

# REGIONAL PERFORMANCE MEASURES SYSTEM PERFORMANCE REPORT 2022



JULY 2022

T22-06

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***REGIONAL PERFORMANCE MEASURES  
SYSTEM PERFORMANCE REPORT  
2022***

**PREPARED BY:**



**JULY 2022**

## REPORT DOCUMENTATION

### TITLE

Regional Performance Measures – System Performance Report 2022

### AUTHOR/PROJECT MANAGER

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### ABSTRACT

The Moving Ahead for Progress in the 21st Century (MAP-21) surface transportation legislation established a performance-and outcome-based program. As part of this program, current legislation requires that States and Metropolitan Planning Organizations (MPOs) prepare and use a set of federally-established performance measures that are tied to the national performance goals. Each MPO must set regional targets in the areas of roadway safety, transit asset management, transit safety, pavement condition, bridge condition, roadway performance, and freight.

Setting HRTPO targets is a collaborative effort. The Transportation Technical Advisory Committee (TTAC) recommends targets for the HRTPO Board to consider. In order to assist the TTAC, the committee formed a Regional Performance Measures Working Group. This Working Group includes staff from localities, transit agencies, VDOT, and subject-matter experts.

This Regional Performance Measures – System Performance Report includes a description of the methodology used to calculate each measure, historical data trends for each of the areas, information on statewide targets, a description of the targets that have been established by the HRTPO, and the progress being made towards meeting the established targets. This report is updated on an annual basis to reflect updated targets as well as progress towards meeting the established targets.

### REPORT DATE

July 2022

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### ACKNOWLEDGMENTS

Prepared in cooperation with the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), and Virginia Department of Transportation (VDOT). The contents of this report reflect the views of the Hampton Roads Transportation Planning Organization (HRTPO). The HRTPO is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the FHWA, VDOT or Hampton Roads Planning District Commission. This report does not constitute a standard, specification, or regulation. FHWA or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

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# INTRODUCTION

The Moving Ahead for Progress in the 21st Century (MAP-21) surface transportation legislation established a performance- and outcome-based program. The Federal Highway Administration (FHWA) defines performance-based planning and programming as a system-level, data-driven process to identify strategies and investments.

A key feature of MAP-21 (and continued under the current federal legislation) is the establishment of national performance goals in the following areas:

- ▶ **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.

As part of this program, federal legislation requires that States and Metropolitan Planning Organizations (MPOs) prepare and use a set of federally-established performance measures that are tied to the national performance goals, as described below.

## MEASURES

States and MPOs must prepare and set targets for the federally-established performance measures in the following table:

Area	Measures
<b>Safety</b>	Fatalities
	Fatality Rate
	Serious Injuries
	Serious Injury Rate
	Bike/Pedestrian Fatalities & Serious Injuries
<b>Transit</b>	Transit Asset Management
	Transit Safety
<b>Bridge Condition</b>	NHS Bridge Deck Area in Good Condition
	NHS Bridge Deck Area in Poor Condition
<b>Pavement Condition</b>	Interstate System Pavement in Good Condition
	Interstate System Pavement in Poor Condition
	Non-Interstate NHS Pavement in Good Condition
	Non-Interstate NHS Pavement in Poor Condition
<b>Roadway Performance</b>	Interstate Travel Time Reliability
	Non-Interstate NHS Travel Time Reliability
<b>Freight</b>	Truck Travel Time Reliability
<b>CMAQ</b>	N/A for attainment areas (Hampton Roads is in attainment of the national ambient air quality standards for all criteria pollutants specified by EPA.)

NHS = National Highway System

# INTRODUCTION

## TARGET SETTING PROCESS

Each MPO must set targets for each of the measures shown on the previous page. These performance measures and targets must be reported based on the MPO's Metropolitan Planning Area (MPA). The Hampton Roads MPA (shown to the right) is comprised of 15 localities including all of Chesapeake, Hampton, Isle of Wight County, James City County, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg, and York County, and portions of Franklin, Gloucester County, and Southampton County.

For target setting, the MPO may:

- ▶ Adopt the statewide targets, but report metrics specific to the MPA
- ▶ Select unique, MPO specific targets, and report metrics specific to the MPA
- ▶ Use a combination of statewide and unique targets

Each MPO must establish its targets within 180 days of the date that the state established its targets. The initial MPO roadway safety targets needed to be established by February 27, 2018, and initial targets in transit asset management were due by October 1, 2018. Initial targets in the areas of bridge condition, pavement condition, roadway performance, and freight needed to be established by each MPO by November 14, 2018. Finally, the initial transit safety targets needed to be established by each MPO by January 20, 2021.

## HAMPTON ROADS METROPOLITAN PLANNING AREA



For roadway safety, transit asset management, and transit safety, targets are established for a one-year time horizon and must be set on an annual basis. For bridge condition, pavement condition, roadway performance and freight measures, MPO targets are established for a four-year time horizon, whereas states must establish both two-year and four-year targets. States may adjust their four-year targets at the midway point (after two years). If the state elects to make an adjustment and the MPO adopted the statewide targets, the MPO has the option to adopt the adjusted statewide target or to commit to a new, unique MPO-specific target within 180 days.

# INTRODUCTION

If an MPO establishes its own unique four-year targets, the MPO may adjust its target at the midway point in a manner that is collectively developed, documented, and mutually agreed upon by the State DOT and MPO. This is allowable regardless of whether the state adjusted its four-year targets or not.

There are no “penalties” for MPOs for not meeting their performance targets, although it can be addressed during the MPO’s quadrennial certification review to ensure adequate performance-based planning efforts.

Setting the initial and subsequent HRTPO targets was a collaborative effort. The Transportation Technical Advisory Committee (TTAC) – which is comprised of staff from Hampton Roads localities and stakeholders – recommended targets for the HRTPO Board to consider. In order to assist the TTAC, the committee formed a Regional Performance Measures Working Group. This group includes staff from localities, transit agencies, VDOT, and subject-matter experts.

The HRTPO Board established initial targets throughout 2018. Subsequent annual safety and transit asset management targets were established by the Board during the winter of each year between 2019 and 2022. In addition to safety and transit asset management targets, transit safety targets were approved by the Board in 2021 and 2022.

While statewide targets are reported to the Federal Highway Administration (FHWA), targets established by MPOs are reported to the state. HRTPO has reported transit targets to the Virginia Department of Rail and Public Transportation (DRPT) and the remaining targets to the Virginia Department of Transportation (VDOT).

## **INCORPORATING TARGETS INTO THE PLANNING PROCESS**

MAP-21 and the FAST Act also require that MPOs include these performance measures and targets and report on progress in planning documents such as the Long-Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).

The LRTP is a comprehensive and multimodal transportation blueprint that identifies and plans for critically important transportation improvements that not only meet the transportation goals of the HRTPO but also impact the region’s economic vitality and every citizen’s quality of life. The LRTP – which must encompass a minimum of a 20-year time horizon – contains a list of transportation projects that are expected to be constructed based on the anticipated funding available during the time horizon. The Hampton Roads 2045 Long-Range Transportation Plan was approved by the HRTPO Board in July 2021.

The LRTP is required to include a description of the federally-mandated performance measures and targets used in assessing the performance of the transportation system. The LRTP shall also include a system performance report evaluating the condition and performance of the transportation system including progress achieved by the MPO towards meeting the performance targets, and this annual System Performance Report was created to satisfy this requirement. Also, MPOs that elect to conduct scenario planning (as HRTPO has for the 2045 LRTP) shall describe how the preferred scenario will improve the performance of the system.

# INTRODUCTION

Transportation Improvement Programs are federally-mandated, regional documents that identify the programming of transportation funds over a four-year period. It lists all projects for which federal funds are anticipated, along with non-federally funded projects that are determined to be regionally significant. For performance measures and targets, TIPs shall include a description of the anticipated effect of the TIP toward achieving the performance targets identified by the MPO. The TIP must also link investment priorities to the achievement of performance targets in the plans.

The HRTPO TIP and LRTP have been updated to include information on the program's impact on each of these areas. Updates were made to the TIP in May 2018 for roadway safety, October 2018 for transit asset management, May 2019 for all of the other target areas, and February 2020, 2021, and 2022 for updates to safety and transit. The 2040 LRTP was updated via an administrative modification for the roadway safety measures in May 2018, transit asset management in October 2018, and the remaining categories in March 2020. The 2045 LRTP also includes information on all of the updated measures and targets.

In addition, the metropolitan transportation planning agreement between the MPO, the State, and regional public transportation providers (commonly referred to as the 3-C agreement) was updated in September 2018 to include an article on Performance-Based Metropolitan Planning Process responsibilities. The updated agreement – which details each party's responsibilities in terms of performance-based planning – is available at <https://www.hrtpo.org/page/metropolitan-planning-agreement>.

## WEBSITE

In addition to this document, the HRTPO also maintains a Regional Performance Measures and Targets website. This site includes information on each of these performance measures as well as the basis for selecting each regional target. Progress toward meeting targets is also detailed on the site. The HRTPO Regional Performance Measures and Targets website is <https://www.hrtpo.org/page/regional-performance-measures-and-targets>.



# ROADWAY SAFETY

## MEASURES

- ▶ **Number of Fatalities**
- ▶ **Fatality Rate**
- ▶ **Number of Serious Injuries**
- ▶ **Serious Injury Rate**
- ▶ **Number of Non-Motorized Fatalities & Serious Injuries Combined**

## METHODOLOGY

This measure examines the safety of the regional roadway system in terms of the total number and rate of fatalities and serious injuries. In addition, bicyclist and pedestrian (non-motorized) fatalities and serious injuries are analyzed. These measures and targets cover all public roadways regardless of ownership or functional classification and help support the Highway Safety Improvement Program (HSIP), which is a Federal program that aims to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

The number of fatalities throughout the Metropolitan Planning Area (MPA) must be determined on an annual basis using data from USDOT's Fatality Analysis Reporting System (FARS) database. The FARS database contains a description and more than 100 coded data elements of each reported fatal crash throughout the country. A crash must involve a motor vehicle traveling on a roadway that is generally open to the public and must result in the death of a person (either an occupant of a vehicle or a non-motorist) within 30 days of the crash to be included in the FARS database.

