Florida and MAP-21 Performance Measures

Methodology and Data Sources

Technical Report

Office of Policy Planning

Florida Department of Transportation

UPDATED April 2022

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INTRODUCTION

The Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation Act (FAST Act) transformed the federal-aid highway and transit programs by establishing new performance-based planning requirements for state departments of transportation (DOT), metropolitan planning organizations (MPO), and providers of public transportation services. The performance management framework focuses on seven national goal areas articulated in MAP-21: safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays.

Specific requirements for implementing the performance management provisions of MAP-21 and the FAST Act are codified in the Code of Federal Regulations. As of April 2022, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) have published eight final rulemakings that have some relationship to performance management. These include:

- Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning Final Rule (commonly referred to as he "Planning Rule");
- Highway Safety Improvement Program (HSIP) Final Rule;
- National Performance Management Measures for the Highway Safety Improvement Program Final Rule ("PM1" Rule);
- National Performance Management Measures for Assessing Pavement Condition and Bridge Condition for the National Highway Performance Program Final Rule ("PM2" Rule);
- Asset Management Plan Final Rule;
- National Performance Management Measures for Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program (CMAQ) Final Rule ("PM3" Rule);
- Transit Asset Management (TAM) Final Rule; and
- Public Transportation Agency Safety Plan Final Rule.

The Planning Rule provides overarching context for long-range and short-term planning, establishing requirements for coordination in data collection and management and target setting between state DOTs, MPOs, and providers of public transportation services as well as for integrating performance-based planning and programming into the statewide and metropolitan planning processes. The Safety (PM1), Pavement and Bridge Condition (PM2), and System Performance (PM3) Final Rules establish standardized statewide performance measures intended to address the seven national performance goals. Each rule contains requirements for target setting, data collection and management, performance measurement, reporting, and significant progress determination. The HSIP and Asset Management Plan Final Rules do not establish performance measures but describe procedures for developing related plans and data management procedures.

The Transit Asset Management (TAM) Final Rule establishes minimum federal requirements for transit asset management, requires public transportation providers to develop and implement transit asset management plans, and establishes state of good repair (SGR) standards and four SGR performance measures. The Public Transportation Agency Safety Plan rule requires public transit agencies to develop and implement Public Transportation Agency Safety Plans based on a Safety Management System approach.

Definitions

To ensure consistent definitions, following terms are defined as follows in 23 CFR 490.101.

- A "metric" is defined as a quantifiable indicator of performance or condition.
- A "measure" is defined as an expression based on a metric that is used to establish targets and to assess progress toward meeting the established targets.
- Highway Performance Monitoring System (HPMS) is a national level highway information system that includes data on the extent, condition, performance, use, and operating characteristics of the Nation's highways.
- National Bridge Inventory (NBI) is an FHWA database containing bridge information and inspection data for all highway bridges on public roads, on and off federal-aid highways, including tribally owned and federally owned bridges that are subject to the National Bridge Inspection Standards (NBIS).
- National Performance Management Research Data Set (NPMRDS) means a data set derived from vehicle/passenger probe data (sourced from Global Positioning Station (GPS), navigation units, cell phones) that includes average travel times representative of all traffic on each mainline highway segment of the National Highway System (NHS), and additional travel times representative of freight trucks for those segments that are on the Interstate System. The data set includes records that contain average travel times for every 15 minutes of every day of the year recorded and calculated for every travel time segment where probe data are available. The NPMRDS does not include any imputed travel time data.
- Target means a quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within the time period required by the FHWA.

The Final Rules provide the performance metrics and measures that the Florida Department of Transportation (FDOT), MPOs, and transit providers must report. These are described in this report.

Purpose

This report focuses on the Safety (PM1), Pavement and Bridge Condition (PM2), System Performance (PM3), and Transit Asset Management Final Rules. It provides an overview of the performance measures, metrics, and the data sources used by FDOT to develop the performance targets. This report also specifies a schedule to be used by FDOT in sharing performance measures data with the MPOs, so they may develop and track progress towards targets. It also provides a brief description of the Public Transportation Agency Safety Plan rule, where FDOT is in a coordinating role and not responsible for setting targets.

SAFETY (PM1) FINAL RULE

The Safety (PM1) Final Rule establishes five performance measures that support the data-driven performance framework outlined in the Highway Safety Improvement Program (HSIP) Final Rule. The HSIP is a federal-aid funding program intended to reduce fatalities and serious injuries on the nation's roadways. Under the Safety Rule, FDOT is responsible for establishing statewide targets, which must be reported, along with baseline performance and progress towards achieving targets, in the annual HSIP report due August 31 of each year. Targets are applicable to all public roads regardless of functional classification or ownership.

Performance Measures

- **Number of Fatalities:** The total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year.
- **Rate of Fatalities:** The ratio of total number of fatalities to the number of vehicle miles traveled (VMT, in 100 Million VMT) in a calendar year.
- **Number of Serious Injuries:** The total number of persons suffering at least one serious injury in a motor vehicle crash during a calendar year.
- **Rate of Serious Injuries:** The ratio of total number of serious injuries to the number of VMT (in 100 Million VMT) in a calendar year.
- **Number of Non-motorized Fatalities and Non-motorized Serious Injuries:** The combined total number of non-motorized fatalities and non-motorized serious injuries involving a motor vehicle during a calendar year.

Data Sources

The Florida Department of Highway Safety and Motor Vehicles (FLHSMV) is the official custodian of traffic crash reports. Therefore, the FLHSMV database is the official crash records database for the State of Florida. FLHSMV produces official crash numbers every year with a closeout date that can vary from year to year. In the past five years, this closeout date has ranged from July to October of the following year.

- **Fatality Data:** FLHSMV is the source for fatality data.
- **Serious Injury Data:** FLHSMV is the source for serious injury data. Agencies must use the definition for "Suspected Serious Injury (A)" from the Model Minimum Uniform Crash Criteria (MMUCC), 4th edition as of April 15, 2019.
- **Number of Non-motorized Fatalities and Non-motorized Serious Injuries:** FLHSMV is the source for non-motorized fatalities and serious injuries.
- **Volume Data:** The FDOT Transportation Data and Analytics Office provides the VMT data. VMT information is generated via the HPMS software by taking the product of Annual Average Daily Traffic

(AADT) and length (in miles) for all sections and summing the section-specific results to the desired HPMS aggregation level (e.g., functional system, urban area, etc.). VMT statistics are typically made available by June of the following year.

VMT for MPO planning areas, if applicable, is estimated by the MPO. Whereas states are expected to use HPMS data to furnish the VMT denominator for the safety rate metrics, using HPMS data at the MPO level is not directly possible. The VMT denominator must include travel on all public roadways within the Metropolitan Planning Area boundary. In HPMS, local roadway travel is reported in aggregate for the state and for large Census urbanized areas. However, urbanized areas do not necessarily coincide with Metropolitan Planning Area boundaries, as MPOs also must plan for areas that are reasonably expected to become urbanized in the next 20 years. In HPMS, travel on roadways with higher functional classification is reported for specific geo-located roadway segments and may be readily disaggregated to the geographic bounds of a Metropolitan Planning Area. However, because travel on local roadways is not geo-located, HPMS by itself does not provide sufficient information to compute full travel in an MPO study area.[1]

Table 1 summarizes the applicability, data needs, sources, and availability for the safety performance measures.

[1] FHWA's guidance to identify reasonable technical methods for developing consistent VMT estimates on local roadways for a geographic area smaller than an entire State is available at: https://www.fhwa.dot.gov/planning/processes/tools/technical_guidance/index.cfm

Table 1. Data Summary for Safety Performance Measures

Performance Measures	Applicability	Data Needs/ Performance Metrics	Data Source/Owner	Date Available
Number of Fatalities	All Public Roads	Annual fatalities for the five years preceding the performance period	Fatality data from FLHSMV	July-October of the following year
Rate of Fatalities per 100 million VMT	All Public Roads	Annual fatalities and VMT for the five years preceding the performance period	Fatality data from FLHSMV	July-October of the following year
			AADT and Roadway Section Length from HPMS	June of the following year
Number of Serious Injuries	All Public Roads	Annual serious injuries for the five years preceding the performance period	Serious injury data from FLHSMV	July-October of the following year
Rate of Serious Injuries per 100 million VMT	All Public Roads	Annual serious injuries and VMT for the five years preceding the performance period	Serious injury data from FLHSMV	July-October of the following year
			AADT from HPMS	June of the following year
Number of Non-motorized Fatalities and Serious Injuries	All Public Roads	Annual non-motorized fatalities and serious injuries for the five years preceding the performance period	Non-motorized fatality and serious injury data from FLHSMV	July-October of the following year

Figure 1 in **Appendix A** summarizes how data are used to calculate the safety performance measures in a flow chart.

