance to achieve cost savings, improve service reliability, and contribute to customer and employee safety.
    - Through the application of improved lifecycle management practices METRO can improve reliability, increase maintenance efficiency, and extend the useful life of its assets.

SECTION 2: ASSET INVENTORY

TRANSIT ASSET MANAGEMENT INVENTORY

This section provides an overview of capital assets that support the delivery of public transportation in central Arkansas. Under the final FTA rule, transit providers are required to complete an inventory of their capital assets. The inventory needs to provide accessible, consistent, and comprehensive information about the state of good repair of a transit providers capital assets. METRO manages and operates a TAM plan asset portfolio estimated to be approximately $63,914,924 original purchase value. According to the FTA rule, the inventory should include all revenue vehicles used in the provision of public transit, all non-revenue service vehicles used in the provision of public transit, all equipment with an acquisition value greater than $50,000, all facilities used in the provision of public transit and all infrastructure used in the provision of public transit. The information presented is as of December 31, 2017.

Rolling Stock

Rolling stock is a METRO-owned and operated revenue service vehicle used in the provision of providing public transportation, and includes vehicles used to primarily transport passengers. METRO does not utilize or operate any third-party rolling stock assets. METRO manages and operates a fleet of fifty-nine (59) fixed-route revenue vehicles (thirty-seven (37) diesel-powered and twenty-two (22) CNG-powered), twenty-four (24) Links paratransit revenue vehicles (two (2) diesel-powered and twenty-two (22) gasoline powered), and five (5) streetcar revenue vehicles (electric-powered). The total acquisition cost of these assets total $27,605,223. Presented below and on the following pages are the rolling stock assets managed and operated by METRO.

Fixed-Route Rolling Stock - Buses (BU)					
Asset	#	Year Built	Unit Cost ($)	Acquisition Cost ($)	Replacement Cost ($)
35' Gillig	1	2003	257,334	257,334	497,450
35' Gillig	3	2003	257,334	772,002	1,583,235
30' Gillig	1	2004	253,794	253,794	527,745
40' Gillig	3	2007	291,794	875,382	1,583,235
35' Gillig	1	2007	291,794	291,794	527,745
40' Gillig	5	2008	325,888	1,629,440	2,799,420
35' Gillig	5	2008	325,888	1,629,440	2,799,420
40' Gillig	4	2010	356,117	1,424,468	2,520,620
35' Gillig	8	2010	350,617	2,804,936	5,041,240
40' Gillig	3	2010	329,397	988,191	1,781,943
35' Gillig	3	2010	324,422	973,266	1,781,943
35' Gillig CNG	15	2015	457,818	6,867,270	10,328,805
40' Gillig CNG	4	2017	486,656	1,946,624	2,922,088
35' Gillig CNG	3	2017	478,034	1,434,102	2,191,566

The average age of fixed-route rolling stock is 7.0 years. It is METRO's goal to replace diesel-powered fixed route revenue vehicles that have reached the end of their useful lives and are no

longer considered to be in a state of good repair with CNG-powered revenue vehicles by 2026. These assets have a ULB of fourteen (14) years. A copy of the Fleet Replacement Schedule is shown in Appendix A.

Links Rolling Stock - Cutaway (CU)				
Asset	#	Year Built	Unit Cost ($)	Acquisition Cost ($)	Replacement Cost ($)
Aerotech	2	2013	74,449	148,898	130,080
Ford Starcraft	4	2016	65,433	261,732	310,648
Ford Starcraft	4	2016	62,938	251,752	310,648
Ford Starcraft	11	2017	62,938	692,318	879,912
Ford Starcraft	1	2017	65,433	65,433	79,992

The average age of paratransit cutaway vans is 1.7 years. It is METRO's goal to replace diesel-powered paratransit cutaways that have reached the end of their useful lives (mileage) and are no longer considered to be in a state of good repair with gasoline-powered paratransit vehicles by 2018. Although these assets have a ULB of ten (10) years, it is METRO's policy to replace these vehicles at their useful life mileage of 150,000 miles.

Links Rolling Stock - Minivan (MV)				
Asset	#	Year Built	Unit Cost ($)	Acquisition Cost ($)	Replacement Cost ($)
MV-1	2	2016	46,250	92,500	107,234

The average age of paratransit minivans is 2.0 years. Although these assets have a ULB of eight (8) years, it is METRO's policy to replace these paratransit vehicles when they reach their useful life mileage of 100,000 miles.

Streetcar Rolling Stock - Vintage Trolley (VT)				
Asset	#	Year Built	Unit Cost ($)	Acquisition Cost ($)	Replacement Cost ($)
Gomaco Streetcar	3	2001	755,103	2,265,309	*
Gomaco Streetcar	2	2006	839,619	1,679,238	*

The average age of streetcar rolling stock is 15.0 years. METRO does not anticipate purchasing new streetcar rolling stock. These assets have a ULB of fifty-eight (58) years. It is METRO's policy to continue to repair streetcars as needed. METRO will not purchase more vintage trolley streetcars unless the streetcar system is expanded.

Equipment

METRO maintains and operates nineteen (19) service vehicles in the provision of public transportation. METRO also maintains and operates major capital assets with an acquisition value greater than $50,000 in the provision of public transportation. METRO does not utilize or operate any third-party equipment assets.

Service Vehicles		Year	Unit	Acquisition	Replacement
Asset	**#**	**Built**	**Cost ($)**	**Cost ($)**	**Cost ($)**
Chevy Traverse	1	2014	23,754	23,754	28,700
Dodge Ram Van 3500	1	2000	12,826	12,826	21,000
Dodge Durango	1	2002	22,845	22,845	30,000
Chevy Equinox	5	2013	21,392	106,960	23,100
Chevy Equinox	2	2015	21,699	43,398	23,100
Dodge Ram 1500	1	2001	22,721	22,721	27,500
Chevy Silverado 150	1	2011	20,154	20,154	28,000
Chevy 3500 HD	1	2011	36,158	36,158	38,000
Ford F-250	1	2015	24,697	24,697	31,000
Chevy K2500 4WD	1	2011	21,776	21,776	35,000
Chevy Express	3	2013	19,312	57,936	28,000
Ford Expedition	1	2017	33,117	33,117	35,750

METRO maintains and operates nineteen (19) service vehicles in the provision of public transportation. These assets provide support for operations and include maintenance service vehicles, supervisor vehicles, and executive leadership vehicles. These assets all have a useful life benchmark of eight (8) years. The average age of these assets is 7.75 years. Some of these assets operate at full performance after they have reached the end of their useful lives and, therefore, may not require immediate replacement.