In order to determine the annual number of serious injuries within the MPA, data collected and prepared by VDOT is used. Serious injuries are generally defined as incapacitating injuries that can include skull fractures, internal injuries, broken or distorted limbs, unconsciousness, severe lacerations, severe burns, and other injuries that render the person unable to leave the scene without assistance. Law enforcement frequently uses the "KABCO" scale for classifying injuries resulting from crashes, and fatalities and serious injuries are defined as the "K" and "A" on this KABCO scale. (The other classifications in the KABCO scale include "B" for minor but visible injuries, "C" for nonvisible injuries, and "O" for other crashes that do not include an injury.)

In addition to the total number of fatalities and serious injuries in each region, MPOs must measure and establish targets in the rate of fatalities and serious injuries. This rate is based on the number of fatalities and serious injuries that occur per 100 million vehicle-miles of travel.

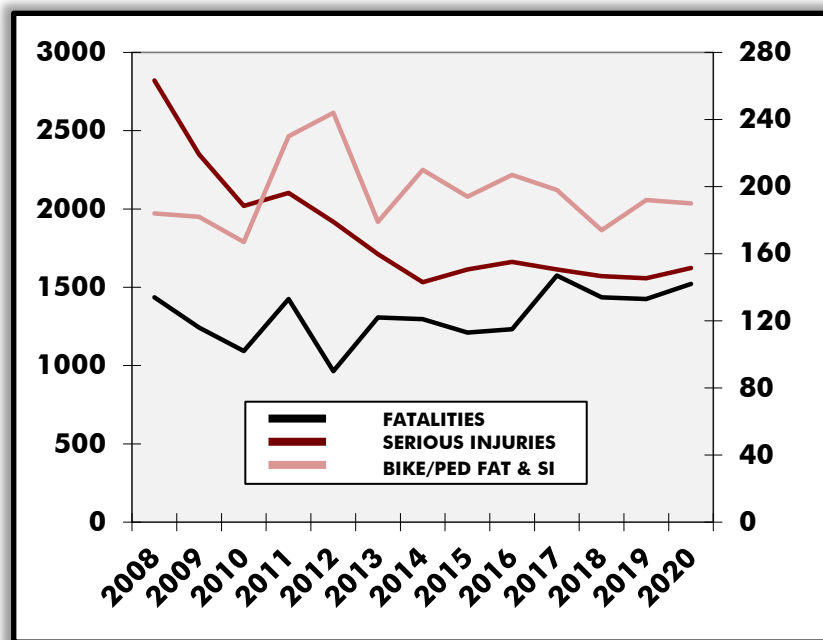
Finally, there is a fifth roadway safety measure related to the safety of non-motorists. MPOs must measure and set targets for the annual number of bicyclist and pedestrian fatalities and serious injuries within the MPA. This combined number is produced using FARS data for non-motorized fatalities and VDOT data for non-motorized serious injuries. The number should include all pedestrians, bicyclists, other cyclists, and persons on personal conveyances killed or seriously injured throughout the region in the calendar year.

# ROADWAY SAFETY

## CURRENT/HISTORICAL CONDITIONS

The following chart shows the number of fatalities, serious injuries, and the combined bike and pedestrian crashes and serious injuries in Hampton Roads between 2008 and 2020. This was the data that was used to assist with determining the regional 2022 targets.

### **FATALITIES, SERIOUS INJURIES, AND BIKE/PEDESTRIAN FATALITIES & SERIOUS INJURIES IN HAMPTON ROADS (2008-2020)**



## STATEWIDE 2022 TARGETS

► Number of Fatalities	861
► Fatality Rate per 100M VMT	0.995
► Number of Serious Injuries	6,901
► Serious Injury Rate per 100M VMT	7.971
► Number of Combined Bicyclist & Pedestrian Fatalities & Serious Injuries	646

The statewide 2018 safety targets established by the Commonwealth Transportation board (CTB) were based on the targets included in the [Virginia 2017-2021 Strategic Highway Safety Plan](#). These targets included a 2% annual decrease in fatalities, 5% decrease in serious injuries, and a 4% decrease in the number of bicyclist and pedestrian fatalities and serious injuries combined.

A different methodology was used to determine the 2019 statewide targets. Rather than using percent reduction targets, the state based their 2019 targets on annual trend lines to account for the reality that the number of fatalities throughout Virginia was increasing and the number of serious injuries was no longer decreasing.

The 2020, 2021, and 2022 statewide targets were also determined using a different methodology. These statewide targets were based on predictive models that take into account a number of external factors related to the amount of roadway travel, economic influences, and changing driver behavior. These model predictions were adjusted to account for the anticipated reduction in crashes due to the completion of roadway safety and capacity projects.

# ROADWAY SAFETY

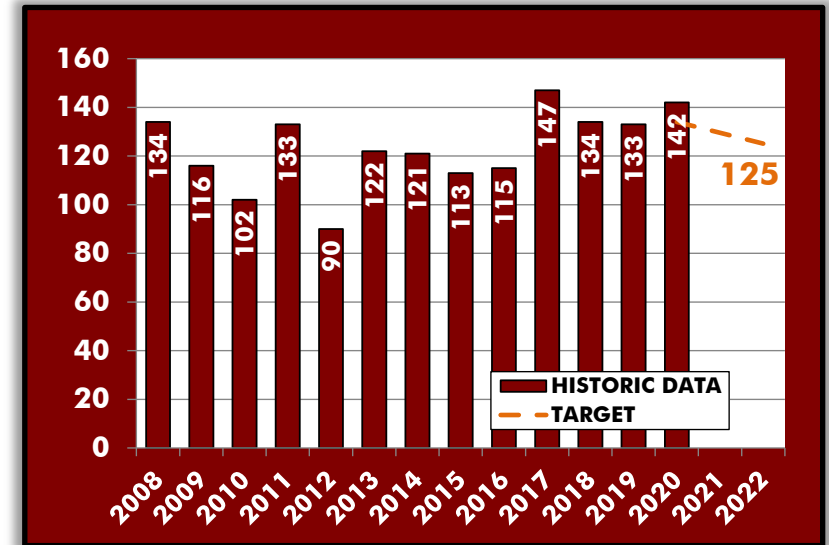
## HRTPO 2022 TARGETS

HRTPO has established one-year roadway safety targets each year since 2018. The most recent one-year (2022) roadway safety targets that the HRTPO has established are shown below.

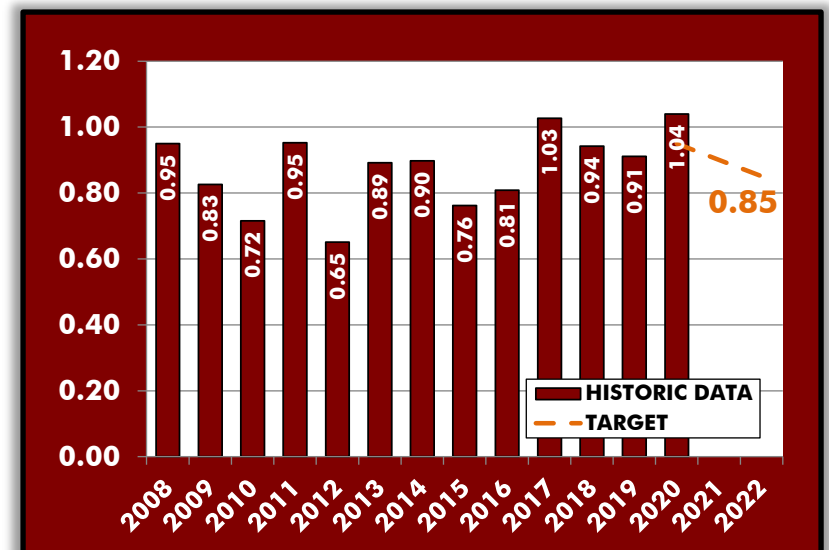
**Each of these safety targets is based on the Vision Zero concept**, where the number of fatalities, serious injuries, and non-motorized fatalities and serious injuries is reduced by a set amount each year to reach a goal of zero by 2050, the horizon of the upcoming regional Long-Range Transportation Plan. A 6.8% annual increase in vehicle-miles of travel was assumed for the fatality and serious injury rates, which is equal to the rate assumed in statewide targets due to the recovery from the pandemic. More information on the Vision Zero concept is available at <https://visionzeronetwork.org>.

► Number of Fatalities	<b>125</b>
► Fatality Rate (per 100 MVMT)	<b>0.85</b>
► Number of Serious Injuries	<b>1,498</b>
► Serious Injury Rate (per 100 MVMT)	<b>10.19</b>
► Number of Non-Motorized Fatalities and Serious Injuries Combined	<b>179</b>

## NUMBER OF FATALITIES



## FATALITY RATE (PER 100 MILLION VMT)



# ROADWAY SAFETY

## PROGRESS TOWARDS ACHIEVING TARGETS

HRTPO has established one-year safety targets each year between 2018 and 2022. Each of these one-year regional targets is shown below. Information on whether Hampton Roads achieved its 2020 safety targets based on the 2020 data is also detailed for each of the five safety measures below:

### ► Number of Fatalities

Targets – 102 ('18), 137 ('19), **124 ('20)**, 123 ('21), 125 ('22)

**MISSING TARGET**

There were 142 fatalities in Hampton Roads in 2020, which is higher than the HRTPO's established target of 124. This level of fatalities would also miss the targets set for 2021 and 2022.