Safety performance management promotes a coordinated relationship for common performance measures, resulting in comprehensive transportation and safety planning.

- FDOT Safety Office established statewide targets for calendar year 2018 for all five safety measures in the August 31, 2017 HSIP Annual Report. FDOT has reaffirmed these safety targets in its HSIP Annual Report that is due to FHWA each year by August 31.

- As required by the PM 1 rule, the FDOT Safety Office established identical statewide targets for three performance measures (fatalities, serious injuries, and fatality rate) in the July 1, 2017 version of the State Highway Safety Plan (HSP) and reaffirmed these targets annually. In addition to those three measures, the Florida HSP includes a total of 24 core outcome, behavior, activity, and Florida-specific performance measures to comprehensively quantify safety performance.

Targets

For the 2021 HSIP annual report, FDOT established 2021 statewide safety performance targets at "0" for each PM1 safety performance measure to reflect Florida's vision of zero deaths.

Justification for Targets

Florida established safety as its highest priority at least 35 years ago. Florida's Legislature enacted state law in 1984 placing top priority on safety, Section 334.046(2), Florida Statutes:

"(2) The mission of the Department of Transportation shall be to provide a safe statewide transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities."

FDOT adopted a vision of zero traffic-related fatalities in 2012 and has reaffirmed this vision in the past decade. This vision is well documented in FDOT's mission and vision. Safety is the first goal of the Florida Transportation Plan (FTP) and the emphasis of the Strategic Highway Safety Plan (SHSP). The FTP updated in 2020 reaffirmed Florida's commitment to zero establishing the objective "Eliminate transportation-related fatalities and serious injuries" and the supporting strategy to "commit to Vision Zero as our top priority." The SHSP, published in 2012, 2016, and, most recently, in 2021, specifically embraces Vision Zero/Target Zero and identifies potential strategies to achieve zero traffic deaths. Both the FTP and SHSP highlight the state's continuing commitment to advancing performance management and a vision of zero deaths. Both the FTP and the SHSP were developed in coordination with Florida's 27 MPOs and Florida's Metropolitan Planning Organization Advisory Council (MPOAC).

Florida's Highway Safety Plan (HSP) also echoes the goals of the SHSP. All three data-driven initiatives cite the goal of reducing traffic crashes, fatalities, and serious injuries, with an ultimate vision of zero deaths.

Data Schedule

FDOT will make the safety data available to MPOs in the fourth quarter of each year, with the specific date subject to the availability of the source data from FLHSMV.

PAVEMENT AND BRIDGE CONDITION (PM2) FINAL RULE

The Pavement and Bridge Condition (PM2) Final Rule establishes six performance measures (four for pavement and two for bridges) that FDOT must use to manage pavement and bridge performance on the National Highway System (NHS). The rule helps ensure that federal-aid highway funding under the National Highway Performance Program (NHPP) supports the achievement of performance targets established in a FDOT's Transportation Asset Management Plan.

Performance Measures

Pavement and bridge performance measures refer to the percentages of network lane-miles (for pavement) and percentages of deck area (for bridges), in Good or Poor condition, computed using the reported metrics. Good condition suggests no major investment is needed, while Poor condition suggests major reconstruction investment is needed. The pavement and bridge performance measures are:

- Pavement
  - Percentage of pavements of the Interstate System in Good condition
  - Percentage of pavements of the Interstate System in Poor condition
  - Percentage of pavements of the non-Interstate NHS in Good condition
  - Percentage of pavements of the non-Interstate NHS in Poor condition
- Bridges
  - Percentage of NHS bridges classified as in Good condition
  - Percentage of NHS bridges classified as in Poor condition

Methodology – Pavement

Pavement data generally are collected in the rightmost travel lane. They may be collected in another single consistent lane for all data if the rightmost lane carries traffic that is not representative of the remainder of the lanes or is not accessible due to closure, excessive congestion, or other events that impact access.

Step 1: Identify Pavement Surface Type

The PM2 rule requires the pavement types to be grouped into the following three categories: Asphalt, Jointed Concrete, and Continuously Reinforced Concrete Pavements (CRCP).

Step 2: Performance Metric Threshold

The PM2 rule identifies the following pavement performance metrics:

- **International Roughness Index (IRI)** – IRI is the road roughness index most commonly used worldwide for evaluating and managing road systems. Road roughness is the primary indicator of the utility of a highway network to road users. IRI is defined as a statistic used to estimate the amount of roughness in a measured longitudinal profile. It is applicable to Asphalt, Jointed Concrete, and Continuously Reinforced Concrete Pavements.

- **Rutting** – Rutting is defined as longitudinal surface depressions in the pavement derived from measurements of a profile transverse to the path of travel on a highway lane. It is applicable to Asphalt Pavements only.

- **Faulting** – Faulting is defined as a vertical misalignment of pavement joints in Portland Cement Concrete Pavements. It is applicable to Jointed Concrete Pavements only.

- **Cracking percent** – Cracking is defined as a fissure or discontinuity of the pavement surface not necessarily extending through the entire thickness of the pavement. Cracking percent is defined as the percentage of pavement surface exhibiting cracking. It is applicable to Asphalt, Jointed Concrete, and Continuously Reinforced Concrete Pavements.

- **Present Serviceability Rating (PSR**) – PSR is an observation-based system used to rate the quality of pavement condition. It is applicable only to roads with posted speed limits of less than 40 miles per hour (e.g., toll plazas, border crossings). States may choose to collect and report PSR for applicable segments as an alternative to the other four metrics.

As stated in the PM2 rule, the following thresholds for each of the pavement performance metrics are applied.

Table 2. Thresholds for Pavement Performance Metrics

Metric Rating	Good	Fair	Poor
IRI (inches/mile)	< 95	95 – 170	> 170
Cracking Percent (%)	< 5	• CRCP: 5 – 10 • Jointed: 5 – 15 • Asphalt: 5 – 20	• CRCP: > 10 • Jointed: > 15 • Asphalt: > 20
Rutting (inches) (for asphalt only)	< 0.20	0.20 – 0.40	> 0.40
Faulting (inches) (for jointed only)	< 0.10	0.10 – 0.15	> 0.15

Good condition suggests no major investment is needed, while Poor condition suggests major reconstruction investment is needed.

Step 3: Overall Section Condition

Overall conditions for the roadway sections are based on the pavement type and the criteria are described below:

Table 3. Overall Section Condition – Pavement Measures

	Good	Fair	Poor
Asphalt	Section exhibits good rating for all three conditions: – IRI – Cracking Percent – Rutting	Sections not categorized as Good or Poor	Section exhibits poor rating for two or more of the three conditions: – IRI – Cracking Percent – Rutting
Jointed	Section exhibits good rating for all three conditions: – IRI – Cracking Percent – Faulting	Sections not categorized as Good or Poor	Section exhibits poor rating for two or more of the three conditions: – IRI – Cracking Percent – Faulting
CRCP	Section exhibits good rating for both the following conditions: – IRI – Cracking Percent	Sections not categorized as Good or Poor	Section exhibits poor rating for both the following conditions: – IRI – Cracking Percent

Good condition suggests no major investment is needed, while Poor condition suggests major reconstruction investment is needed.

Step 4: Sections Excluded

As stated in the PM2 rule, the following sections are excluded prior to computing all pavement condition measures:

- Sections that are identified in HPMS as Bridge;
- Sections that have an unpaved surface type or an "other" surface type (such as cobblestone, planks, and bricks); and
- Sections with missing and invalid data.