Maintenance Equipment		Year	Unit	Acquisition	Replacement
Asset	**#**	**Built**	**Cost ($)**	**Cost ($)**	**Cost ($)**
Fuel Vacuum System	1	2002	87,505	87,505	150,000
Brake Drum Lathe	1	2008	59,707	59,707	50,000
Chassis Wash Lift	1	2009	77,188	77,188	100,000
Bus Wash System	1	2011	180,879	180,879	225,000
Fareboxes	74	2010	13,301	984,289	1,420,000

Security Equipment		Year	Unit	Acquisition	Replacement
Asset	**#**	**Built**	**Cost ($)**	**Cost ($)**	**Cost ($)**
Trolley Camera System	1	2013	55,514	55,514	65,000
Camera Security System	1	2012	469,445	469,445	500,000
Computer Software		Year	Unit	Acquisition	Replacement
Asset	**#**	**Built**	**Cost ($)**	**Cost ($)**	**Cost ($)**
Intelligent Transit System	1	2015	782,543	782,543	1,000,000
AVL System	1	2005	50,007	50,007	139,000
IVR System	1	2017	191,790	191,790	200,000

All assets included in equipment (not including service vehicles) must have an acquisition value greater than $50,000 and must be used in the provision of public transportation. These assets all have varying useful lives that range from five (5) years to ten (10) years. The useful lives are the same useful lives used for accounting purposes which are based off of the OEM recommended useful life. Some of these assets operate at full performance after they have reached the end of their useful lives and, therefore, may not require immediate replacement.

Facilities

Support Facilities		Year	Unit	Square	Replacement
Asset	**#**	**Built**	**Cost ($)**	**Foot**	**Cost ($)**
Administration Building	1	1991	781,523	10,085	4,450,000
West Wing Addition	1	2013	1,244,535	5,000	2,000,000
Maintenance Building	1	1991	2,654,000	34,248	4,000,000
Bus Wash Facility	1	1991	269,678	3,480	309,000
Diesel Fueling Facility	1	1991	154,987	2,000	227,000
CNG Control Center	1	2015	2,139,214	1,323	2,200,000
Storage Building	1	1991	52,816	2,510	60,800
Trolley Barn	1	2003	1,923,854	19,000	5,120,000
Bus Pavilion	1	1991	121,055	16,043	170,000
LR Substation	1	2003	78,329	220	103,000
Passenger Facilities		Year	Unit	Square	Replacement
Asset	**#**	**Built**	**Cost ($)**	**Foot**	**Cost ($)**
River Cities Travel Center	1	2000	3,558,831	10,000	4,000,000

All assets included in facilities must be used in the provision of public transportation. METRO maintains these assets by following the procedures and policies laid out in the maintenance management documents (facility maintenance plan, vehicle maintenance plan, etc.).

Infrastructure

Fixed Guideway Track				
Asset	Miles of Track	Year Built	Unit Cost ($)	Acquisition Cost ($)	Replacement Cost ($)
Fixed Guideway Stage 1	2.5	2004	5,338,443	13,346,108	30,000,000
Fixed Guideway Stage 2	0.6	2007	11,032,603	6,619,562	10,000,000

The streetcar fixed guideway runs 3.1 miles around the downtowns of North Little Rock and Little Rock. METRO maintains the asset through preventive maintenance schedules laid out in the maintenance management documents.

AVAILABLE DATA RESOURCES

METRO uses Ron Turley Associates (RTA) fleet management systems to track fleet data including preventive maintenance, parts tracking and warranty recovery. This system is used for all METRO rolling stock. For equipment and facilities maintenance items, METRO uses Microsoft Excel spreadsheets and work orders to track the condition of the assets and maintenance performed on assets. METRO staff also uses internal finance data that is stored and tracked using a Microsoft Excel spreadsheet and the Sage Accounting software. Collectively, these sources of data were used to build the transit asset inventory and all of its components. All preventive maintenance policies are documented in the Facilities Maintenance Plan, Fleet Maintenance Plan, and Streetcar Maintenance Plan.

Rolling Stock

The capital asset data presented above was collected using internal finance data that is stored and tracked in an excel spreadsheet and on the Sage Accounting software. The spreadsheets are updated monthly with new capital assets. Maintenance on these assets is tracked through the RTA system. Maintenance employees document the miles on the odometer every night when fueling the fixed route and paratransit rolling stock. This information is given to the Maintenance Data System Analyst that records the information in the RTA system. When prompted, the RTA systems produces are report for schedule preventive maintenance.

Equipment and Facilities

Currently, METRO tracks preventive maintenance on equipment and facilities using a combination of internal Excel spreadsheets. Maintenance creates a preventive maintenance schedule spreadsheet for each equipment and facility asset. The spreadsheet tells staff when maintenance is required for each equipment and facility asset.

Equipment preventive maintenance intervals and compositions are based off of the Original Equipment Manufacturer's recommended maintenance interval and composition. This varies by

type of equipment. A utility employee will conduct the preventive maintenance and document any maintenance performed on the asset. Once the employee has finished completing the required work order documentation, the maintenance work order is filed.

Facility preventive maintenance intervals and composition are based off of the maintenance staff's recommendations. There are no standard preventive maintenance measures for facilities.

Infrastructure
METRO performs preventive maintenance on the streetcar fixed-guideway biweekly. During the maintenance, tracks and curves are lubricated. METRO does not have an in-house way to inspect the condition of the fixed guideway. In 2015, METRO contracted with Shelby Railroad Service to perform a rail inspection and identify any parts of the track that were in a state of disrepair. The inspection did not identify any parts of the track that were in a state of disrepair.

Going forward, METRO will contract for one (1) rail inspection every other year to better understand and track the condition of the fixed guideway.