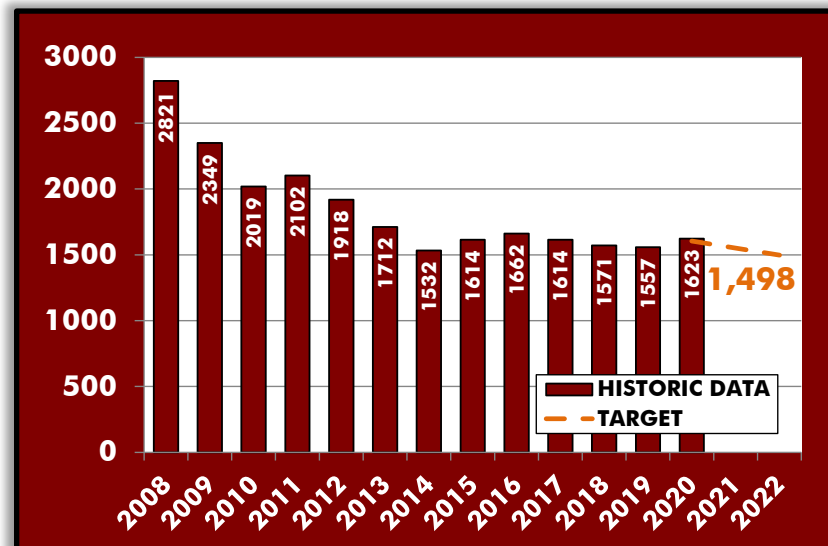
### ► Fatality Rate (per 100 million VMT)

Targets – 0.69 ('18), 0.93 ('19), **0.84 ('20)**, 0.82 ('21), 0.85 ('22)

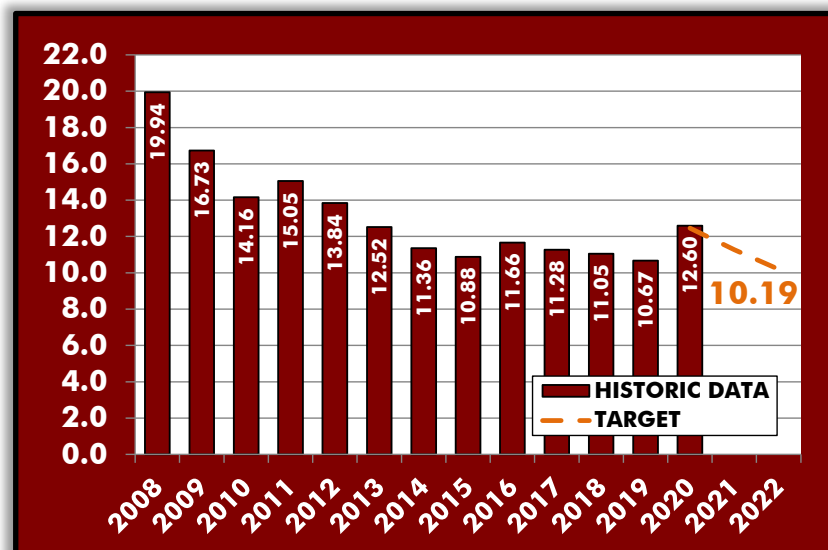
**MISSING TARGET**

The fatality rate in Hampton Roads was 1.04 in 2020, which exceeds the HRTPO's established target of 0.84 fatalities per 100 million VMT. This rate would also exceed the targets established for 2021 and 2022.

## NUMBER OF SERIOUS INJURIES



## SERIOUS INJURY RATE (PER 100M VMT)



# ROADWAY SAFETY

## PROGRESS TOWARDS ACHIEVING TARGETS (continued)

### ► Number of Serious Injuries

Targets – 1,522 ('18), 1,522 ('19), **1,448 ('20)**, 1,433 ('21), 1,498 ('22)

**MISSING TARGET**

There were 1,623 serious injuries in Hampton Roads in 2020, which is above the HRTPO's established target of 1,448. This number of serious injuries also exceeds the targets established for 2021 and 2022.

### ► Serious Injury Rate (per 100 million VMT)

Targets – 10.39 ('18), 10.32 ('19), **9.85 ('20)**, 9.61 ('21), 10.19 ('22)

**MISSING TARGET**

The serious injury rate in Hampton Roads was 12.60 in 2020, which is above the HRTPO's established target of 9.85 serious injuries per 100 million VMT. This rate also exceeds the targets established for 2021 and 2022.

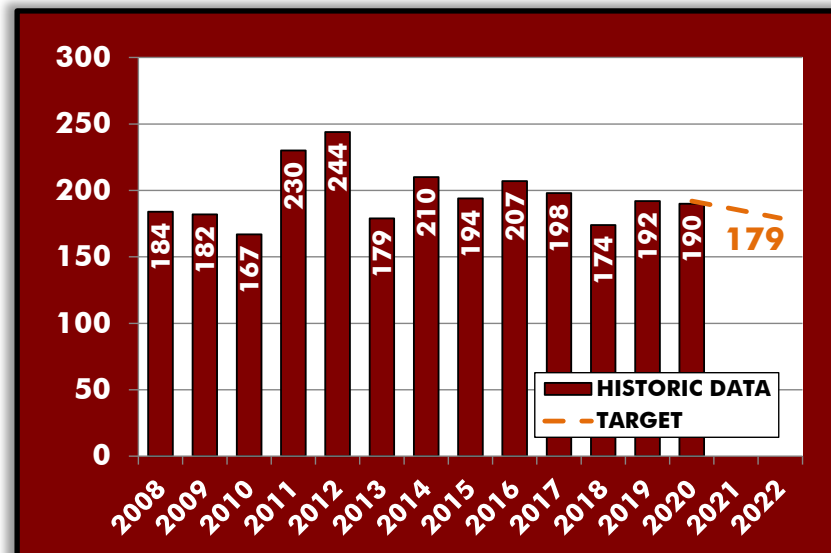
### ► Number of Non-Motorized Fatalities and Serious Injuries

Targets – 193 ('18), 194 ('19), **163 ('20)**, 175 ('21), 179 ('22)

**MISSING TARGET**

There were 190 non-motorized fatalities and serious injuries combined in Hampton Roads in 2020, which exceeds the HRTPO's established target for 2020 of 163. This number of fatalities and serious injuries would also miss the targets established for the years 2021 and 2022.

## NUMBER OF NON-MOTORIZED FATALITIES AND SERIOUS INJURIES COMBINED



In order to improve roadway safety throughout the state, VDOT has undertaken systemic improvements throughout the state such as installing rumble strips and reflective signal backplates, and DMV has allocated additional funding for educational and enforcement safety improvements. In addition, additional funding in the Infrastructure Investment and Jobs Act (IIJA) will be available in Virginia for roadway safety improvements over a five-year period.

# BRIDGE CONDITION

## MEASURES

- ▶ **Percentage of National Highway System (NHS) Bridge Deck Area in Good Condition**
- ▶ **Percentage of National Highway System (NHS) Bridge Deck Area in Poor Condition**

## METHODOLOGY

This measure examines the condition of bridges on the National Highway System (NHS) – including on- and off-ramps connected to the NHS – on a regional basis. In order to be included, each bridge must meet National Bridge Inventory (NBI) standards. These standards include:

- The structure must be located on roadways open to the general public. Bridges located within the security perimeter of military bases and other secure federal facilities are not included.
- The bridge must carry a roadway. Structures that carry only railroad or pedestrian traffic are not included.
- The bridge must be more than 20 feet in length. Culverts are included, as long as the opening in the culvert is more than 20 feet in length.

Bridges are inspected on a regular basis. During these inspections, bridge inspectors rate the condition of the bridge's deck (the driving surface), superstructure (the structural members such as beams and girders), and substructure (the piers, abutments, piles, footings, and other components of the bridge's foundation).

Each of these three components is rated by the bridge inspector from 0 to 9, with 9 representing a component in excellent condition and 0 representing a failed condition or a closed bridge. For culverts, a single rating is given in place of the deck, superstructure, and substructure ratings to assess the general condition of the entire culvert.

Bridges are classified as being in good, fair, or poor condition based on **the lowest of the condition ratings** of the bridge's deck, superstructure, and substructure. For culverts, the classification is based on the culvert condition rating. These classification thresholds are shown in the table below.

Condition Rating Thresholds for Classification				
NBI Rating Scale (from 0 – 9)		9 8 7	6 5	4 3 2 1 0
		Good	Fair	Poor
Bridge	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

# BRIDGE CONDITION

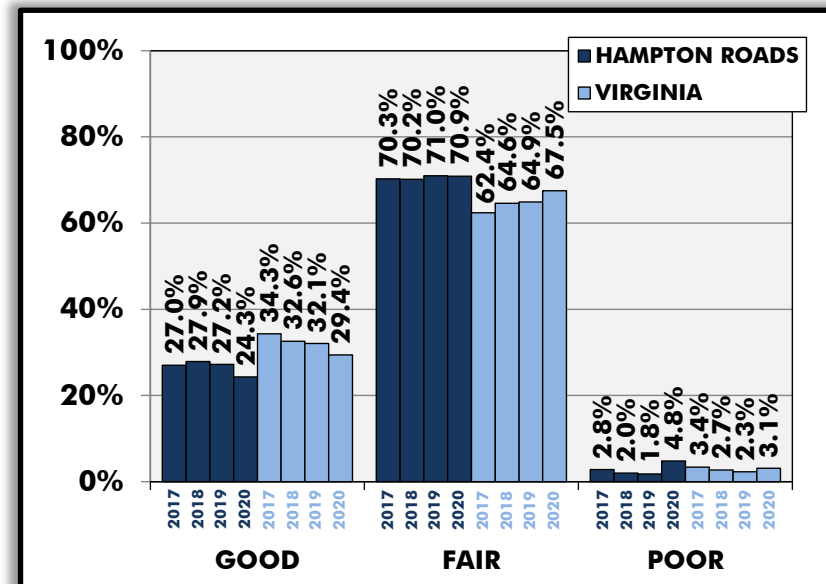
For example, if a structure has a deck condition rated as a 7, a superstructure condition rated as a 4, and a substructure condition rated as a 5, then the structure is classified as being in poor condition based on the lowest condition rating of 4.

After each NBI bridge on the NHS is classified as being in good, fair, or poor condition, the deck area of each bridge is calculated by multiplying the full width of the bridge by the bridge's length. The total deck area of each good bridge, fair bridge, and poor bridge throughout the region is summed together, and then divided by the total deck area of all NBI bridges on the NHS in the entire region. This produces a total regional percentage of bridges that are in good condition, fair condition, and poor condition. The regional percentages of NBI bridge deck area in good and poor condition on the NHS are tracked for regional targets.