Step 5: Pavement Condition Measures

As stated in the PM2 rule, the pavement condition measures are calculated as follows:

- **% of Interstate pavements in Good condition** shall be computed to the one tenth of a percent as the ratio of number of Interstate lane miles which are in Good condition to the number of total lane miles.
- **% of Interstate pavements in Poor condition** shall be computed to the one tenth of a percent as the ratio of number of Interstate lane miles which are in Poor condition to the number of total lane miles.

- **% of Non-Interstate NHS pavements in Good condition** shall be computed to the one tenth of a percent as the ratio of number of Non-Interstate NHS lane miles which are in Good condition to the number of total Non-Interstate NHS lane miles.

- **% of Non-Interstate NHS pavements in Poor condition** shall be computed to the one tenth of a percent as the ratio of number of Non-Interstate NHS lane miles which are in Poor condition to the number of total Non-Interstate NHS lane miles.

Methodology – Bridge

Step 1: Identify Performance Metrics

The PM2 rule identifies the following bridge performance metrics:

- **Condition rating value for Deck (Item 58) – describes** the overall condition rating of the deck

- **Condition rating value for Superstructure (Item 59) –** describes the physical condition of all structural members.

- **Condition rating value for Substructure (Item 60) –** describes the physical condition of piers, abutments, piles, fenders, footings, or other components**.**

- **Condition rating value for Culverts (Item 62) –** evaluates the alignment, settlement, joints, structural condition, scour, and other items associated with culverts**.**

Step 2: Performance Metric Threshold

As stated in the PM2 rule, the following thresholds for each of the bridge performance metrics are applied.

Table 4. Thresholds for Bridge Performance Metrics

Metric Rating	Good	Fair	Poor
Deck (Item 58)	≥ 7	5 or 6	≤ 4
Superstructure (Item 59)	≥ 7	5 or 6	≤ 4
Substructure (Item 60)	≥ 7	5 or 6	≤ 4
Culvert (Item 62)	≥ 7	5 or 6	≤ 4

Good condition suggests no major investment is needed, while Poor condition suggests major reconstruction investment is needed.

Step 3: Bridge Condition Measures

As stated in the PM2 rule, the bridge condition measures are calculated as follows:

- **% of Bridges in Good condition** shall be computed to the one tenth of a percent as the ratio of deck area of bridges in Good condition to the total bridge deck area.

- **% of Bridges in Poor condition** shall be computed to the one tenth of a percent as the ratio of deck area of bridges in Poor condition to the total bridge deck area.

Deck area is computed using structure length and either deck width or approach roadway width.

Data Sources

- **Pavement Condition Measures**: The governing data source for computing all four pavement condition measures is Highway Performance Monitoring System (HPMS). States report Interstate pavement data to HPMS annually by April 15 and non-Interstate NHS pavement data annually by June 15. The following HPMS data items are used:
  - Cracking percent;
  - Faulting;
  - IRI;
  - PSR; and
  - Rutting.

- **Bridge Condition Measures**: The governing data source for computing bridge condition measures and determining the percent of the total deck area of highway bridges classified as Structurally Deficient is the National Bridge Inventory (NBI). NBI includes information on approximately 600,000 of the nation's bridges located on public roads. Bridge data are uploaded to the NBI by March 15 of the following year. The following NBI data items are used:
  - NBI Data Item 58: Deck;
  - NBI Data Item 59: Superstructure;
  - NBI Data Item 60: Substructure; and
  - NBI Data Item 62: Culvert.

- **Bridge Deck Area Calculations**: for determining the deck area, the following NBI Data Items are used:
  - NBI Data Item 32: Approach Roadway Width;
  - NBI Data Item 49: Structure Length; and
  - NBI Data Item 52: Deck Width.

Table 5 summarizes the applicability, data needs and sources for the Pavement and Bridge condition performance measures.

Table 5. Data Summary for Pavement and Bridge Condition Performance Measures

Performance Measures	Extent	Data Needs/ Performance Metrics	Data Source/Owner	Date Reported
Percent of Pavements on the Interstate in Good Condition	Interstate	IRI, Rutting, Faulting, Cracking Percent, PSR	Pavement Data from FDOT State Materials Office; LRS Network from FDOT TDA Office*	April 15 of the following year; Ongoing
Percent of Pavements on the Interstate in Poor Condition	Interstate	IRI, Rutting, Faulting, Cracking Percent, PSR	Pavement Data from FDOT State Materials Office; LRS Network from FDOT TDA Office*	April 15 of the following year; Ongoing
Percent of Pavements on the Non-Interstate NHS in Good Condition	Non-Interstate NHS	IRI, Rutting, Faulting, Cracking Percent, PSR	Pavement Data from FDOT State Materials Office; LRS Network from FDOT TDA Office*	June 15 of the following year; Ongoing
Percent of Pavements on the Non-Interstate NHS in Poor Condition	Non-Interstate NHS	IRI, Rutting, Faulting, Cracking Percent, PSR	Pavement Data from FDOT State Materials Office; LRS Network from FDOT TDA Office*	June 15 of the following year; Ongoing
Percent of Bridge Deck Area on the NHS in Good Condition	NHS	NBI Items: Deck, Superstructure, Substructure, Culverts, Approach Width, Structure Length, Deck Width	Bridge Data from FDOT Maintenance Office; LRS Network from FDOT TDA Office*	March 15 of the following year; Ongoing
Percent of Bridge Deck Area on the NHS in Poor Condition	NHS	NBI Items: Deck, Superstructure, Substructure, Culverts, Approach Width, Structure Length, Deck Width	Bridge Data from FDOT Maintenance Office; LRS Network from FDOT TDA Office*	March 15 of the following year; Ongoing

* The pavement and bridge data must be joined to the HPMS linear referencing system to determine which segments are on the Interstate and Non-Interstate NHS.

Figure 2 in **Appendix A** summarizes how data are used to calculate the pavement and bridge condition performance measures in a flow chart.

As described in the flow chart, using the data from HPMS and NBI, the pavement and bridge performance measures are calculated. Pavement and bridge performance targets will 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. FDOT will document the target setting methodology and the targets in the Transportation Asset Management Plan (TAMP).

Targets

FDOT established the following targets for the first four-year performance period (2018-2021) and reaffirmed these targets following the submittal of the mid performance period report on October 1, 2020.

Pavement

Table 6. Targets for Pavement Condition Performance Measures

FHWA Performance Measure	2-year Target	4-year Target
% of Interstate pavements in Good condition	n/a	≥ 60%
% of Interstate pavements in Poor condition	n/a	≤ 5%
% of non-Interstate NHS pavements in Good condition	≥ 40%	≥ 40%
% of non-Interstate NHS pavements in Poor condition	≤ 5%	≤ 5%

Note: Per the federal rule, no more than 5 percent of the Interstate pavement can be in Poor condition.

Bridge

Table 7. Targets for Bridge Condition Performance Measures

FHWA Performance Measure	2-year Target	4-year Target
% of NHS bridges classified as in Good condition by deck area	≥ 50%	≥ 50%
% of NHS bridges classified as in Poor condition by deck area	≤ 10%	≤ 10%

Note: Per the federal rule, no more than 10 percent of the total deck area of NHS bridges can be classified as Structurally Deficient (Poor).

Justification for Targets

Pavement

The targets for the FHWA pavement condition performance measures were established after review and analysis of the last three years of FDOT's Interstate and non-Interstate NHS pavement condition survey data.

In the analyses of the pavement data, the federal regulation uses methodologies to measure rut depth and cracking that represent a significant departure from those currently used by FDOT. Further, the FHWA pavement metrics are summarized in 0.1-mile intervals. All these three metrics (IRI, cracking percent and rutting/faulting) must be rated Good for the 0.1-mile segment to be considered Good. To be rated as Poor, two of the three metrics must be rated Poor.

In contrast, FDOT performs a visual estimate of the extent of cracking and measures rutting using three points along the roadway width (i.e., both wheel paths and the center of the roadway). In addition, these pavement measurements are averaged along the entire length of the segment which can vary in length. Pavement meeting FDOT's standards is defined as pavement for which each of the three rating factors (ride quality, crack severity and rutting) are scored 6.5 or above on a 10-point scale. The segment is considered Deficient if any one of the three ratings are deficient. FDOT's crack rating is a combination of lengths and severities as well as raveling and patching and is not comparable to the FHWA cracking percent, which is the percentage of the area of the surface section exhibiting visible cracking attributed to fatigue cracking only.