DEFINITION OF STATE OF GOOD REPAIR

Nominally the goal of capital asset rehabilitation and replacement is to maintain a transit agency's assets in, or return them to, a SGR. However, it is important to define what SGR means to METRO, and how the definition relates to METRO's goals and objectives. MAP-21 requires FTA to create a definition for SGR, and establish performance measures that will support this definition.

METRO defines SGR as the condition in which a capital asset is able to operate at a full level of performance. This means that the asset is able to perform its designed function, does not pose a known unacceptable risk and its lifecycle investments have been met or recovered.

2019 PERFORMANCE MEASURES

Rolling Stock (Must include all revenue vehicles)

- **Measure**: % of rolling stock (fixed-route, Links and Streetcar) that have exceeded their useful life benchmark.
- **Target (fixed-route)**: 5% of fixed-route rolling stock will exceed their useful life benchmarks of 14 years.
- **Target (Links-Cutaway)**: 0% of Links-CU rolling stock will exceed their useful life benchmarks.
- **Target (Links-Minivan)**: 0% of Links-MV rolling stock will exceed their useful life benchmarks.
- **Target (Streetcar)**: 0% of Streetcar rolling stock will exceed their useful life benchmarks of 58 years.

Equipment (Only non-revenue vehicles)

- **Measure**: % of non-revenue vehicles that have exceeded their useful life benchmark.
- **Target**: 20% of non-revenue vehicles will exceed their useful life benchmarks of 8 years.

Facilities (All facilities with direct capital responsibility)

- **Measure**: % of facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) scale.
- **Target (Support Facilities)**: 0% of the support facilities will have a condition rating below 3.0 on the FTA TERM scale.
- **Target (Passenger Facilities)**: 0% of the passenger facilities will have a condition rating below 3.0 on the FTA TERM scale.

Infrastructure (Streetcar fixed-guideway track)

- **Measure**: % of track segment with performance restrictions due to the track segment not being in a state of good repair.
- **Target**: 0% of track segment will require speed restrictions due to the track not being in a state of good repair.

GATHERING, STORING AND UPDATING DATA

METRO will continue to gather, store and update data as required by FTA. RTA fleet management system will continue to be utilized for fleet management. METRO is currently investigating opportunities to enhance its facility maintenance software package and warranty tracking capabilities. METRO will also continue to maintain and update required financial information for all capital assets in the Sage Accounting software.

SECTION 3: ASSET CONDITION ASSESSMENT

TRANSIT ASSET INVENTORY CONDITION ASSESSMENT

METRO assesses the condition of its assets on an annual basis by utilizing the FTA Useful Life Benchmark for rolling stock and non-revenue service vehicles and the TERM condition rating assessment scale for non-vehicle equipment, facilities and infrastructure. METRO has chosen to present the condition assessments at the individual asset level.

Rolling Stock

The rolling stock condition assessment consists of comparing the age of the fleet to the ULB established by FTA. METRO considers any rolling stock asset that has not reached its useful life benchmark to be given a condition rating of 3.0 or higher. A condition assessment rating is not conducted in the TAM plan for rolling stock assets for which METRO does not own the rolling stock asset, the rolling stock is owned by a 3rd party, and/or where METRO does not have direct capital responsibility for the rolling stock asset. At the time of this writing, METRO owns and operates all fixed route, demand response paratransit and streetcar rolling stock.

Fixed-Route Rolling Stock - BU			Useful			
	Year		Life		ULB	Condition
Asset	#	Built	Benchmark (Yrs.)	Age (Yrs.)	Exceeded?	Rating
35' Gillig	1	2003	14	15	YES	2
35' Gillig	3	2003	14	15	YES	3*
30' Gillig	1	2004	14	14	NO	3
40' Gillig	3	2007	14	11	NO	3
35' Gillig	1	2007	14	11	NO	3
40' Gillig	5	2008	14	10	NO	3
35' Gillig	5	2008	14	10	NO	3
40' Gillig	4	2010	14	8	NO	3
35' Gillig	8	2010	14	8	NO	3
40' Gillig	3	2010	14	8	NO	3
35' Gillig	3	2010	14	8	NO	3
35' Gillig CNG	15	2015	14	3	NO	4
40' Gillig CNG	4	2017	14	1	NO	4
35' Gillig CNG	3	2017	14	1	NO	4

*METRO replaced the engines to these buses thus extending their useful lives until 2020 when METRO plans to replace the diesel revenue buses with CNG revenue buses.

As shown above, METRO has only one (1) fixed-route rolling stock asset that falls below the 3.0 TERM condition rating. In 2018, METRO replaced the rolling stock that exceeded its useful life and, therefore, received a condition rating below 3.0 with a new CNG revenue vehicle. METRO also plans to replace eight (8) fixed route diesel buses in 2020 and ten (10) diesel buses in 2022. A complete fleet replacement plan is provided in Appendix A.

Links Rolling Stock - CU			Useful			
	Year		Life		ULB	Condition
Asset	#	Built	Benchmark (Yrs.)	Age (Yrs.)	Exceeded?	Rating
Aerotech	2	2013	10	5	NO	3
Ford Starcraft	4	2016	10	2	NO	4
Ford Starcraft	4	2016	10	2	NO	4
Ford Starcraft	11	2017	10	1	NO	5
Ford Starcraft	1	2017	10	1	NO	5

Links Rolling Stock - MV			Useful			
	Year		Life		ULB	Condition
Asset	#	Built	Benchmark (Yrs.)	Age (Yrs.)	Exceeded?	Rating
MV-1	2	2016	8	2	NO	4

METRO did not have any Links rolling stock receive a condition rating below 3.0 in 2018. However, it is METRO's policy and practice to replace Links cutaway vans after five (5) years in service or once the vehicles exceed 150,000 miles, whichever one comes first. It has been METRO's experience that these vehicles exceed 150,000 miles around five years of service. METRO will purchase two (2) Links paratransit vans in 2018 to replace the two (2) 2013 Aerotech vans. These vans both had an average of 171,182 miles on them as of December 31, 2017.