## CURRENT/HISTORICAL CONDITIONS

The following chart shows the percentage of NHS Bridge Deck Area in Good, Fair, and Poor condition in Hampton Roads and throughout Virginia in 2017, 2018, 2019, and 2020:

**PERCENTAGE OF NHS BRIDGE DECK AREA  
IN HAMPTON ROADS AND VIRGINIA  
BY CONDITION (2017 - 2020)**



# BRIDGE CONDITION

## STATEWIDE 4-YEAR TARGETS (2018-2021)

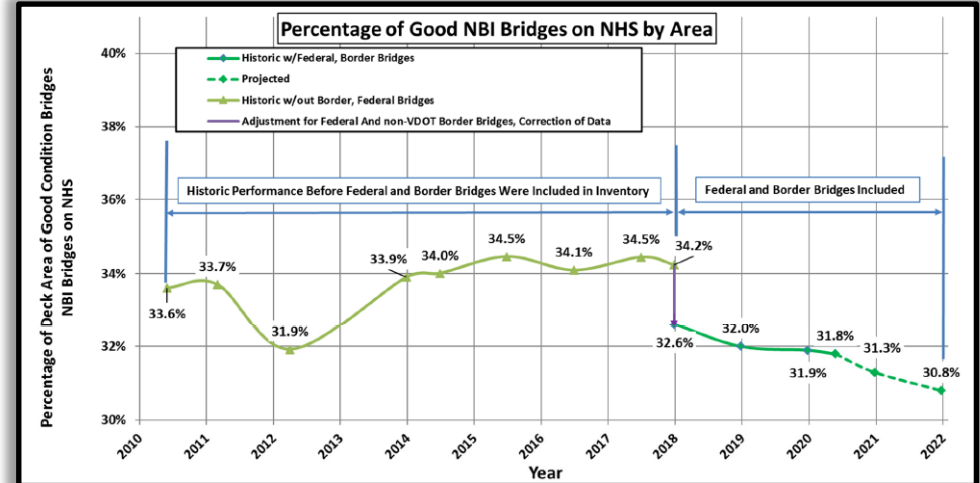
- ▶ **Percentage of NHS Bridge Deck Area in Good Condition** > 30.5%
- ▶ **Percentage of NHS Bridge Deck Area in Poor Condition** < 3.0%

The statewide four-year targets established by the Commonwealth Transportation Board (CTB) are based on VDOT projections of bridge conditions assuming continued optimal use of maintenance funds. These statewide projections produced by VDOT are shown in the figures to the right.

The original statewide target set by the CTB for the percentage of NHS Bridge Deck Area in good condition was 33.5%. This target was set using original statewide bridge condition projections as of 2017. However, the baseline condition data used to set the target for bridges in good condition was too high due to not including all border and federally-owned bridges and other data inconsistency issues. In addition, most of the programmed bridge rehabilitation and replacement projects have been for structures on non-NHS routes, which are not reflected in the statewide targets.

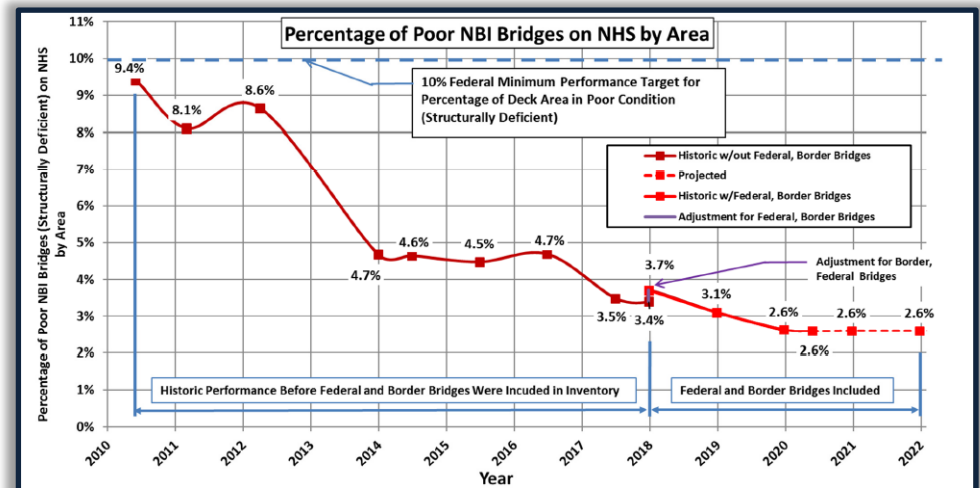
Based on this, the CTB adjusted the target for NHS Bridge Deck Area in good condition from 33.5% to 30.5% during the mid-term adjustment period in 2020.

## STATEWIDE PROJECTED PERCENTAGE OF BRIDGES IN GOOD CONDITION



Source: VDOT

## STATEWIDE PROJECTED PERCENTAGE OF BRIDGES IN POOR CONDITION



Source: VDOT

# BRIDGE CONDITION

## HRTPO 4-YEAR TARGETS (2018-2021)

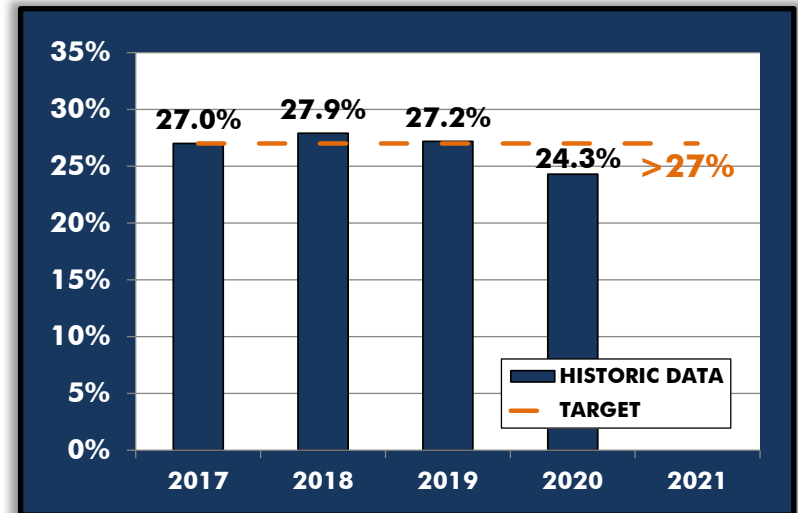
The HRTPO originally established four-year targets of greater than 20% of NHS Bridge Deck Area being in Good Condition, and less than 3% of NHS Bridge Deck Area being in Poor Condition. However, the HRTPO Board adjusted the NHS Bridge Deck Area being in Good Condition target to 27% during the mid-term adjustment period.

**The percentage of NHS bridge deck area in poor condition target matches the statewide target established by the CTB.** However, the regional target that was established for NHS bridge deck area in good condition is based on maintaining the current percentage of bridges in Hampton Roads that are classified in good condition. This target was chosen because the statewide percentage of NHS bridge deck area in good condition (34% in the original 2017 data) was much higher than the percentage in Hampton Roads (20% in the original 2017 data), and the state target for bridges in good condition was considered too optimistic for Hampton Roads to achieve.

However, the original 2017 data that was used to produce the regional target – based on maintaining the current percentage – indicated that 20% of the NHS bridge deck area in Hampton Roads was classified in good condition. However, updated data from VDOT indicates that the percentage of bridge deck area in good condition should have been 27% in 2017, not 20%. Based on this, the HRTPO adjusted the target to 27% during the mid-term adjustment period.

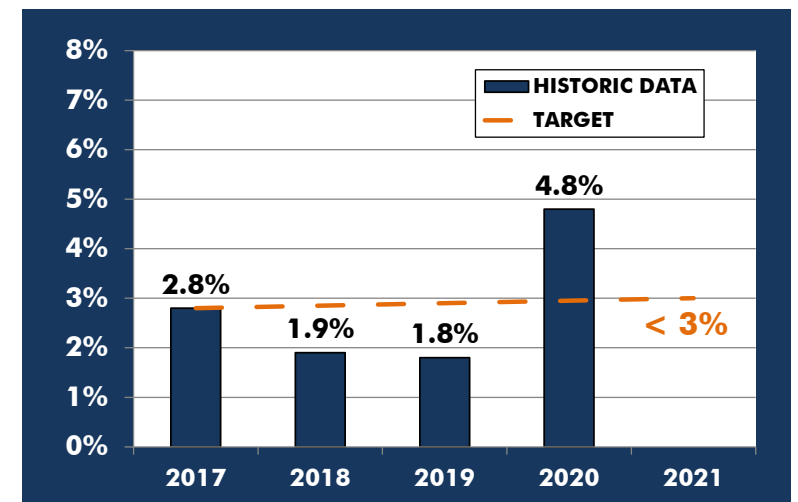
- ▶ **Percentage of NHS Bridge Deck Area in Good Condition** **> 27%**
- ▶ **Percentage of NHS Bridge Deck Area in Poor Condition** **< 3%**

## PERCENTAGE OF NHS BRIDGE DECK AREA IN HAMPTON ROADS IN GOOD CONDITION\*



\* - The 2021 target was changed from 20% to 27% by the HRTPO Board.

## PERCENTAGE OF NHS BRIDGE DECK AREA IN HAMPTON ROADS IN POOR CONDITION



# BRIDGE CONDITION

## PROGRESS TOWARDS ACHIEVING TARGETS

Hampton Roads is missing the level needed to reach the 2021 target in both bridge condition measures as of 2020. More details on progress towards achieving targets for each of the bridge condition measures is shown below:

► **Percentage of NHS Bridge Deck Area in Good Condition**

**MISSING TARGET**

At 24.3% as of 2020, this is below the 27.0% level that would be necessary to be on pace to meet the 2021 regional target.

► **Percentage of NHS Bridge Deck Area in Poor Condition**

**MISSING TARGET**

At 4.8% as of 2020, this is above the 2.9% level that would be necessary to be on pace to meet the 2021 regional target.

In order to improve the condition of bridges throughout the state, VDOT and the CTB have modified the investment strategy for a more balanced approach. VDOT is allocating more funding to rehabilitating bridges before they degrade into poor condition, and a special Structures fund was created to fund maintenance for major bridges such as the bridge-tunnels in the region. In addition, additional funding in the IIJA (approximately \$536 million) will be available in Virginia for bridge repair and replacement over a five-year period.

# PAVEMENT CONDITION

## MEASURES

- ▶ **Percentage of Interstate System Pavement in Good Condition**
- ▶ **Percentage of Interstate System Pavement in Poor Condition**
- ▶ **Percentage of Non-Interstate NHS Pavement in Good Condition**
- ▶ **Percentage of Non-Interstate NHS Pavement in Poor Condition**

## METHODOLOGY

This measure examines the condition of roadway pavement on the National Highway System (NHS). The percentage of the region's Interstate system and Non-Interstate NHS pavement in both good and poor condition is analyzed. This measure only includes through travel lanes; ramps, shoulders, turn lanes, crossovers, etc. are not included in this analysis.