Table 8 illustrates some of the differences between FDOT and FHWA criteria for assessing pavement condition.

Table 8: FDOT and FHWA Pavement Rating Criteria

FDOT Pavement Rating Criteria

Metric Rating	Non-Deficient	Deficient
Ride Rating	≥ 6.5 (IRI ≤ 125 in/mile)	< 6.5 (IRI > 125)
Crack Rating	≥ 6. 5	< 6.5
Rut Rating	≥ 6. 5 (Rut ≤ 3/8 in)	< 6.5 (Rut > 3/8 in)

FHWA Pavement Rating Criteria

Metric Rating	Good	Fair	Poor
IRI (inches/mile)	< 95	95 – 170	> 170
Cracking Percent (%)	< 5	• CRCP: 5 – 10 • Jointed: 5 – 15 • Asphalt: 5 – 20	• CRCP: > 10 • Jointed: > 15 • Asphalt: > 20
Rutting (inches) (for asphalt only)	< 0.20	0.20 – 0.40	> 0.40
Faulting (inches) (for jointed only)	< 0.10	0.10 – 0.15	> 0.15

Section 334.046 (4)(a), Florida Statutes, requires FDOT to ensure that 80 percent of the pavement on the State Highway System (SHS), which contains the majority of the NHS, meets FDOT standards. FDOT will continue to use its longstanding asset management processes to meet the standards. The federal performance measures focus on the Interstate highway system and non-Interstate NHS, rather than the full SHS. The NHS generally is a subset of the SHS, but also includes a small number of locally owned roads in MPO planning areas. About 6.5 percent of the center-line miles on Florida's NHS are locally owned.

FDOT will collect the data to satisfy the federal requirements based on the required approaches and technologies in the regulations. FDOT has not previously collected pavement condition data using these new methodologies. Therefore, in consideration of the differences in data collection requirements used by FDOT and those mandated by the rule, as well as other unknowns and unfamiliarity associated with the new required

processes, conservative four-year targets for the Interstate and two- and four-year targets for the non-Interstate NHS pavement conditions were established.

- For the targets related to the percentage of pavement in Good condition, FDOT established targets for the federal performance measure slightly lower than current performance (initial four-year targets of ≥ 60.0 percent of Interstate pavements in Good condition and initial two- and four-year targets of ≥ 40.0 percent of non-Interstate NHS pavements in Good condition). The expectation is that FDOT will meet or exceed these targets

- For the targets related to the percentage of pavement in Poor condition, FDOT established a target for the federal performance measure equal to the maximum threshold established in federal rule for Interstate pavement (≤ 5.0 percent) and applied the same target to the federal performance measure for the non-Interstate NHS pavement. In both cases the expectation is that FDOT will meet or come in below these targets.

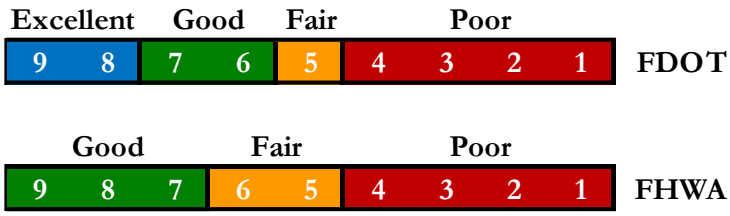
Bridge

The targets for the FHWA NHS bridge condition performance measures were established after review and analysis of the last five years of FDOT's bridge data collected through the annual bridge inventory process.

The federal regulation criteria consider bridges to be in Good condition if the NBI rating is 7, 8, or 9 and to be in Poor condition if the NBI rating is 4 or less. The percentage of bridges in Good and Poor condition will be reported to FHWA as a percentage of deck area for all bridges on the NHS. In contrast, FDOT considers bridges to be in Excellent condition if the NBI rating is 9 or 8; Good condition if the NBI rating is 6 or 7; Fair condition if the NBI rating is 5; and Poor condition if the NBI rating is 4 or less. FDOT's internal process is to have no more than 10 percent of its bridges in Poor Condition. FDOT does not program any significant bridge work for bridges with an NBI rating of 5, 6, 7, 8, or 9, but does actively perform routine maintenance and repairs.

Table 9 shows the differences between the FDOT and FHWA criteria for assessing bridge condition.

Table 9: FDOT and FHWA National Bridge Inventory (NBI) Rating Criteria



Section 334.046 (4)(a), Florida Statutes, requires FDOT to ensure that 90 percent of FDOT-maintained bridges meets FDOT standards. FDOT will continue to use its longstanding asset management processes to meet the standards. Both the FDOT and federal standards are based on NBI rating criteria on a 9-point scale, with three important differences:

- The FDOT standard covers all FDOT-maintained bridges on the SHS; the FHWA measure focuses on bridges on the NHS;

- The FDOT standard is calculated based on the total number of bridges; the FHWA measure is calculated based on deck area of bridges; and

- The FDOT standard defines meeting standards as 6 or higher on the NBI scale; the FHWA measure is calculated for both Good (7 or higher) or Poor (4 or lower).

An evaluation of historical bridge data over the last few years shows the condition of bridges on the NHS is slowly moving from Good condition to Fair condition (NBI 5 or 6 per FHWA definition), which is to be expected as FDOT's bridge inventory is slowly growing older. FDOT programs bridges for repair or replacement work to begin within six years of reaching deficient status (NBI 4) or becoming posted.

FDOT's Bridge Performance Group consisting of FDOT personnel and industry representatives considers how data at the element level can be used to track bridge condition and the effectiveness of element level repairs over time. The goal is to determine when repairs are needed, and which repairs are the most effective to extend the bridge service life. This will be an on-going effort to develop, monitor, and draw conclusions. It is anticipated that as data are collected, deterioration models will be refined, which should lead to long term cost savings and longer lasting bridges over time.

FDOT identifies bridge maintenance needs during bridge inspections, and programs bridge maintenance and repair work to address these needs. FDOT programs bridges for rehabilitation or replacement to begin within 6-years of being identified as being in Poor condition. FDOT plans to continue with these internal processes, meet targets as established per FHWA criteria, and use the same targets for the two and four-year cycle. At some point in the future, FDOT may adjust its targets if how it currently programs bridge work leads to consistent reporting results per FHWA criteria.

- For the targets related to the percentage of bridge deck area in Good condition, FDOT established targets for the federal performance measure lower than current performance (two- and four-year targets of ≥ 50.0 percent). The expectation is that FDOT will meet or exceed these targets.,

- For the targets related to the percentage of bridge deck area in Poor condition, FDOT established a target for the federal performance measure equal to the maximum threshold established in federal rule (two- and four-year targets ≤ 10.0 percent). In both cases the expectation is that FDOT will meet or come in below these targets.

Data Schedule

FDOT will provide a summary table and raw data for the bridge performance measures to the MPOs by the first week of April of each year, and a summary table and raw data for the pavement performance measures to the MPOs by June 30 of each year.

SYSTEM PERFORMANCE (PM3) FINAL RULE

The System Performance (PM3) Final Rule is intended to carry out the NHPP, National Highway Freight Program (NHFP), and Congestion Mitigation and Air Quality Improvement Program (CMAQ) through six performance measures that address travel-time reliability, freight movement, peak-hour excessive delay, non-SOV travel, and on-road mobile source emissions reductions. Because Florida does not have any air quality nonattainment or maintenance areas, three of the six performance measures related to the CMAQ program (peak-hour excessive delay, non-SOV travel, and on-road mobile source emissions reductions) are not currently required to be calculated by FDOT nor by Florida's MPOs. These three measures are not discussed in this document.

The rule outlines data items that should be used in the calculation of performance measures, such as travel time, average annual daily traffic (AADT), and vehicle occupancy factors. The rule also establishes mechanisms for reporting data and performance metrics to HPMS.