Streetcar Rolling Stock - VT			Useful			
	Year		Life		ULB	Condition
Asset	#	Built	Benchmark (Yrs.)	Age (Yrs.)	Exceeded?	Rating
Gomaco Streetcar	3	2001	58	17	NO	3
Gomaco Streetcar	2	2006	58	12	NO	3

METRO's streetcar rolling stock is made up of vintage trolleys. METRO does not intend on replacing the streetcars in the future and will continue to replace major associated capital items on an as needed basis.

Equipment

The equipment condition assessment is different for each asset type. Non-revenue vehicles are assessed according the ULB provided by FTA. Service vehicles have a ULB of eight (8) years. Non-vehicle equipment was assessed through an internal inspection of the asset and review of previous maintenance performed on the non-vehicle equipment. Condition ratings were given based on the previous maintenance required of the asset and if the asset has exceeded is useful life (using OEM's recommended useful life).

Maintenance Equipment			Useful			
	Year		Life		ULB	Condition
Asset	#	Built	Benchmark (Yrs.)	Age (Yrs.)	Exceeded?	Rating
Fuel Vacuum System	1	2002	5	16	YES	2
Brake Drum Lathe	1	2008	5	10	YES	2
Chassis Wash Lift	1	2009	10	9	NO	3
Bus Wash System	1	2011	10	7	NO	3
Fareboxes	74	2010	5	8	YES	2
Security Equipment			**Useful**			
	Year		**Life**		**ULB**	**Condition**
Asset	**#**	**Built**	**Benchmark (Yrs.)**	**Age (Yrs.)**	**Exceeded?**	**Rating**
Trolley Camera System	1	2013	5	5	NO	3
Camera Security System	1	2012	10	6	NO	3
Computer Software			**Useful**			
	Year		**Life**		**ULB**	**Condition**
Asset	**#**	**Built**	**Benchmark (Yrs.)**	**Age (Yrs.)**	**Exceeded?**	**Rating**
Intelligent Transit System	1	2015	10	3	NO	3
AVL System	1	2005	5	13	YES	3
IVR System	1	2017	10	1	NO	4

Three assets received a condition rating less than 3.0 during the condition assessment process. The fuel vacuum system, brake drum lathe, and fareboxes all received a condition rating less than 3.0. Although the fuel vacuum system asset received a condition rating lower than 3.0, METRO does not intend on replacing the asset over the next four years. This is mainly due to the asset not posing any risk due to it being in a state of disrepair. Therefore, METRO will continue to repair the asset as needed and look for opportunities in the future for replacement. METRO currently has plans in place to replace the brake drum lathe and fareboxes assets.

Service Vehicles			Useful			
	Year		Life		ULB	Condition
Asset	#	Built	Benchmark (Yrs.)	Age (Yrs.)	Exceeded?	Rating
Chevy Traverse	1	2014	8	4	NO	3
Dodge Ram Van 3500	1	2000	8	18	YES	2
Dodge Durango	1	2002	8	16	YES	2
Chevy Equinox	5	2013	8	5	NO	3
Chevy Equinox	2	2015	8	3	NO	3
Dodge Ram 1500	1	2001	8	17	YES	2
Chevy Silverado 150	1	2011	8	7	NO	3
Chevy 3500 HD	1	2011	8	7	NO	3
Ford F-250	1	2015	8	3	NO	3
Chevy K2500 4WD	1	2011	8	7	NO	3
Chevy Express	3	2013	8	5	NO	3
Ford Expedition	1	2017	8	1	NO	4

For service vehicles, METRO assessed the condition of the assets by comparing the ULB of eight (8) years to the age of the individual asset. During the condition assessment, METRO determined that three (3) service vehicles received a condition rating of less than 3.0. Although these assets received a condition rating lower than 3.0, METRO does not plan on replacing these vehicles over the next four years. This is mainly due to these assets not posing a significant risk due to employees or customers. METRO will continue to repair these assets on an "as needed" basis to help extend the useful life of the assets.

Facilities

METRO staff performed an internal condition assessment of all facilities. The checklist shown in Section 1 (Table 3) was used to assess the condition of different components and sub-components. Each sub-component was given a rating (also shown in Table 3) based on the condition as of 7/31/2018. The ratings were totaled up and given the same weight. The aggregate condition ratings for each facility is shown below. It is METRO's policy to perform condition assessments annually.

Support Facilities		Year	Unit	Square	TERM
Asset	**#**	**Built**	**Cost ($)**	**Foot**	**Condition Rating**
Administration Building	1	1991	781,523	10,085	3.22
West Wing Addition	1	2013	1,244,535	5,000	3.58
Maintenance Building	1	1991	2,654,000	34,248	3.04
Bus Wash Facility	1	1991	269,678	3,480	3.00
Diesel Fueling Facility	1	1991	154,987	2,000	3.00
CNG Control Center	1	2015	2,139,214	1,323	3.60
Storage Building	1	1991	52,816	2,510	3.00
Trolley Barn	1	2003	1,923,854	19,000	3.54
Bus Pavilion	1	1991	121,055	16,043	3.00
LR Substation	1	2003	78,329	220	3.67
Passenger Facilities		Year	Unit	Square	TERM
Asset	**#**	**Built**	**Cost ($)**	**Foot**	**Condition Rating**
River Cities Travel Center	1	2000	3,558,831	10,000	3.07

METRO did not have any facilities (as a whole) that received a condition rating lower than 3.0. However, METRO did identify some components and sub-components of facilities that need attention. METRO determined that the HVAC system at the River Cities Travel Center is in need of replacement. This asset received a rating of 2.0. METRO also determined that minor electrical repairs were needed to the bus wash facility. Also, during the condition assessment, METRO determined that there is a need to procure and implement facility maintenance software in order to better track preventive maintenance performed on facilities and non-vehicle equipment.

Infrastructure

Fixed Guideway Track			
Asset	Miles of Track	Year Built	Condition Rating
Fixed Guideway Stage 1	2.5	2004	3
Fixed Guideway Stage 2	0.6	2007	3

METRO has 3.1 miles of fixed guideway track that runs through the downtown Little Rock and North Little Rock areas. In 2015, METRO contracted with Shelby Railroad Service to perform a rail inspection. During the inspection, Shelby Railroad Service submitted recommendations and observations to the maintenance staff and performed minor repairs on the track. There were no recommendations to restrict the speed of the streetcar on any part of the fixed guideway due to the rail line being in a state of disrepair. Also, METRO performs preventive maintenance on the fixed guideway rail line that includes lubricating the tracks twice a week. Due to the results of the track inspection and METRO's own in-house inspection, METRO has set the condition rating of the fixed guideway at 3.0. Going forward, METRO will contract with a vendor to perform an annual rail line inspection to help determine the ongoing condition of the asset.