Pavement condition data is collected annually by VDOT on every mile of the NHS throughout the state, regardless of roadway ownership. In the Hampton Roads Metropolitan Planning Area (MPA), there are over 500 miles (and over 2,400 lane-miles) of roadway included on the NHS. Information on VDOT's pavement data collection process is available at [http://www.virginiadot.org/info/state\\_of\\_the\\_pavement.asp](http://www.virginiadot.org/info/state_of_the_pavement.asp).

The following metrics are used in determining the pavement condition of each NHS roadway:

- International Roughness Index (IRI) – IRI is used to determine the ride quality based on the smoothness of pavement. It is measured in inches per mile of roadway.
- Rutting and Faulting – Rutting is a surface depression in the wheel path of asphalt roadways, and faulting is the difference in elevation across joints or cracks in jointed concrete.
- Cracking – Cracking measures the percentage of roadway surface area where cracks are present.
- Present Serviceability Rating (PSR) – If the posted speed limit is less than 40 mph, the PSR can be used in place of the metrics above to determine the condition of the pavement.

Each of these aspects of each NHS roadway segment's pavement is rated as good, fair, or poor. These ratings are assigned based on the table below.

	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)
PSR	PSR ≥ 4.0	2.0 ≤ PSR ≤ 4.0	PSR ≤ 2.0

# PAVEMENT CONDITION

For roadways with a posted speed limit below 40 mph, the PSR can be used for determining the overall condition of the pavement. Otherwise, the overall condition of each section of NHS roadway is determined based on the pavement type and the appropriate metrics described previously. As shown in the figure to the right, for a section to be in good condition, all of the appropriate metrics must be rated as good. Roadway sections are determined to be in poor condition if two of the three metrics (IRI, cracking, and rutting/faulting) are rated poor for asphalt and jointed concrete, or both metrics (IRI and cracking) are rated poor for continuous concrete.

On a statewide level, no more than 5% of the Interstate system can be in poor condition. If this minimum threshold is not met, the state is required to obligate a specified percentage of its National Highway Performance Program (NHPP) and Surface Transportation Program (STP) funds to improve Interstate pavement condition. There is no similar penalty for the Non-Interstate NHS.

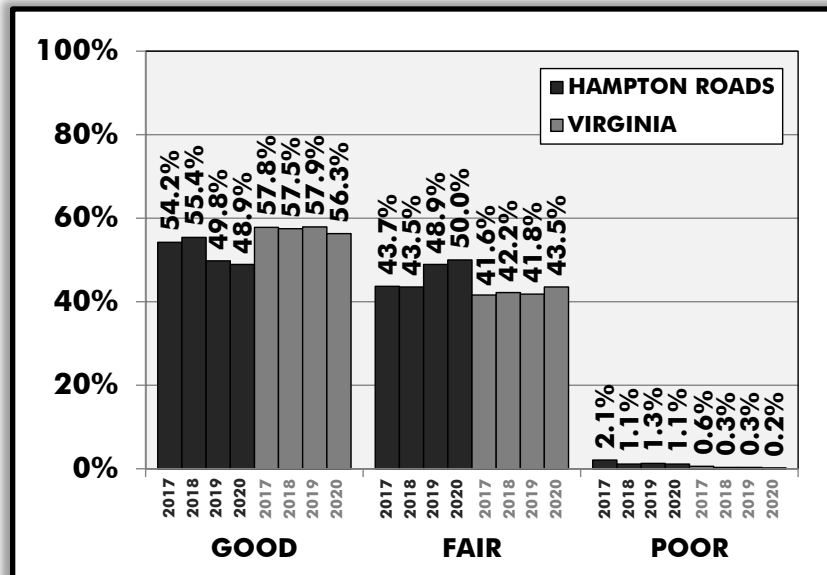
	Pavement Type		
	Asphalt and Jointed Concrete	Continuous Concrete	
Overall Section Condition Rating	3 metric ratings (IRI, cracking and rutting/faulting)	2 metric ratings (IRI and cracking)	Measures
Good	All three metrics rated "Good"	Both metrics rated "Good"	→ percentage of lane-miles in "Good" condition
Poor	≥ 2 metrics rated "Poor"	Both metrics rated "Poor"	→ percentage of lane-miles in "Poor" condition
Fair	All other combinations	All other combinations	

# PAVEMENT CONDITION

## CURRENT/HISTORICAL CONDITIONS

The following charts show the percentage of Interstate and Non-Interstate NHS pavement in good, fair, and poor condition in Hampton Roads and throughout Virginia for 2017, 2018, 2019, and 2020.

**PERCENTAGE OF PAVEMENT IN HAMPTON ROADS AND VIRGINIA BY CONDITION INTERSTATE (2017 - 2020)**

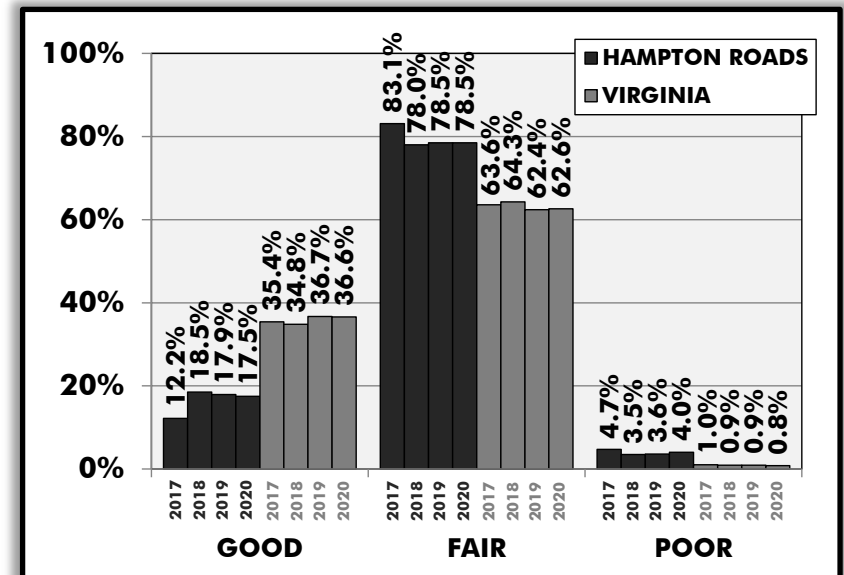


## STATEWIDE 4-YEAR TARGETS (2018-2021)

- ▶ **Percentage of Interstate System Pavement in Good Condition** > 45%
- ▶ **Percentage of Interstate System Pavement in Poor Condition** < 3%
- ▶ **Percentage of Non-Interstate NHS Pavement in Good Condition** > 25%
- ▶ **Percentage of Non-Interstate NHS Pavement in Poor Condition** < 5%

The statewide four-year targets established by the Commonwealth Transportation Board (CTB) are based on VDOT projections of pavement conditions assuming optimal use of maintenance funds.

**PERCENTAGE OF PAVEMENT IN HAMPTON ROADS AND VIRGINIA BY CONDITION NON-INTERSTATE NHS (2017 - 2020)**



# PAVEMENT CONDITION

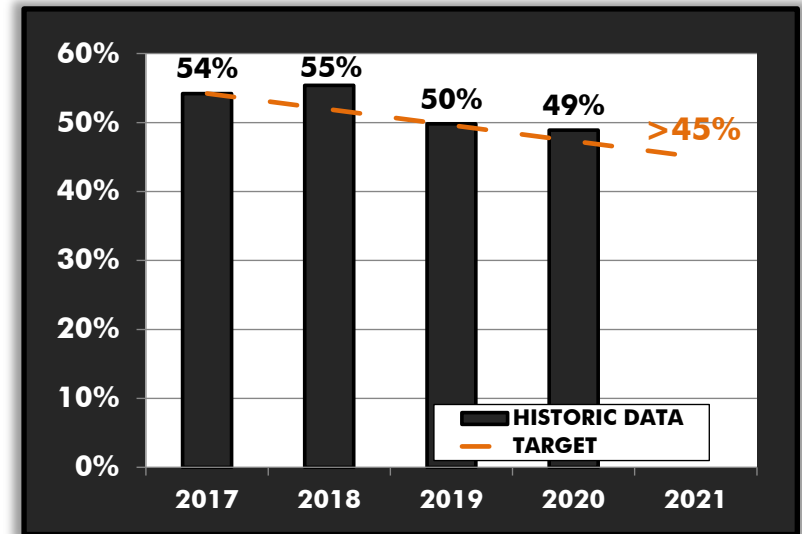
## HRTPO 4-YEAR TARGETS (2018-2021)

The HRTPO established four-year targets of greater than 45% of Interstate pavement condition being in good condition, less than 3% of Interstate pavement condition being in poor condition, greater than 25% of Non-Interstate NHS pavement condition being in good condition, and less than 5% of Non-Interstate NHS pavement condition being in poor condition. **All of these percentages match the statewide targets established by the CTB.**

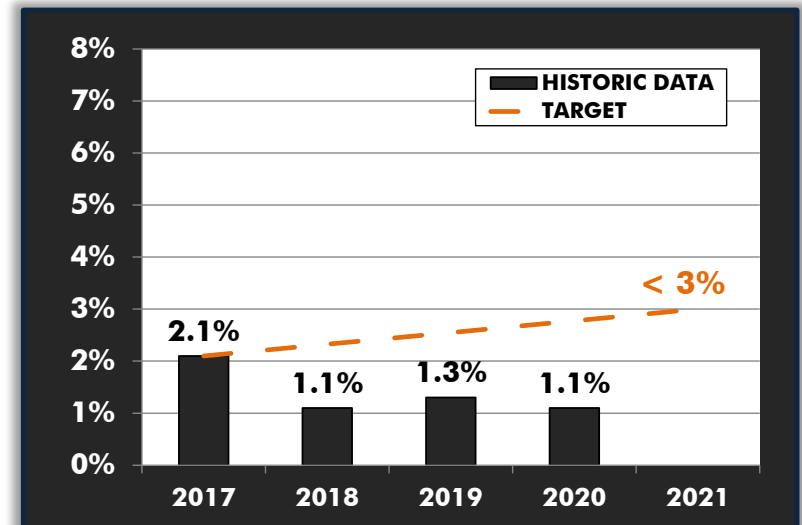
HRTPO chose to match the regional Interstate targets with the statewide targets since the existing condition of Interstate pavement in Hampton Roads was similar to the statewide condition. Similar to the statewide Interstate targets, the regional targets are based on an expectation that the amount of Interstate pavement in good condition will decrease. For Non-Interstate NHS, the statewide targets were also chosen in spite of a much lower percentage of Non-Interstate NHS pavement in good condition in Hampton Roads than the statewide percentage.