Performance Measures

- Percent of person-miles traveled on the Interstate that are reliable
- Percent of person-miles traveled on the non-Interstate National Highway System (NHS) that are reliable
- Truck Travel Time Reliability (TTTR) Index

Methodology

Percent of Person Miles Traveled on the Interstate and Non-Interstate NHS that are Reliable

These measures are calculated by determining the Level of Travel Time Reliability (LOTTR) for each reporting segment, rounded to the nearest hundredth. LOTTR is defined as the ratio of 80th percentile travel time to the 50th percentile travel time using travel time data in 15-minute intervals from the National Performance Monitoring Research Dataset (NPMRDS). The LOTTR metric is calculated for the following time periods:

- AM Peak – 6:00am – 10:00am on Monday – Friday
- Mid-day – 10:00am – 4:00pm on Monday – Friday
- PM Peak – 4:00pm – 8:00pm on Monday – Friday
- Weekends – 6:00am – 8:00pm on Saturday and Sunday

A segment is reliable if its LOTTR is less than 1.5 during all four time periods. If one or more time periods has a LOTTR of 1.5 or above, that segment is unreliable.

To obtain person miles traveled, vehicle miles traveled (VMT) for each segment are multiplied by the average vehicle occupancy for each type of vehicle on the roadway. FHWA published a national average vehicle occupancy of 1.7 for all roads and that is the number that was used for all the segments in Florida.

To calculate the percent of person miles traveled that are reliable on the Interstate or non-Interstate NHS, the sum of the number of reliable person miles traveled is divided by the sum of total person miles traveled.

Truck Travel Time Reliability Index

The Truck Travel Time Reliability (TTTR) Index is calculated using truck travel time data in 15-minute intervals from the NPMRDS. Average travel times are ranked for each segment of the Interstate for each of the following five time periods:

- AM Peak – 6:00am – 10:00am on Monday – Friday
- Mid-day – 10:00am – 4:00pm on Monday – Friday
- PM Peak – 4:00pm – 8:00pm on Monday – Friday
- Weekend – 6:00am – 8:00pm on Saturday - Sunday
- Overnight – 8:00pm – 6:00am on all days of the week

A TTTR ratio is calculated for each segment of the Interstate system by dividing the 95th percentile truck travel time by the 50th percentile truck travel time during each time period. The highest TTTR value for each segment among the five time periods is then weighted by segment length. The sum of the weighted values is divided by the total Interstate length to calculate the TTTR Index.

Data Sources

The data sources for the three (3) performance measures in PM3 Rule are presented in the table below.

Table 10. Data Summary for System Performance Measures

Performance Measures	Extent	Data Needs/ Performance Metrics	Data Source/Owner	Date Available
Percent of Person-Miles Traveled on the Interstate that are Reliable	Interstate	Level of Travel Time Reliability – 80th percentile travel time and 50th percentile travel time for 15-minute intervals during four time periods	Travel time from NPMRDS	January of following year
			AADT from HPMS[2]	January of following year
			Segment Length from NPMRDS	January of following year
			Occupancy Factor provided by FHWA	Ad hoc basis
Percent of Person-Miles Traveled on the Non-Interstate NHS that are Reliable	Non-Interstate NHS	Level of Travel Time Reliability – 80th percentile travel time and 50th percentile travel time for 15-minute intervals during four time periods	Travel time from NPMRDS	January of following year
			AADT from HPMS[4]	January of following year
			Segment Length from NPMRDS	January of following year
			Occupancy Factor provided by FHWA	Ad hoc basis
Truck Travel-Time Reliability Index	Interstate	Truck Travel Time Reliability – 95th percentile truck travel time and 50th percentile truck travel time for 15-minute intervals during five time periods	Truck travel time from NPMRDS	January of following year

Note: NPMRDS – National Performance Management Research Data Set;

AADT – Average Annual Daily Traffic;

HPMS – Highway Performance Monitoring System

NPMRDS

NPMRDS is a national data set of average travel times on the National Highway System that is acquired by FHWA for use in its performance management activities. The first version (v1) of the NPMRDS data set was acquired by FHWA for 2014, 2015 and 2016 using travel time data from the private vendor HERE Technologies. The second version (v2) of the NPMRDS data set was acquired for 2017 onwards using travel time data from the private vendor INRIX, Inc. This change in vendors for acquiring the NPMRDS data set

[2] It is important to note that, while the AADT data ultimately comes from HPMS, the rules require that these data be conflated to the NPMRDS TMC segments. For that reason, most states, including Florida, are using the FHWA-provided AADTs that are associated to the NPMRDS. These AADTs may be two years behind the year of the travel times.

in 2017 initially impacted the results for performance measures. In addition to the travel time data, the segment lengths for each roadway segment are also provided by NPMRDS.

Starting in 2017, FHWA includes the AADT reported in HPMS as part of the NPMRDS data sets. However, it should be noted that this causes a temporal mismatch as data submitted through HPMS in one year reflects data collected in the previous year (i.e. traffic counts submitted in 2016 are reflective of 2015 conditions).

Occupancy Factors

For computing Travel Time Reliability measures, the PM3 Rule requires that the Occupancy Factors needed to calculate the measures must come from the most recently available data tables published by FHWA, unless using other allowed data source(s). In April 2018, FHWA provided guidance that an Occupancy Factor of 1.7 be used for calculating the Travel Time Reliability measures.

Figure 3 in **Appendix A** summarizes how data are used to calculate the system performance measures in a flow chart.

Targets

FDOT established the following targets for the first four-year performance period (2018-2021) and reaffirmed these targets on October 1, 2020 with the submittal of the mid performance period report.

Table 11. Targets for System Performance Measures

FHWA Performance Measure	2-year Target	4-year Target
Percent of the Person-Miles Traveled on the Interstate That Are Reliable	75.0%	70.0%
Percent of the Person-Miles Traveled on the Non-Interstate NHS That Are Reliable	n/a	50.0%
Truck Travel Time Reliability (TTTR) Index	1.75	2.00

Justification for Targets

FDOT undertook the following steps as a part of the target setting process:

- Reviewed the external factors (also called exogenous factors) that affect transportation system performance but are typically outside the control (at least operationally) of transportation agencies.
- Reviewed the internal factors and influences that affect transportation system performance and are under the control of transportation agencies.
- Conducted a trend line analysis for the performance measures using the baseline data.
- Conducted a sensitivity analysis to analyze the performance measures in detail.
- Set the targets.

The methodologies used to calculate the FHWA measures are similar to those used by FDOT to develop mobility performance measures in the past, but with some differences. Because of these changes in methodology and data requirements, FDOT decided to be conservative in establishing initial targets in 2018, with the expectation that these targets could be refined over time when multiple years of baseline data are available. In most cases, the lower end of the range projected for each measure if current trends continue was selected for the target.

- For the percent of person-miles traveled on the Interstate that are reliable, baseline performance for Florida in 2017 was estimated at 82.2 percent, with a range from 79 percent to 85 percent monthly. FDOT established a two-year target of 75 percent and a four-year target of 70 percent for this measure.

- For the percent of person-miles traveled on the non-Interstate NHS that are reliable, baseline performance for Florida in 2017 was estimated at 84.0 percent, with a range from 82 percent to 87 percent monthly. FDOT established a four-year target of 50 percent for this measure.

- For the truck travel time reliability index, baseline performance for Florida in 2017 was estimated at 1.43 percent, with a range from 1.41 to 1.69. FDOT established a two-year target of 1.75 and a four-year target of 2.00 percent for this measure.

In each case, FDOT established a target that anticipates a decline from current performance, reflecting the likelihood that increasing population, improving economic conditions, and associated growth in travel demand could lead to a worsening of system performance in the future.

Data Schedule

FDOT will provide data for the three required measures to the MPOs by June 30 of each year.

TRANSIT ASSET MANAGEMENT PLAN FINAL RULE

The Federal Transit Administration (FTA) Transit Asset Management (TAM) Final Rule became effective on October 1, 2016. The purpose of the Final Rule is to help achieve and maintain a state of good repair (SGR) for the nation's public transportation assets. Transit Asset Management is a business model that uses the condition of assets to guide the optimal prioritization of funding at transit properties and keep transit networks in a state of good repair.