SECTION 4: DECISION SUPPORT TOOLS

DECISION SUPPORT TOOLS

Section 4 of this document details the process and tools used to manage the lifecycle planning of capital public transportation assets. METRO staff within the maintenance, finance, operations, and executive departments utilizes a variety of management practices, policies, and technology to manage, maintain, and plan throughout the life cycle of an asset.

The analytical process provided below is in place to support investment decision-making, including project selection and prioritization. The decision support tools that METRO utilizes for asset lifecycle management and investment planning, include both electronic software and written policy manuals. The decision support tools are shown on the following page. Each written policy manual and software program complements each other as they contribute to asset management throughout the lifecycle, from planning and procurement to disposal.

METRO Decision Support & Capital Asset Investment Planning Process	
Step	**Process Description**
1	Quarterly department management meetings to review asset performance and establish goals.
2	Update to departmental policies, procedures, and SOP's
3	Data collection, analysis and review
4	Department management meetings: Assess asset and transit system capital investment needs based on: Safety deficiencies, ADA accessibility, agency capacity, consumer demand, maintenance needs, data, and available funding
5	Development of Asset Inventory Priority List. Placement on TIP/METRO Program of Projects.
6	Contract advertising (RFP - bid) and award process (board approval)
7	Project/program implementation and monitoring

METRO TAM Decision Support Tools	
Document/Software Tool	**Description**
METRO Facility Maintenance Plan	This document details all policies and procedures related to METRO owned facilities. It includes facility maintenance standards, facility inspection process, PM schedules, work order process, warranty recovery process, and inspection checklists.
METRO Maintenance Policies and Procedures Manual	This document details all policies and procedures related to METRO owned vehicles. It includes maintenance department responsibilities, vehicles maintenance practices and service standards, inspection procedures, work order process, unit rebuilding process, purchasing and inventory control, track and wayside maintenance, overhead catenary and substation maintenance procedures, and warranty recovery process.
METRO Procurement Manual	This document lists all FTA and Arkansas purchasing policies, contract bidding requirements and regulations, asset purchasing procedures, and asset disposal procedures. This document should be consulted with when planning to purchase or dispose of an asset.
METRO Transit Asset Management Plan	This document contains a business model that uses condition of assets to guide the optimal prioritization of funding at transit agencies in order to keep transit systems in a SGR.
Ron Turley Associates Fleet Management Software	This software allows METRO to track, schedule, and record all vehicle related maintenance activities in a single platform.
METRO Capital Plan/List of Prioritization	The METRO Capital Plan/List of Priorization lists projects in rank order on the priority list of projects needed in order to maintain the SGR of the asset.
Metropolitan Planning Organization Transportation Improvement Program (MPO TIP)	The Metropolitan Planning Organization Transportation Improvement Plan is a list of upcoming transportation projects covering a period of at least four years. The TIP is developed in cooperation with ArDOT and regional transportaiton providers. The TIP includes capital and non-capital surface projects, bicycle and pedestrian facilities and other transportation enhancements.

The primary management approach utilized to maintain a SGR is risk mitigation. This management philosophy applies risk mitigation strategies (policies and procedures) throughout the assets life cycle, both from a maintenance perspective (breakdowns) and a safety & accessibility perspective (accidents/ADA requirements).

Throughout each asset's life cycle, METRO shall monitor all assets for unsafe and inaccessible conditions. However, identifying an opportunity to improve the safety of an asset does not necessarily indicate an unsafe condition. When METRO encounters and identifies an unacceptable safety risk associated with an asset, the asset shall be ranked with higher investment prioritization, to the extent practicable. METRO's risk management philosophy is the

proactive approach of identifying future projects and ranking preventative projects with better return on investments higher in the investment prioritization list.

Performing an analysis of the asset life cycle at the individual asset level is just one management approach METRO uses to maintain a SGR. This analysis follows the asset from the time it is purchased, placed in operation, maintained, and ultimately disposed of. The analysis is a snap shot of each asset's current status. The asset lifecycle stages consist of the following strategies:

Stage 1: Acquisition and Renewal Strategy (Design/Procurement)
Stage 2: Maintenance Strategy (Operate/Maintain/Monitor)
Stage 3: Overhaul Strategy (Rebuild)
Stage 4: Replacement Strategy (Disposal)

Acquisition and Renewal Strategy
Determine when to initiate acquisition activities for assets. Describe METRO's long-term replacement strategy and how long-term renewal and improvement activities are assessed based on the asset's lifecycle.

STAGE 1: ACQUISITION AND RENEWAL STRATEGY			
Asset Category		**Asset Class**	**Acquisition and Renewal Strategy**
Rolling Stock		BU-Bus	Transition to 100% low to no emission CNG vehicles. Projection for replacement starts the day new buses are placed into service. Replace after 12 years or 500,000 miles.
		CU - Cutaway Paratransit	Transition to 100% gasoline powered vans. Projection for replacement starts the day new vans are placed into service. These assets are replaced after 150,000 miles.
		MV - Minivan	Minivans are 4 years or 100,000 miles. Projection for replacement starts the day new minivans are placed into service.
		VT - Vintage Trolley	Trolleys are maintained as needed.
Equipment		Maintenance Security Equipment	Regular preventive maintenance is performed to extend the useful life. Items are replaced on an as needed basis.
		Computer Software	Software is maintained on an annual basis.
		Non-revenue Vehicles	Replacement of support vehicles is based on ULB and availability of funding.
Facilities		Support Facilities Passenger Facilities	Facilities are maintained on an annual basis to extend useful life.
Infrastructure		Fixed-Guideway	Infrastructure is maintained on an annual basis to extend the useful life.