- ▶ **Percentage of Interstate System pavement in Good Condition** > **45%**
- ▶ **Percentage of Interstate System pavement in Poor Condition** < **3%**
- ▶ **Percentage of Non-Interstate NHS pavement in Good Condition** > **25%**
- ▶ **Percentage of Non-Interstate NHS pavement in Poor Condition** < **5%**

## PERCENTAGE OF PAVEMENT IN HAMPTON ROADS IN GOOD CONDITION - INTERSTATE



## PERCENTAGE OF PAVEMENT IN HAMPTON ROADS IN POOR CONDITION - INTERSTATE



# PAVEMENT CONDITION

## PROGRESS TOWARDS ACHIEVING TARGETS

Hampton Roads is surpassing the level needed to reach the 2021 targets in most of the four pavement condition measures as of 2020. More details on progress towards achieving targets for each of the four pavement condition measures is shown below:

### ► **Percentage of Interstate System Pavement in Good Condition**

**SURPASSING TARGET**

At 48.9% as of 2020, this is surpassing (above) the 47.3% level that would be necessary to be on pace to meet the 2021 target.

### ► **Percentage of Interstate System Pavement in Poor Condition**

**SURPASSING TARGET**

At 1.1% as of 2020, this is surpassing (below) the 2.8% level that would be necessary to be on pace to meet the 2021 target.

### ► **Percentage of Non-Interstate NHS Pavement in Good Condition**

**MISSING TARGET**

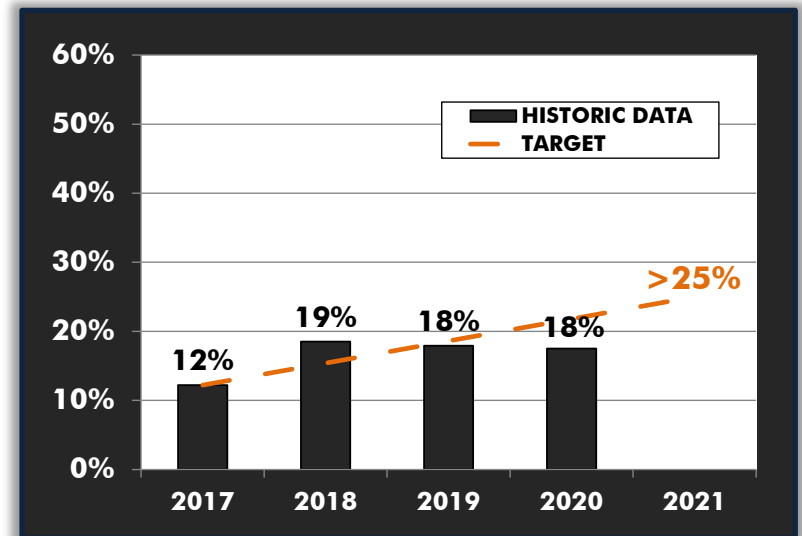
At 17.5% as of 2020, this is below the 21.8% level that would be necessary to be on pace to meet the 2021 target.

### ► **Percentage of Non-Interstate NHS Pavement in Poor Condition**

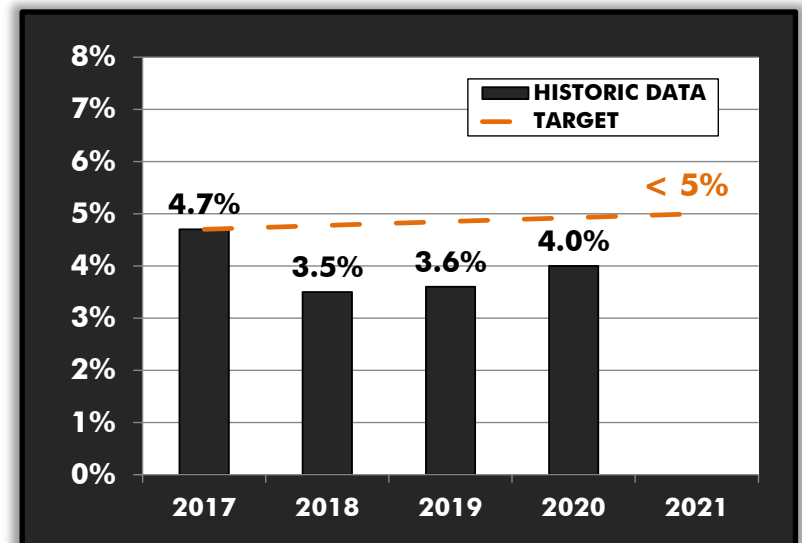
**SURPASSING TARGET**

At 4.0% as of 2020, this is surpassing (below) the 4.9% level that would be necessary to be on pace to meet the 2021 target.

## PERCENTAGE OF PAVEMENT IN HAMPTON ROADS IN GOOD CONDITION - NON-INTERSTATE NHS



## PERCENTAGE OF PAVEMENT IN HAMPTON ROADS IN POOR CONDITION - NON-INTERSTATE NHS



# TRANSIT ASSET MANAGEMENT

## MEASURES

- ▶ **Transit Asset Management (TAM) – Rolling Stock**
- ▶ **TAM – Equipment/Service Vehicles**
- ▶ **TAM - Infrastructure**
- ▶ **TAM - Facilities**

## METHODOLOGY

This measure examines the condition of various aspects of the regional public transportation system. The Federal Transit Administration's (FTA) Performance-Based Planning final rule requires transit performance measures in the area of state of good repair, also referred to as transit asset management (TAM).

MPOs are required to establish regional targets and monitor progress for each of the assets using the performance measures in the following table:

Asset Type	Performance Measure	Asset Classes
<b>Rolling Stock</b>	% of revenue vehicles within each asset class that have met or exceeded their useful life benchmark (ULB)	Buses, cutaway buses, ferry boats, light rail vehicles, trolley buses, vans
<b>Equipment/Service Vehicles</b>	% of vehicles that have met or exceeded their useful life benchmark (ULB)	Non-revenue automobiles, trucks and other rubber tire vehicles
<b>Infrastructure</b>	% of track segments, signals, and systems with performance restrictions	Light rail infrastructure
<b>Facilities</b>	% of facilities in each asset class rated under 3.0 on FTA's TERM scale	Passenger facilities, parking facilities, maintenance facilities, administrative facilities

Three transit agencies operate within the Hampton Roads Metropolitan Planning Area – Hampton Roads Transit (HRT), the Williamsburg Area Transit Authority (WATA), and Suffolk Transit. HRT, as a larger Tier I transit agency, must develop and carry out their own TAM plans. As Tier II transit agencies, WATA and Suffolk Transit are eligible to participate in group TAM plans. WATA and Suffolk Transit elected to use the statewide targets that were established by the Virginia Department of Rail and Public Transportation (DRPT) for Tier II agencies.

# TRANSIT ASSET MANAGEMENT

## CURRENT/HISTORICAL CONDITIONS

The following table shows the transit asset management conditions in Hampton Roads in Fiscal Years 2018, 2019, and 2020:

Rolling Stock			
% of revenue vehicles within each asset class that have met or exceeded their useful life benchmark			
	2018	2019	2020
Buses	36.7%	26.9%	25.1%
Cutaway Buses	0%	7.7%	5.5%
Ferry Boat	50.0%	33.3%	33.3%
Light Rail Vehicles	0%	0%	0%
Minibus	28.6%	0%	0%
Trolley Buses	4.8%	0%	0%
Vans	40.0%	0%	0%

Equipment/Service Vehicles			
% of vehicles that have met or exceeded their useful life benchmark			
	2018	2019	2020
Non-Revenue/Service Vehicles	91.3%	74.0%	89.7%
Trucks & Other Rubber Tire Vehicles	64.0%	12.5%	17.6%

Infrastructure			
% of track segments, signals, and systems with performance restrictions			
	2018	2019	2020
Light Rail Infrastructure	2.8%	2.2%	5.0%

Facilities			
% of facilities in each asset class rated under 3.0 on FTA's TERM scale			
	2018	2019	2020
Passenger/Parking	9.1%	9.1%	0%
Maintenance	14.3%	14.3%	14.3%
Administrative	0%	0%	0%

## STATEWIDE 2022 TARGETS

The Virginia Department of Rail and Public Transportation established targets for Tier II transit agencies – such as WATA and Suffolk Transit – that elected to participate in the statewide group TAM plan. The FY 2022 targets are:

### Rolling Stock

(% of revenue vehicles that have met or exceeded their useful life benchmark)

- Buses < 10%
- Cutaway Buses < 10%
- Minibus < 20%
- Trolley Buses < 10%
- Vans < 25%

### Equipment/Service Vehicles

(% of vehicles that have met or exceeded their useful life benchmark)

- Non-Revenue/Service Vehicles < 25%
- Trucks & Other Rubber Tire Vehs < 25%

### Facilities

(% of facilities in each asset class rated under 3.0 on FTA's TERM scale)

- Passenger < 10%
- Maintenance < 10%
- Administrative < 10%

There are no statewide targets for Tier I transit agencies such as HRT. Each Tier I transit agency must establish their own transit asset management targets.