SGR is the condition in which a capital asset can operate at a full level of performance. A capital asset is in a state of good repair when that asset:

- Can perform its designed function;
- Does not pose a known unacceptable safety risk; and
- Lifecycle investments have been met or recovered.

This rule applies to all recipients and subrecipients of FTA funding that own, operate, or manage public transportation capital assets. The rule introduces three key requirements:

- New SGR performance measures and targets;
- Revised National Transit Database (NTD) reporting requirements; and
- New Transit Asset Management (TAM) Plan requirement.

The Final Rule groups transit providers into two categories: Tier I and Tier II.

- Tier I providers own, operate, or manage rail, or more than 100 vehicles across all fixed-route modes, or more than 100 vehicles in one non-fixed route mode.
- Tier II providers are sub-recipients of 5311 funds, or an American Indian Tribe, or own, operate, or manage 100 or fewer vehicles across all fixed route modes, or 100 or fewer vehicles in one non-fixed route mode.

TAM Plan Elements

The TAM rule requires every transit provider that receives federal financial assistance under 49 U.S.C. 53 to develop a TAM Plan or be a part of a Group TAM Plan prepared by a sponsor. Table 12 shows the TAM Plan elements that are required by each category of provider. Since Tier II providers generally operate less complex systems, their TAM Plan requirements are not as extensive.

Table 12. TAM Plan Elements

TAM Plan Element	Transit Provider
1. Inventory of Capital Assets	Tier I and Tier II
2. Condition Assessment	
3. Decision Support Tools	
4. Investment Prioritization	
5. TAM and SGR Policy	Tier I only
6. Implementation Strategy	
7. List of Key Annual Activities	
8. Identification of Resources	
9. Evaluation Plan	

Group TAM Plan Participants

Because FDOT is the direct recipient of FTA funds for its subrecipients, FDOT's Transit Office sponsored a Group TAM plan for those providers. A total of 19 transit providers participated in this Group TAM Plan and continue to coordinate on reporting of targets to the NTD. These are FDOT's Section 5311 Rural Program subrecipients. The Group TAM Plan was adopted in October 2018 and covers fiscal years 2018-2019 through 2021-2022. Table 13 lists the Group TAMP Plan participants who are continuing to coordinate on reporting of targets to the NTD.

Table 13. Group TAM Plan Participants

District	Participant
District 1	Central Florida Regional Planning Council
	Hendry County
District 2	Baker County Transit
	Big Bend Transit*
	Levy County Transit
	Nassau County Transit
	Ride Solution
	Suwannee Valley Transit Authority
	Suwannee River Economic Council
District 3	Big Bend Transit*
	Calhoun Transit
	Gulf County ARC
	JTRANS
	Liberty County Transit
	Tri-County Community Council
	Wakulla Transit
District 4	*No participating providers*
District 5	Flagler Transit
	Marion Transit
	Sumter Transit
District 6	Key West Transit
District 7	*No participating providers*

* Provider service area covers portions of Districts 2 and 3

All facilities, equipment, rolling stock, and infrastructure that an agency owns, operates, or manages must be included in the TAM Plan asset inventory. This includes (except for equipment) assets that are owned by a third party or shared resources. The inventory must include all service vehicles, and any other owned equipment assets over $50,000 in acquisition value. Agencies only need to include condition assessment for assets for which they have direct capital responsibility.

Performance Measures

Table 14 lists the required TAM performance measures. Asset performance is measured by asset class, which means a subgroup of capital assets within an asset category. The following table shows assets for which performance needs to be reported to the NTD and the measure which will be reported. Useful Life Benchmark (ULB) is defined as the expected lifecycle of a capital asset for a particular transit provider's operating environment, or the acceptable period of use in service for a particular transit provider's operating environment. ULB is different from an asset's useful life. ULB considers a provider's unique operating environment such as geography, service frequency, etc.

Table 14. TAM Asset Performance Measures

Asset Class	Performance Measure
Equipment: Non-revenue support-service and maintenance vehicles	Percentage of nonrevenue vehicles met or exceeded Useful Life Benchmark
Rolling Stock: Revenue vehicles by mode	Percentage of revenue vehicles met or exceeded Useful Life Benchmark
Infrastructure: Only rail fixed-guideway, track, signals, and systems (Applicable to Tier I providers only)	Percentage of track segments with performance restrictions
Facilities: Maintenance and administrative facilities; and passenger stations (buildings) and parking facilities	Percentage of assets with condition rating below 3.0 on FTA TERM Scale

Data Sources

The principal data source is the detailed asset inventory per provider, which is summarized in the Group TAM Plan. This includes detailed information for total of 813 assets, including 752 revenue vehicles, 13 pieces of equipment (including support vehicles), and 48 facilities.

Figure 4 in **Appendix A** summarizes how data are used to calculate the transit asset management measures in a flow chart.

Targets

Targets are set by each transit provider or TAM plan sponsor for each applicable asset class for the coming year. Initial targets were set by January 1, 2017. The targets have been updated every fiscal year thereafter.

FDOT, as the Group TAM plan sponsor, is principally responsible for establishing performance targets applicable to all group plan participants. Table 15 lists the statewide targets for the Group TAM Plan participants:

Table 15. Statewide Targets for Transit Asset Management Performance Measures

Performance Measure	Asset Class	FY2020 Asset Condition	FY2021 Performance Target
Revenue Vehicles % of revenue vehicles met or exceeded ULB	Automobile	28.6%	≤28%
	Bus	17.0%	≤16%
	Cutaway bus	14.1%	≤14%
	School bus	100.0%	≤75%
	Mini-van	26.6%	≤26%
	SUV	18.2%	≤18%
	Van	47.9%	≤47%
Equipment % of equipment or non-revenue vehicles met or exceeded ULB	Non-revenue/service automobile	66.7%	≤66%
	Trucks and other rubber tire vehicles	7.1%	≤7%
Facilities % of assets with condition rating below 3.0 of FTA TERM scale	Passenger/parking facilities	0%	0%
	Administration/ maintenance facilities	0%	≤6%

Justification for Targets

The targets reflect the investment prioritization in the Group TAM Plan and the expectation of changing conditions as specific assets are replaced or upgraded in the following fiscal year. Based on the investment prioritization, vehicles that are rated poor or marginal in the cutaway class and the van class will be prioritized for replacement.

Timeframes/Reporting

TAM Plans

A TAM Plan must be updated in its entirety at least every four years, and it must cover a horizon period of at least four years.

Performance Targets

FDOT will update the statewide performance targets for the participating agencies on an annual basis and will notify the participating transit agencies and the MPOs in which they operate when the targets are updated.

NTD

Each entity developing a TAM Plan must report annually to FTA's National Transit Database (NTD). This submission should include: (1) projected targets for the next fiscal year; (2) condition assessments and performance results; and (3) a narrative report on changes in transit system conditions and the progress toward achieving previous performance targets.

PUBLIC TRANSPORTATION AGENCY SAFETY PLAN FINAL RULE

The Federal Transit Administration's (FTA) Final Rule was published in the Federal Register regarding Public Transportation Agency Safety Plans (PTASP), at 49 CFR Part 673, on July 19, 2018. The Final Rule requires recipients of Urbanized Area Formula Program assistance to develop PTSAPs with processes and procedures for implementing Safety Management Systems (SMS) for all transit operations

The goals of the regulations on PTASPs and the SMS are to drive transit agency collaboration to help better control risk, detect and correct safety problems earlier, share and analyze safety data more effectively, and measure safety performance more precisely. Key requirements of the plans include:

- Adopting Safety Management Systems (SMS) principles and methods;
- Identifying the accountable executive, chief safety officer, and key staff;
- Documenting employee reporting programs;
- Developing a process and timeline to certify and update Public Transportation Agency Safety Plans;
- Establishing safety performance targets based on the measures in the National Public Transportation Safety Plan (NSP); and
- Coordinate Public Transportation Agency Safety Plan elements with other FTA programs and proposed rules, notably the Final Rule regarding Transit Asset Management Plans and state of good repair performance measures and targets.