Maintenance Strategy

Determine the maintenance activities and frequency of those activities for assets. The maintenance and frequency activities will be based off the recommend operator's preventive maintenance schedule. Maintenance activities for all rolling stock and non-revenue vehicles will be maintained in the RTA fleet management system and all maintenance activities for non-vehicle equipment, facilities, and infrastructure will be filed and maintained by the maintenance department. It is METRO's goal to procure and implement new facility and equipment maintenance software in order to better track preventive maintenance work performed on these assets and assess the condition of these assets.

STAGE 2: MAINTENANCE STRATEGY			
Asset Category	**Asset Class**	**Maintenance Activity**	**Frequency**
Rolling Stock	BU-Bus	Clean, wash & vacuum	Daily
	CU - Cutaway Paratransit	Pre-trip inspection	Daily
	MV - Minivan	PM service	Mileage/Hours
	VT - Vintage Trolley	SGR inspection	Annually
		Transmission inspection	Mileage/Hours
		Rear end inspection	Mileage/Hours
		Air dryer inspection	Annually
		A/C inspection	Annually
		Camera system inspection	Monthly
		Farebox inspection	Semi-Annually
		Tire inspection	Daily
		ADA systems inspection	Daily
Equipment	Maintenance Equipment	PM inspection	Monthly Semi-Annually
	Security Equipment	SGR inspection	Annually
	Computer Software	Annual maintenance	Annually
	Non-revenue Vehicles	PM Service	Miles
Facilities	Support Facilities	PM inspection	Monthly
	Passenger Facilities	SGR inspection	Annually
Infrastructure	Fixed-Guideway	PM inspection	Semi-Monthly
		SGR inspection	Annually

Overhaul Strategy

Determine how and when assets get overhauled, rehabilitated or replaced. As applicable, describe any planned changes or improvements to these processes.

STAGE 3: OVERHAUL STRATEGY			
Asset Category		**Asset Class**	**Acquisition and Renewal Strategy**
Rolling Stock		BU-Bus CU - Cutaway Paratransit MV - Minivan VT - Vintage Trolley	It is METRO's policy to repair damaged or non-functioning assets and components on an "as needed" basis. METRO does not overhaul or rehabilitate its rolling stock. Assets are replaced once the following conditions are met: (1) the asset's ULB has been met, or (2) the asset is considered a total loss by covering insurance.
Equipment		Maintenance Security Equipment Computer Software	These assets are replaced on an "as needed" basis and are maintained according to recommend operator's preventive maintenance schedules in order to extend the useful life of the assets. METRO does not overhaul or rehabilitate these assets.
Equipment		Non-revenue Vehicles	Strategy is the same as rolling stock.
Facilities		Support Facilities Passenger Facilities	METRO does not currently have an overhaul or rehabilitation strategy for facilities. Preventive maintenance activities are performed in order to extend the useful life of these assets.
Infrastructure		Fixed-Guideway	Strategy is the same as facilities.

Disposal Strategy

Describe METRO's strategy for disposing of assets to be replaced. Describe the approval process and detail, including procedures for physically removing the asset from the property. As applicable, describe any planned changes or improvements to these processes.

STAGE 4: DISPOSAL STRATEGY		
Asset Category	**Asset Class**	**Disposal Strategy**
Rolling Stock Equipment	BU-Bus CU - Cutaway Paratransit MV - Minivan Non-revenue Vehicles	These assets are disposed of once the ULB has been reached or there is a total insurance loss. These assets are disposed of using the following method: (1) Book value is determined and if the asset is valued at $5,000 or greater, FTA must be reimbursed; (2) assets are sold through public surplus to the highest bidder; (3) the director of maintenance requests title and bill of sale from finance; (4) the asset is written off the books and no longer tracked as a TAM asset; (5) the buyer receives title and removes asset from the property.
Equipment	Maintenance Equipment Security Equipment Computer Software	These assets are disposed of after they reach their useful lives and no longer adequately perform their function. These assets are disposed of using the following method: (1) book value is determined and the asset is removed from the books; (2) the asset is placed up for bid on public surplus; (3) if sold, the asset is picked up by the buyer (4) if the item does not sell, it is disposed of at the local junk yard.
Facilities	Support Facilities Passenger Facilities	These assets are not disposed of. Every effort is used to maintain these assets and extend the useful lives.
Infrastructure	Fixed-Guideway	These assets are not disposed of. Every effort is used to maintain these assets and extend the useful lives.

SECTION 5: INVESTMENT PRIORITIZATION LIST

INVESTMENT PRIORITIZATION LIST

Part of the asset management process is optimizing how funds are spent based on the assessed asset inventory to help achieve and maintain a state of good repair. This includes both capital and operating funds. METRO's capital budget funds the planning, design, acquisition, capital maintenance and rehabilitation of all assets subject to this TAM plan. The operating budget funds the use and routine maintenance of those same assets, including the staff needed to perform those functions.

METRO shall perform an investment prioritization analysis on a quarterly basis, in order to:

- Determine what capital investments are needed, how much (and when), in order to maintain SGR; and
- Rate and rank SGR programs and projects in order of implementation priority.

The investment prioritization analysis aids METRO in making more informed investment decisions to improve the SGR of our capital assets, and define when an asset needs overhaul or replacement. The investment prioritization list is a list containing the work plans and schedules of the proposed projects and programs that METRO estimates would achieve its SGR goals, and a ranking of projects and programs based on implementation priority over the TAM plan horizon period of four (4) years. There are six (6) priority groups that METRO uses when assessing the prioritization of investments. Each project must be assigned a priority and a priority level (high, medium, low).

PRIORITIZATION CATEGORIES	
Priority	**Description**
Safety	Requests that concern safety or security of critical assets or initiatives. This applies to the safety of both employees and riders.
Compliance	Requests that are necessary to fulfill regulatory compliance requirements. (Federal Transit Administration, ADA compliance, ArDOT, etc.)
Maintenance	Requests for maintenance of existing assets. This encompasses the bulk of state of good repair requests.
Business Care	Requests that can show a quantifiable benefit from their implementation. These requests are generally not necessary from a maintenance standpoint but could save METRO money in an identifiable and specific way.
Customer Service	Enhancement of existing assets or addition of new assets to better serve the customer base.
Enhancement	Enhancement of existing assets or addition of new assets that are not required for maintenance purposes. Expansion projects.