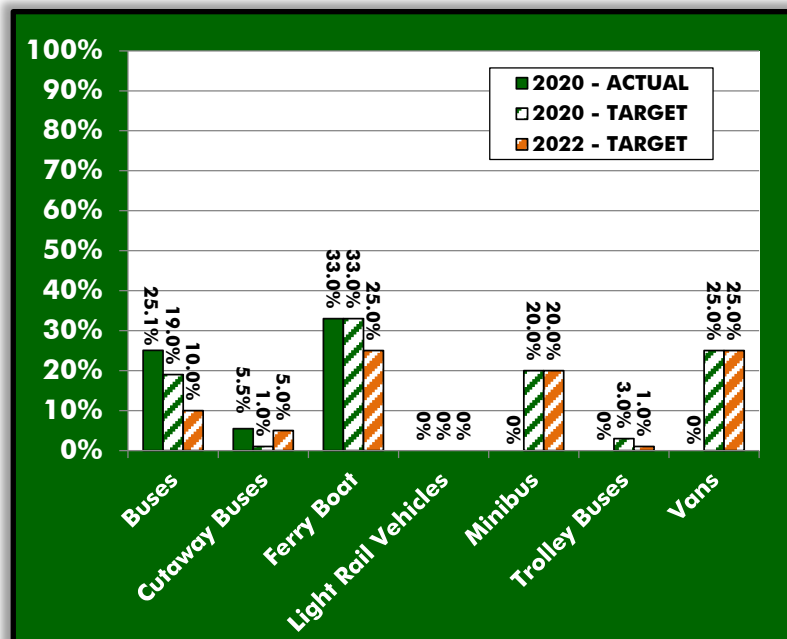
# TRANSIT ASSET MANAGEMENT

## HRTPO 2022 TARGETS

The HRTPO established one-year (2022) regional transit asset management targets for each of the categories as shown to the right. **These regional targets are based on a weighted average of HRT, WATA, and Suffolk Transit Fiscal Year 2022 targets.**

## ROLLING STOCK TARGETS

### PERCENTAGE OF REVENUE VEHICLES THAT HAVE MET OR EXCEEDED THEIR USEFUL LIFE BENCHMARK



## Rolling Stock

% of revenue vehicles that have met or exceeded their useful life benchmark

- ▶ Buses < 10%
- ▶ Cutaway Buses < 5%
- ▶ Ferry Boat < 25%
- ▶ Light Rail Vehicles 0%
- ▶ Minibus < 20%
- ▶ Trolley Buses < 1%
- ▶ Vans < 25%

## Equipment/Service Vehicles

% of vehicles that have met or exceeded their useful life benchmark

- ▶ Non-Revenue/Service Vehicles < 62%
- ▶ Trucks & Other Rubber Tire Vehicles < 17%

## Infrastructure

% of track segments, signals, and systems with performance restrictions

- ▶ Light Rail Infrastructure < 0.3%

## Facilities

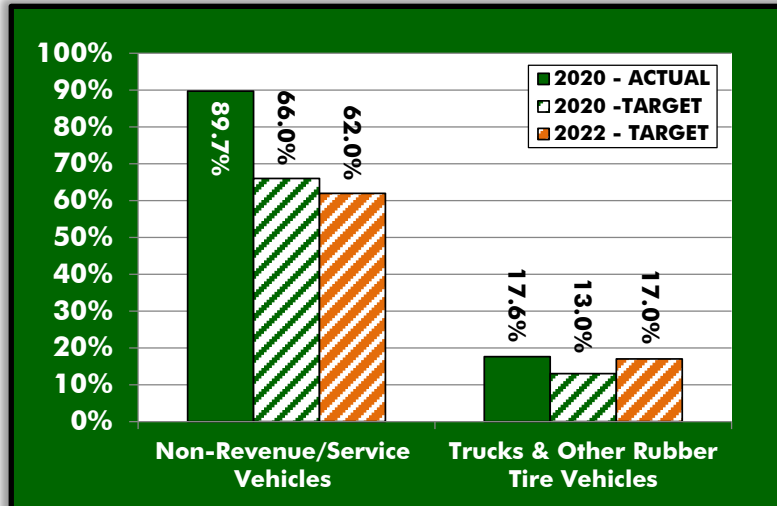
% of facilities in each asset class rated under 3.0 on FTA's TERM scale

- ▶ Passenger/Parking < 1%
- ▶ Maintenance < 10%
- ▶ Administrative < 10%

# TRANSIT ASSET MANAGEMENT

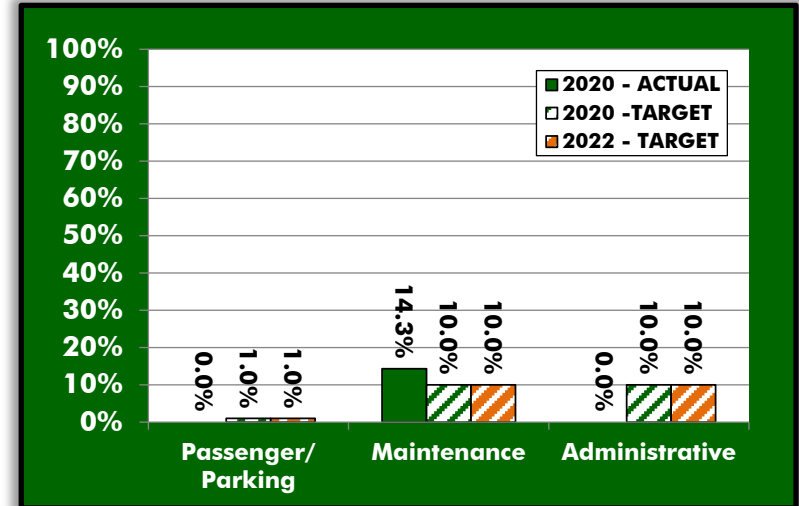
## EQUIPMENT/SERVICE VEHICLES TARGETS

PERCENTAGE OF VEHICLES THAT HAVE MET OR EXCEEDED THEIR USEFUL LIFE BENCHMARK



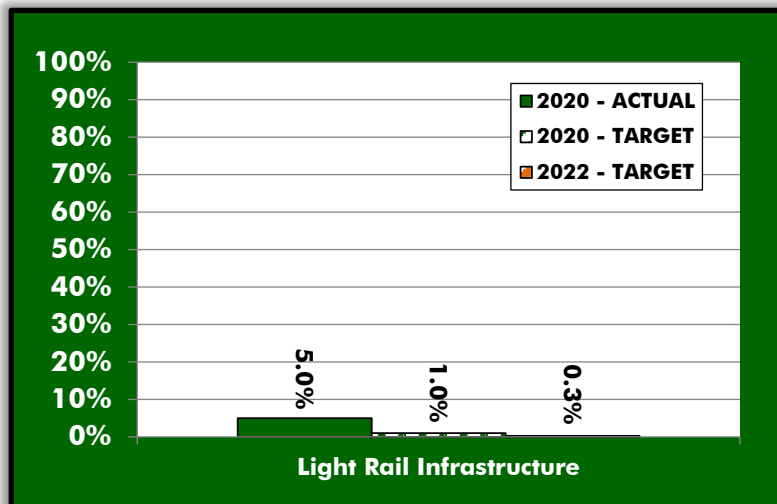
## FACILITIES TARGETS

PERCENTAGE OF FACILITIES IN EACH ASSET CLASS RATED UNDER 3.0 ON FTA'S TERM SCALE



## INFRASTRUCTURE TARGETS

PERCENTAGE OF TRACK SEGMENTS, SIGNALS, AND SYSTEMS WITH PERFORMANCE RESTRICTIONS



# TRANSIT ASSET MANAGEMENT

## PROGRESS TOWARDS ACHIEVING TARGETS

HRTPO has established one-year transit asset management targets each year between 2019 and 2022. Each of these one-year regional targets is shown below. Information on whether Hampton Roads achieved its 2020 transit asset management targets based on the 2020 data is also detailed for each of the measures below:

### ► Rolling Stock - Buses

Targets – 41% ('19), 19% ('20), 10% ('21), 10% ('22)

**MISSING TARGET**

A total of 25.1% of the bus fleet in Hampton Roads met or exceeded the useful life benchmark in 2020, which is above the HRTPO's established target of 19%.

### ► Rolling Stock – Cutaway Buses

Targets – 10% ('19), 1% ('20), 1% ('21), 5% ('22)

**MISSING TARGET**

A total of 5.5% of the cutaway bus fleet in Hampton Roads met or exceeded the useful life benchmark in 2020, which is above the HRTPO's established target of 1%.

### ► Rolling Stock – Ferry Boat

Targets – 50% ('19), 33% ('20), 33% ('21), 25% ('22)

**SURPASSING TARGET**

A total of 33% of the ferry boat fleet in Hampton Roads met or exceeded the useful life benchmark in 2019, which matches the HRTPO's established target of 33%.

### ► Rolling Stock – Light Rail Vehicles

Targets – 0% ('19), 0% ('20), 0% ('21), 0% ('22)

**SURPASSING TARGET**

None of the light rail vehicle fleet in Hampton Roads met or exceeded the useful life benchmark in 2020, which matches the HRTPO's established target of 0%.

### ► Rolling Stock – Minibus

Targets – 20% ('19), 20% ('20), 20% ('21), 20% ('22)

**SURPASSING TARGET**

None of the minibus fleet in Hampton Roads met or exceeded the useful life benchmark in 2020, which is surpassing (below) the HRTPO's established target of 20%.

### ► Rolling Stock – Trolley Buses

Targets – 3.3% ('19), 3% ('20), 10% ('21), 1% ('22)

**SURPASSING TARGET**

None of the trolley bus fleet in Hampton Roads met or exceeded the useful life benchmark in 2020, which is surpassing (below) the HRTPO's established target of 3%.

### ► Rolling Stock – Vans

Targets – 25% ('19), 25% ('20), 25% ('21), 25% ('22)

**SURPASSING TARGET**

None of the van fleet in Hampton Roads met or exceeded the useful life benchmark in 2020, which is surpassing (below) the HRTPO's established target of 25%.

# TRANSIT ASSET MANAGEMENT

## ► Equipment/Service Vehicles – Non-Revenue/Service Vehicles

Targets – 92% ('19), 66% ('20), 62% ('21), 62 ('22)

**MISSING TARGET**

A total of 89.7% of the non-revenue/service vehicle fleet in Hampton Roads met or exceeded the useful life benchmark in 2020, which is above the HRTPO's established target of 66%.

## ► Equipment/Service Vehicles – Trucks & Other Rubber Tire Vehicles

Targets – 70% ('19), 13% ('20), 17% ('21), 17% ('22)

**MISSING TARGET**

A total of 17.6% of the trucks & other rubber tire vehicles service fleet in Hampton Roads met or exceeded the useful life benchmark in 2020, which is above the HRTPO's established target of 13%.

## ► Infrastructure – Light Rail Infrastructure

Targets – 2.6% ('19), 1.0% ('20), 4.0% ('21), 0.3% ('22)

**MISSING TARGET**

A total of 5.0% of the light rail infrastructure in Hampton Roads had performance restrictions in 2020, which is above the HRTPO's established target of 1.0%.

## ► Facilities – Passenger/Parking

Targets – 0.9% ('19), 1.0% ('20), 1.0% ('21), 1.0% ('22)

**SURPASSING TARGET**

None of the passenger and parking facilities in Hampton Roads rated under 3.0 on FTA's TERM Scale in 2020, which is surpassing (below) the HRTPO's established target of 1.0%.