State DOTs or public transportation agencies are responsible for drafting and certifying a PTASP on behalf of recipients or subrecipients of federal funds that have one hundred (100) or fewer vehicles in peak revenue service and do not operate a rail fixed-guideway public transportation system. However, a smaller agency may notify the state that it will develop and certify its own plan. A transit agency may develop one PTASP for all modes of its service, or it may develop a PTASP for each mode of service that is not subject to safety regulation by another federal entity.

Florida System Safety Program Plans

Florida requires each Section 5307 and/or 5311 transit provider to have an adopted System Safety Program Plan (SSPP) (Chapter 14-90, Florida Administrative Code). The FTA PTASP rule and Florida's SSPP requirements are similar but have some differences. For example, the PTASP rule requires transit providers to establish safety performance targets, while the SSPP does not. Because Section 5307 providers in Florida must already have a SSPP, FDOT recommends that transit agencies revise their existing SSPPs to be compliant with the FTA PTASP requirements. FDOT has issued guidance to providers to assist them with revising existing SSPPs to be compliant with the FTA requirements.[3]

[3] FDOT Public Transportation Agency Safety Plan Guidance Document for Transit Agencies. Available at https://www.fdot.gov/transit/default.shtm

Performance Measures

The PTASP regulation also requires the development of safety performance targets established by measures in the National Public Transportation Safety Plan (NSP)[4]. The measures are based on data currently submitted to the National Transit Database (NTD), and transit providers and state DOTs report this data following the NTD Safety and Security Policy Manual (PM). These measures include:

- Total number of reportable fatalities and rate per total vehicle revenue miles by mode;
- Total number of reportable injuries and rate per total vehicle revenue miles by mode;
- Total number of reportable events and rate per total vehicle revenue miles by mode; and
- Mean distance between major mechanical failures by mode.

The modes to be measured, at a minimum, include rail transit, fixed route bus transit, and demand response modes. Targets also can be developed for each individual service if an agency provides multiple services within the same mode. Transit providers may establish and share additional targets for the purpose of safety performance monitoring and measurement.

Target Setting

Safety performance targets can be established in several different ways, depending on the preference of the transit provider or agency. Providers may select aspirational targets with the intention of improving safety performance, or they may focus on maintaining current safety performance. The FTA recommends setting realistic targets and utilizing historic data to develop them.

For example, using their own NTD data from the previous five years, providers may adopt five-year average total numbers and rates, by mode, as performance targets. This reflects a goal to maintain the current level of safety performance while addressing the new safety requirements. Providers could also select a rate decrease for their targets to model desired improvement over current safety performance, setting targets based on specific percentage reductions for all totals and rates from previous years.

Where sufficient historic data is not existent, either due to lack of historic operation or reduced reporting needs, providers can also utilize peer benchmarking to determine suitable targets. NTD offers data from which transit providers can research historic trends of peer operations of similar size and mode, as well as develop average targets. For transit providers that do not have major mechanical failures due to limited service, average vehicle revenue miles are recommended for the system reliability or the "mean distance between major mechanical failures by mode" target. This reflects a goal to continue current services and mileage without any major mechanical failures.

[4] U.S. Department of Transportation Federal Transit Administration. *National Public Transportation Safety Plan*. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/National%20Public%20Transportation%20Safety%20Plan_1.pdf

Timeframes/Coordination

Transit providers are not required to report any of their performance targets directly to FTA, but targets are to be included in certified safety plans due annually. Safety performance targets will be confirmed by FTA as part of the Triennial Review program. Additionally, penalties for not meeting safety performance targets will not be imposed by the FTA at this time.

Providers must make safety performance targets available to the state and metropolitan planning organizations (MPO) to aid in the planning process. To the maximum extent practicable a transit agency must coordinate with the state and MPOs in the selection of state and MPO safety performance targets.

MPOs are required to set performance targets, per 23 C.F.R. § 450.306, within 180 days after the transit agency communicates their initial established targets. Public transit providers will update the PTASP and establish transit safety targets annually. MPOs are not required to establish transit safety targets annually. Instead, subsequent MPO transit safety targets must be established when the MPO updates its LRTP.

If two or more providers operate in an MPO planning area and establish different safety targets for a measure, the MPO may establish a single target for the MPO planning area or establish a set of targets for the MPO planning area that reflect the differing transit provider targets.

Beginning on July 20, 2021, MPOs are also required to reference transit safety performance targets and agency safety plans in their Transportation Improvement Programs (TIP) and LRTP. This should include a description of their use in assessing performance of the transportation system and the anticipated effect of the TIP toward achieving the performance targets, linking investment priorities to those performance targets.