PROJECT PRIORITIZATION LIST					
Project Year	Project Name	Asset Class	Budgeted Cost ($)	Priority Category	Priority Level
2018	Bus Replacement	Rolling Stock - BU	487,898	Safety	High
2018	Van Replacement	Rolling Stock - CU	130,081	Safety	High
2018	Fueling Station Upgrades - Electrical	Facilities	12,000	Compliance	High
				Maintenance	High
2018	Facility Maintenance Software	Equipment - Computer Software	4,000	Business Care	High
				Compliance	High
2019	HVAC/Plumming Rennovation - RCTC	Facilities - Passenger Station	94,650	Maintenance	High
				Customer Service	High
2019	Phone System Upgrade	Equipment - Administration	150,000	Compliance	High
				Customer Service	High
2019	Farebox Replacement	Equipment - Maintenance	1,420,000	Maintenance	Medium
				Customer Service	High
2019	Fuel Storage Tank Conversion	Facilities - Maintenance	20,012	Business Care	Medium
2019	Brake Drum Lathe Replacement	Equipment - Maintenance	46,410	Maintenance	Medium
2019	Fixed-Guideway Track Inspection	Infrastructure	1,500	Maintenance	Medium
2020	Bus Replacement	Rolling Stock - BU	4,221,956	Safety	High
2020	CNG Compressor and Generator	Equipment - Maintenance	1,198,100	Customer Service	High
				Business Care	Medium
2020	Fixed-Guideway Track Inspection	Infrastructure	2,000	Maintenance	Medium
2021	Minivan Replacement	Rolling Stock - MV	107,234	Safety	High
2021	Fixed-Guideway Track Inspection	Infrastructure	1,500	Maintenance	Medium

SECTION 6: IMPLEMENTATION STRATEGY

IMPLEMENTATION STRATEGY

Becoming a high performance asset management organization requires a long-term commitment. Experiences at other transit systems around the country and internationally demonstrate that it is a lengthy journey but one that will realize significant benefits for METRO. This TAM plan is intended to improve asset and system performance in the near term while making changes that will institutionalize asset management and build a foundation for continual improvement and maturity in the long-term. Below is an overview of how the TAM policy, goals and objectives will be implemented at every level of the organization.

Policy
At the enterprise level, METRO management will establish policy direction, governance, and accountability for TAM plan implementation. This includes the establishment of an effective organizational structure to oversee and implement the asset management program.

People
Through leadership, organization and training, an asset management culture will be established which supports employees through better communication, knowledge sharing, succession planning and various talent management practices.

Tools
Through its IT systems and various software tools, METRO will develop and implement a business and technology architecture for enterprise asset management information. This includes the implementation of new facility and equipment maintenance software (Maintenance Pro) and enhancing the capabilities of those systems that are in place.

Business Practices
At the individual asset class level, METRO will implement processes for improved lifecycle management that will lead to better asset maintenance procedures, extended useful life, a reduction in total lifecycle cost, and improved performance.

The TAM plan is considered a “roadmap” – showing how METRO plans to get from its current asset maturity level (i.e., where we are now) to achieve its asset management goals and objectives (i.e., where we want to be). It sets forth the organizational structure, required resources and implementation actions required to reach its destination. The TAM plan will be reviewed annually and the road map will be adjusted as priorities and resource levels change, and different ways to reach asset management goals are identified.

SECTION 7: KEY ANNUAL ACTIVITIES

KEY ANNUAL ACTIVITIES

This TAM plan is considered a "road map," showing how METRO plans to implement its policy and achieve its asset management goals. It sets out an organizational structure, required resources, specific action items and a schedule for reaching our destination. It also provides a detailed implementation plan for each of the action items over a five-year horizon. Following is a brief overview of key projects that will be initiated within the next four years:

2018

Bus Replacement – It is METRO's policy to replace old, diesel-powered revenue buses with CNG-powered revenue buses once they reach their useful life of twelve (12) years. Once the assets reach their useful life, METRO considers them to pose a safety risk to employees and customers. METRO will purchase one (1) CNG revenue bus in 2018 to replace a revenue bus that has reached its useful life and received a condition rating score of 2.0.

Van Replacement – It is METRO's policy to replace old, Links paratransit diesel-powered cutaway vans once they reach their useful life of five (5) years or exceed 150,000 miles, whichever comes first. Once the assets have reach their useful life, METRO considers them to pose a safety risk to employees and customers. METRO will replace two, diesel-powered cutaway vans that have exceeded both thresholds. These vans will be replaced with gasoline-powered cutaway vans that have an expected useful life of five (5) years or 150,000 miles.

Fueling Station Upgrades – Electrical – METRO met with ArDOT officials as they performed an OSHA facility audit in 2018. During the inspection, ArDOT noted deficiencies related to the electrical component of the fueling station. Repairs will be conducted according to the recommendation received from ArDOT.

Facility Maintenance Software – METRO does not currently have a effective system to perform and track maintenance performed on facilities and non-vehicle equipment. METRO will purchase software licenses from Maintenance Pro to better track preventive maintenance performed on these assets. This will contribute greatly to METRO's TAM plan and its goals and objectives.

2019

HVAC/Plumbing Renovation – RCTC – During the condition assessment portion of the TAM plan, METRO assessed the River Cities Travel Center facility and its components. During the observation, METRO determined the need to repair and replace the HVAC system at the RCTC. This project will not only address a significant asset repair need for METRO, but will also benefit its customers at the RCTC.

Phone System Upgrade – METRO will contract with an organization to upgrade the phone systems at the administration office, the maintenance office and the River Cities Travel Center.

This project will improve the customer experience and contribute to the overall success of the organization.

Farebox Replacement – METRO's current farebox system has reached its useful life and is need of an upgrade. The current legacy farebox system is no longer supported by its vendor and is in need of an upgrade. METRO will contract with a vendor to purchase and install new passenger fare collection equipment that will allow METRO to offer more fare payment options in the future. This project is dependent on whether or not METRO receives discretionary federal funds from the competitive grant application process.

Fuel Storage Tank Conversion – Currently, METRO is transitioning out of diesel-powered revenue vehicles and into CNG-powered and gasoline-powered revenue vehicles. Due to this transition, the demand and usage of gasoline fuel has grown considerably over the past two years. This project would convert the diesel fuel tank to gasoline and allow for more gasoline fuel storage.

Brake Drum Lathe Replacement – During the condition assessment portion of the TAM plan, METRO assessed the brake drum lathe equipment and found it to be in a state of disrepair. This asset has reached its useful life and is in need of replacement.

Fixed-Guideway Track Inspection – METRO will contract with a vendor to perform an annual track inspection. This will help METRO determine the condition of the track annually using professionals with extensive knowledge about fixed-guideway track.

2020

Bus Replacement - It is METRO's policy to replace old, diesel-powered revenue buses with CNG-powered revenue buses once they reach their useful life of twelve (12) years. Once the assets reach their useful life, METRO considers them to pose a safety risk to employees and customers. METRO will purchase eight (8) CNG revenue buses in 2020 to replace revenue buses that will reach their useful life in 2020.

CNG Compressor and Generator – It is METRO's policy to convert the fixed-route rolling stock from diesel-powered buses to CNG-powered buses by 2026. Currently, METRO has one CNG compressor and one generator that have a max fueling capacity of 50 buses. METRO will need to purchase another compressor and generator before 2024 in order to adequately fuel the CNG buses while maintaining the current level of service.

Fixed-Guideway Track Inspection – METRO will contract with a vendor to perform an annual track inspection. This will help METRO determine the condition of the track annually using professionals with extensive knowledge about fixed-guideway track.

2021

Minivan Replacement – METRO will replace two (2) Links paratransit minivans that will reach their useful life in 2021. This project is part of METRO's fleet replacement plan.

Fixed-Guideway Track Inspection – METRO will contract with a vendor to perform an annual track inspection. This will help METRO determine the condition of the track annually using professionals with extensive knowledge about fixed-guideway track.

SECTION 8: IDENTIFICATION OF RESOURCES

IDENTIFICATION OF RESOURCES

Part of the asset management process is optimizing how funds are spent based on the assessed asset inventory to help achieve and maintain a state of good repair. This includes both capital and operating funds. METRO's capital budget funds the planning, design, acquisition, capital maintenance and rehabilitation of all assets subject to this TAM plan. The operating budget funds the use and routine maintenance of those same assets, including the staff needed to perform those functions.

METRO's operating budget funds service delivery and maintenance, including employee wages, spare parts, consumables, and a variety of support services used throughout the organization. The operating budget for 2018 is $18.10 million across all departments and modes with labor costs as the largest portion (50%). METRO does not plan on a significant increase in the need of operating funds to complete the projects over the next four years other than $2,000 per year in increased Streetcar funding to perform annual track inspections.

Along with the operating budget METRO's Board also approves a capital budget for the fiscal year. METRO's capital expenditures budget for 2018 is $5.49 million with the majority spent on the purchase of new revenue vehicles and rehabilitation of existing revenue vehicles.

METRO will fund the prioritized project list through a number of federal grants and operating funds. METRO's main source of federal funds comes from Section 5307 Formula Grant Funds, Section 5307 State of Good Repair Grant Funds, and Section 5339 Bus and Bus Facilities Formula Grant Funds. METRO also applies for competitive grant funds when they are available. All federal funds have been previously matched by local funds.

Project Year	Project Name	Budgeted Cost ($)	Source of Funds	New or Existing Funds?
2018	Bus Replacement	487,898	5307	Existing
2018	Van Replacement	130,081	5307	Existing
2018	Fueling Station Upgrades - Electrical	12,000	5307	Existing
2018	Facility Maintenance Software	4,000	5307	Existing
2019	HVAC/Plumming Rennovation - RCTC	94,650	5307	Existing
2019	Phone System Upgrade	150,000	5307	Existing
2019	Farebox Replacement	1,420,000	5339	New
2019	Fuel Storage Tank Conversion	20,012	5307	Existing
2019	Brake Drum Lathe Replacement	46,410	5307	Existing
2019	Fixed-Guideway Track Inspection	2,000	Operating	New
2020	Bus Replacement	4,221,956	5339	Existing
2020	CNG Compressor and Generator	1,198,100	5307	Existing
2020	Fixed-Guideway Track Inspection	2,000	Operating	New
2021	Minivan Replacement	107,234	5307	Existing
2021	Fixed-Guideway Track Inspection	2,000	Operating	New

SECTION 9: EVALUATION PLAN

EVALUATION PLAN

Asset lifecycle management is an ever-changing environment with advances in technology, changes in regulation, funding availability and asset management best practices. Therefore, the TAM plan will be considered a “living document” reviewed and revised, as necessary, on an annual basis. Revisions will come from the TAM Implementation Team, the Executive Leadership Team and the Executive Director (accountable executive) with inputs from various internal and external stakeholders. Initial and ongoing training of METRO employees on the TAM plan will become part of the business culture to ensure employees are equipped to execute the deliverables of the TAM plan and facilitate a continuous TAM improvement process.

SECTION 10: APPENDICES

APPENDIX A: FLEET REPLACEMENT PLAN

TYPE OF VEHICLE	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Fixed-Route Buses	1	-	8	-	10	-	6
Links Paratransit Vans	2	-	-	2	-	5	3
Links Minivans	-	-	-	-	-	-	2
Cost of FR Bus	497,450	-	4,221,956	-	5,598,842	-	3,648,298
Cost of Links Van	130,081	-	-	-	-	468,950	248,666
Cost of Minivan	-	-	-	142,143	-	-	117,176
Total Cost	627,531	-	4,221,956	142,143	5,598,842	468,950	4,014,140
TYPE OF VEHICLE	FY25	FY26	FY27	FY28	FY29	FY30	FY31
Fixed-Route Buses	-	12	-	15	-	7	-
Links Paratransit Vans	14	-	-	-	2	5	-
Links Minivans	-	-	-	2	-	-	-
Cost of FR Bus	-	7,740,958	-	10,265,478	-	5,082,301	-
Cost of Links Van	1,195,253	-	-		192,181	494,866	-
Cost of Links Minivan	-	-		131,883	-	-	-
Total Cost	1,195,253	7,740,958	-	10,397,361	192,181	5,577,167	-