APPENDIX A

Figure 1: Safety Data Flow Chart

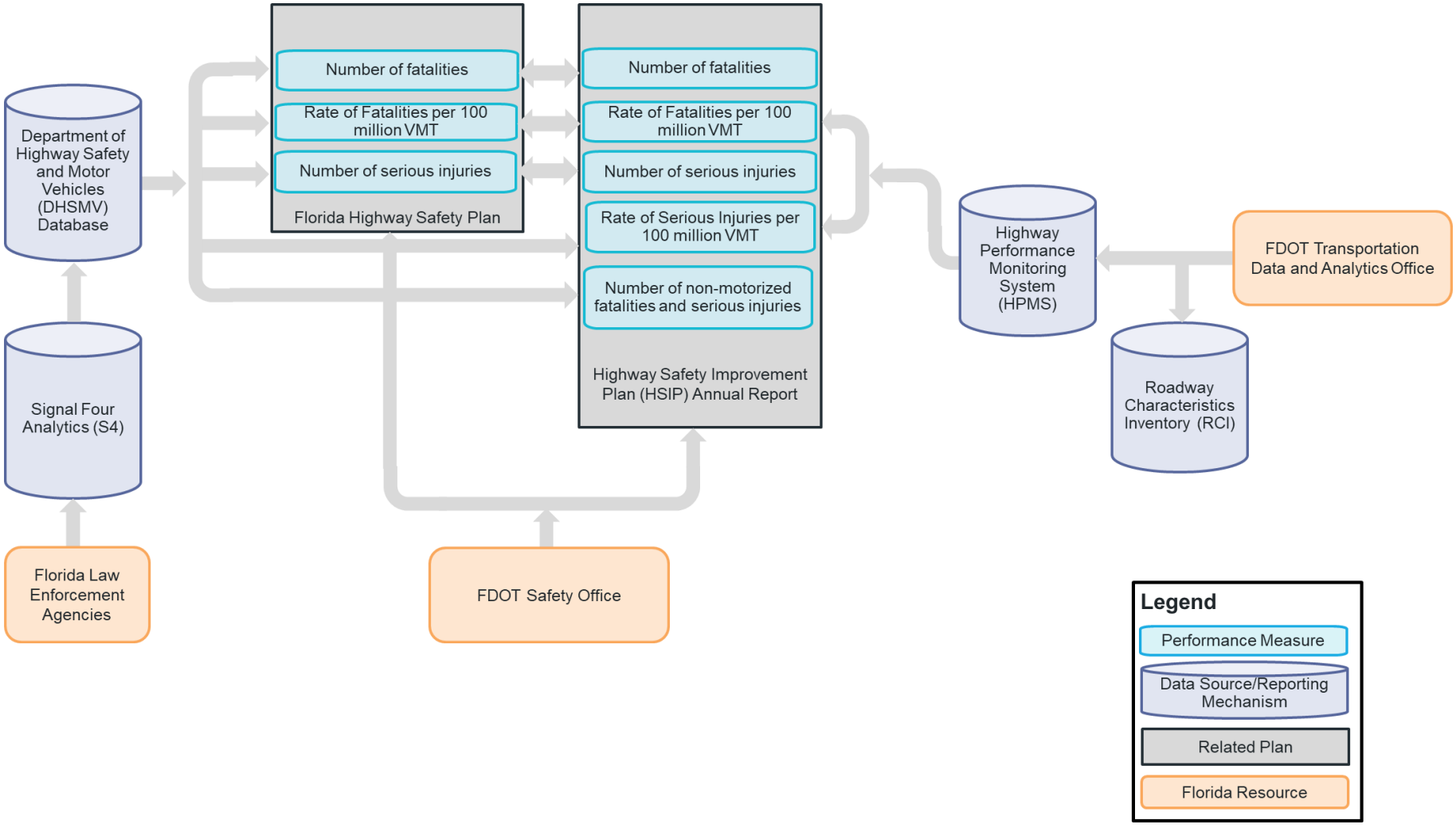


Figure 2: Pavement and Bridge Condition Data Flow Chart

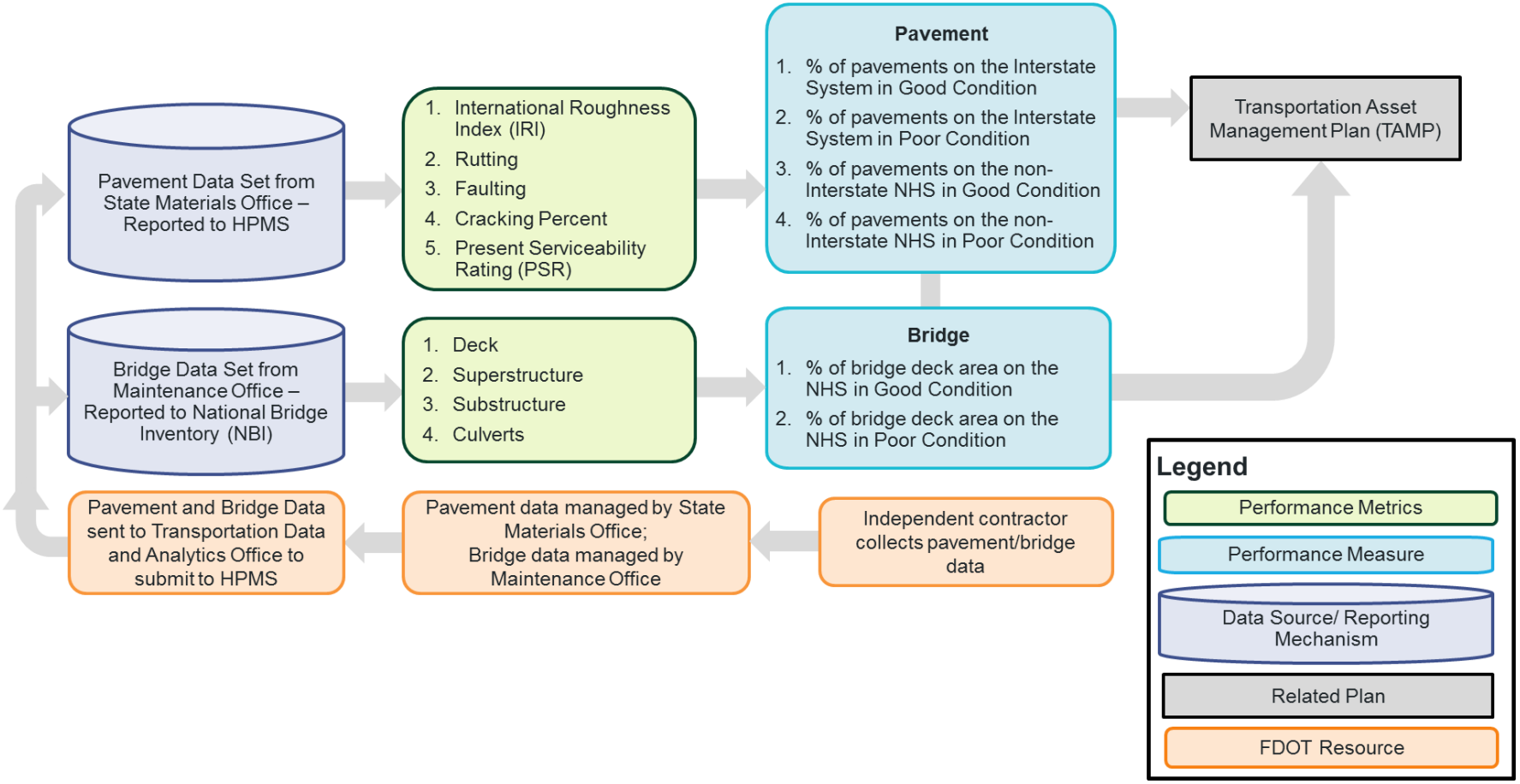


Figure 3: System Performance Data Flow Chart

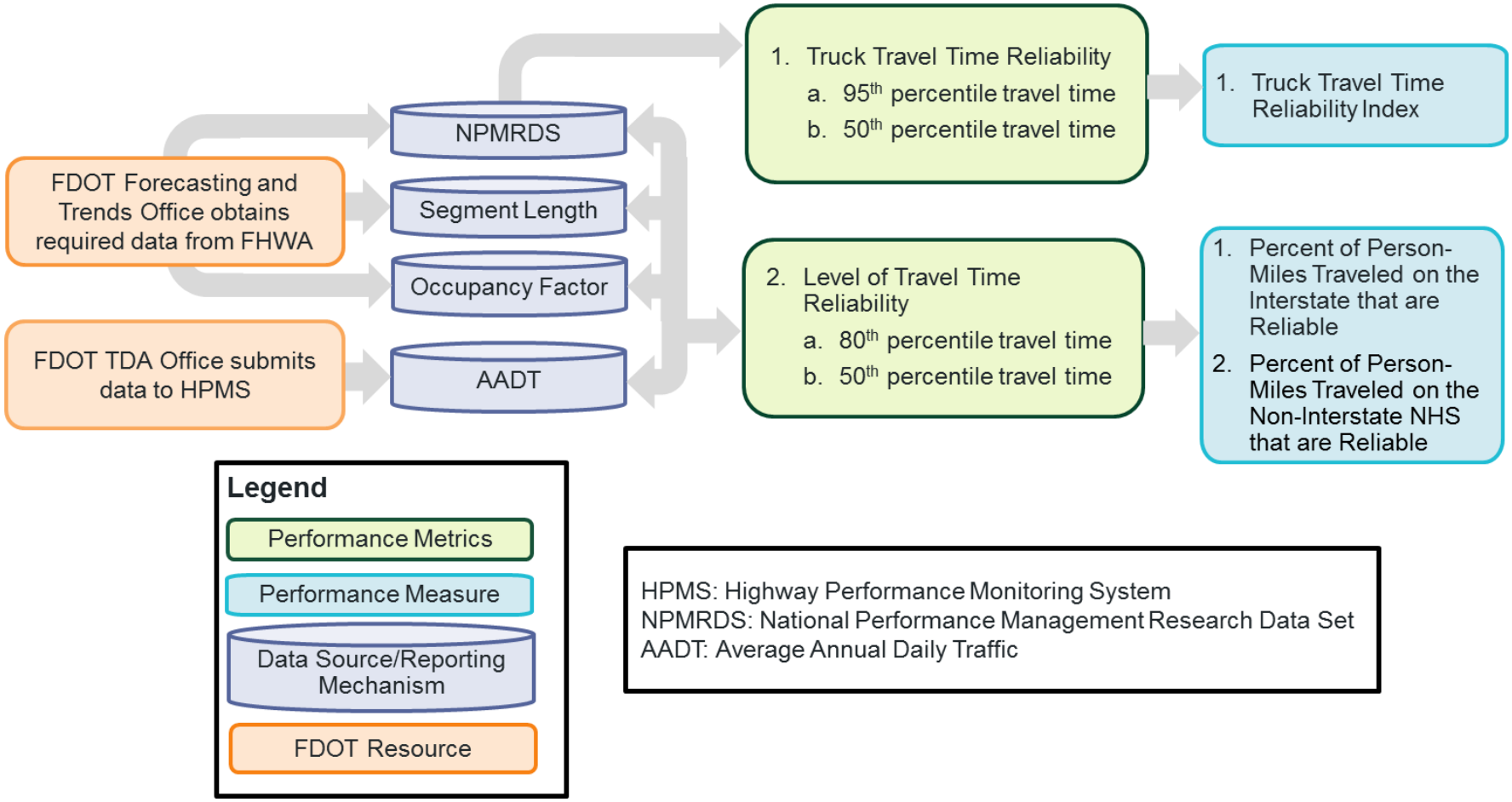


Figure 4: Transit Asset Management Data Flow Chart