## ► Facilities – Maintenance

Targets – 10% ('19), 10% ('20), 10% ('21), 10% ('22)

**MISSING TARGET**

A total of 14.3% of the maintenance facilities in Hampton Roads rated under 3.0 on FTA's TERM Scale in 2020, which is above the HRTPO's established target of 10%.

## ► Facilities – Administrative

Targets – 10% ('19), 10% ('20), 10% ('21), 10% ('22)

**SURPASSING TARGET**

None of the administrative facilities in Hampton Roads rated under 3.0 on FTA's TERM Scale in 2020, which is surpassing (below) the HRTPO's established target of 10%.

# TRANSIT SAFETY

## MEASURES

- ▶ Transit Fatalities
- ▶ Transit Injuries
- ▶ Transit Safety Events
- ▶ Transit System Reliability

## METHODOLOGY

Starting in 2021, the Federal Transit Administration (FTA) requires MPOs to establish regional transit safety targets and incorporate them into Transportation Improvement Programs (TIPs) and Long-Range Transportation Plans (LRTPs). MPOs are required to establish targets and monitor progress in the following transit safety areas for each mode (bus, demand response, light rail, and vanpool):

Category	Measure
Fatalities	Total number of reportable fatalities per year
	Rate per total vehicle revenue miles
Injuries	Total number of reportable injuries per year
	Rate per total vehicle revenue miles
Safety Events	Total number of safety events per year
	Rate per total vehicle revenue miles
System Reliability	Distance between major failures

Safety events are defined as events that include the following if they occur on a transit right-of-way, transit infrastructure, at a transit revenue facility, at a transit facility during maintenance activity, or involving a transit revenue vehicle:

- A fatality confirmed within 30 days of the event
- An injury requiring immediate medical attention away from the scene for at least one person
- Property damage of \$25,000 or more
- Collisions involving transit revenue vehicles that require towing a transit vehicle or other non-transit vehicle away from the scene
- An evacuation for life safety reasons

For system reliability, major failures are defined as those that limit actual vehicle movement or impact safety, such as issues related to doors, brakes, engines, steering, axles, and vehicle suspension systems.

Similar to transit asset management, Hampton Roads Transit (HRT), as a Tier I transit agency, must develop their own Public Transportation Agency Safety Plan (PTASP). As Tier II transit agencies, the Williamsburg Area Transit Authority (WATA) and Suffolk Transit are using the statewide transit safety targets that were established in the [statewide PTASP](#) developed by the Virginia Department of Rail and Public Transportation.

# TRANSIT SAFETY

## CURRENT/HISTORICAL CONDITIONS

The following table shows the transit safety conditions in Hampton Roads for the years 2019 and 2020:

Transit Fatalities		
Total Number of Reportable Fatalities Per Year		
	2019	2020
Buses	0	1
Demand Response	0	0
Light Rail	0	0
Vanpool	0	0
Rate per 100,000 Total Vehicle Revenue Miles		
	2019	2020
Buses	0.0	0.09
Demand Response	0.0	0.0
Light Rail	0.0	0.0
Vanpool	0.0	0.0

Safety Events		
Total Number of Safety Events Per Year		
	2019	2020
Buses	66	65
Demand Response	1	4
Light Rail	8	7
Vanpool	0	0
Rate per 100,000 Total Vehicle Revenue Miles		
	2019	2020
Buses	5.48	5.85
Demand Response	0.31	1.21
Light Rail	20.75	20.37
Vanpool	0	0

Transit Injuries		
Total Number of Reportable Injuries Per Year		
	2019	2020
Buses	102	57
Demand Response	1	5
Light Rail	2	2
Vanpool	0	0
Rate per 100,000 Total Vehicle Revenue Miles		
	2019	2020
Buses	8.47	5.13
Demand Response	0.31	1.51
Light Rail	5.19	5.82
Vanpool	0	0

System Reliability		
Distance Between Major Failures		
	2019	2020
Buses	12,509	17,060
Demand Response	135,748	368,039
Light Rail	9,402	13,745
Vanpool	693,712	-

# TRANSIT SAFETY

## STATEWIDE 2022 TARGETS

The Virginia Department of Rail and Public Transportation established targets for Tier II transit agencies – such as WATA and Suffolk Transit – that elected to participate in the statewide group PTASP. The statewide FY 2022 transit safety targets are:

**Fatality Rate – 0 fatalities per 100,000 vehicle revenue miles**  
(Fatality rate for each mode)

**Injury Rate – < 0.5 injuries per 100,000 vehicle revenue miles**  
(Injury rate for each mode)

**Safety Event Rate - < 1 reportable event per 100,000 vehicle revenue miles**  
(Safety event rate for each mode)

**Distance Between Major Failures - > 10,000 miles**  
(Distance for each mode)

There are no statewide targets for Tier I transit agencies such as HRT. Each Tier I transit agency must establish their own transit safety targets.

## HRTPO 2022 TARGETS

The HRTPO established one-year (2022) regional transit safety targets for each of the categories as shown to the right. **These regional targets are based on a weighted average of HRT, WATA, and Suffolk Transit Fiscal Year 2022 targets.**

### Transit Fatalities

Total Number of Reportable Fatalities/Rate per 100,000 Vehicle Revenue Miles

▶ Buses	0 / 0.0
▶ Demand Response	0 / 0.0
▶ Light Rail	0 / 0.0
▶ Vanpool	0 / 0.0

### Transit Injuries

Total Number of Reportable Injuries/Rate per 100,000 Vehicle Revenue Miles

▶ Buses	< 83 / < 7.62
▶ Demand Response	0 / 0.0
▶ Light Rail	0 / 0.0
▶ Vanpool	0 / 0.0

### Transit Safety Events

Total Number of Reportable Events/Rate per 100,000 Vehicle Revenue Miles

▶ Buses	< 71 / < 5.70
▶ Demand Response	< 1 / < 0.04
▶ Light Rail	< 5 / < 15.40
▶ Vanpool	0 / 0.0

### Transit System Reliability

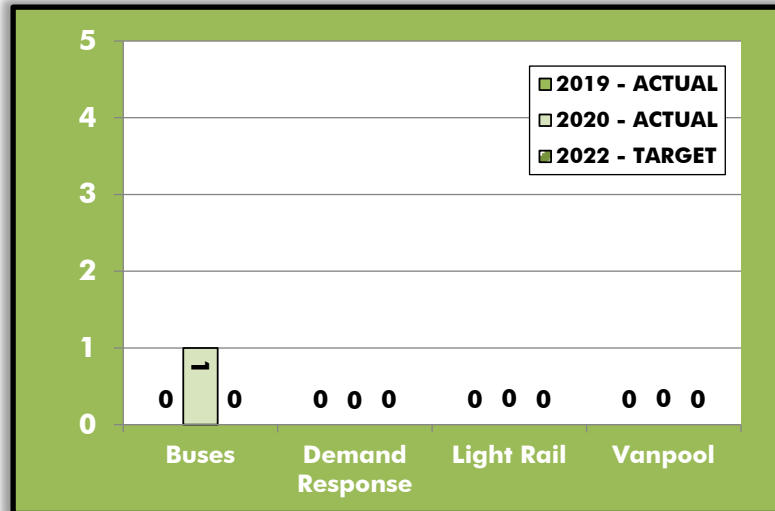
Average Distance between Major Failures in Miles

▶ Buses	> 10,000
▶ Demand Response	> 29,249
▶ Light Rail	> 9,470
▶ Vanpool	> 498,800

# TRANSIT SAFETY

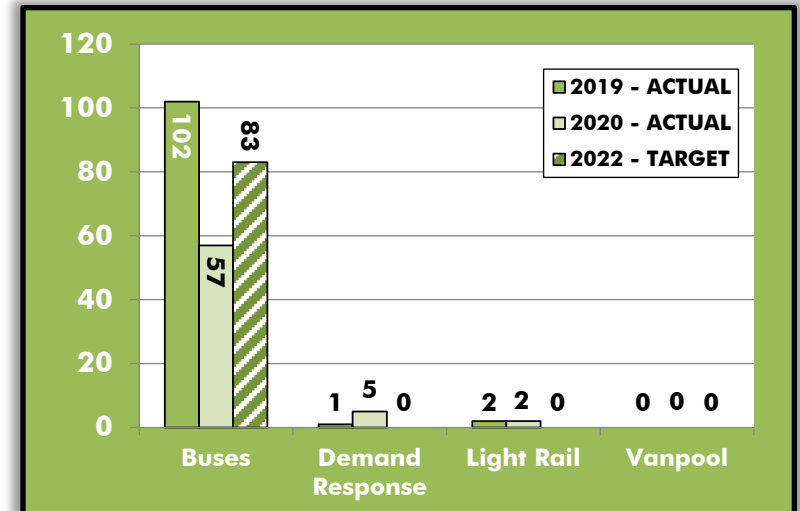
## TRANSIT FATALITY TARGETS

### TOTAL NUMBER OF REPORTABLE FATALITIES



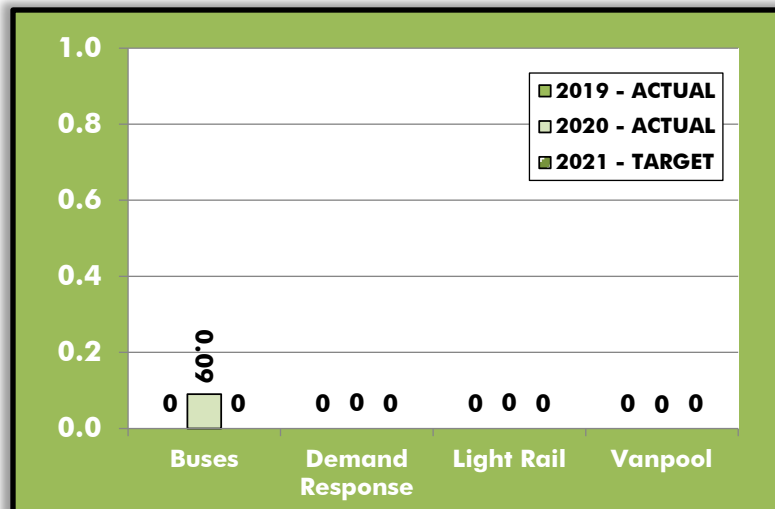
## TRANSIT INJURY TARGETS

### TOTAL NUMBER OF REPORTABLE INJURIES



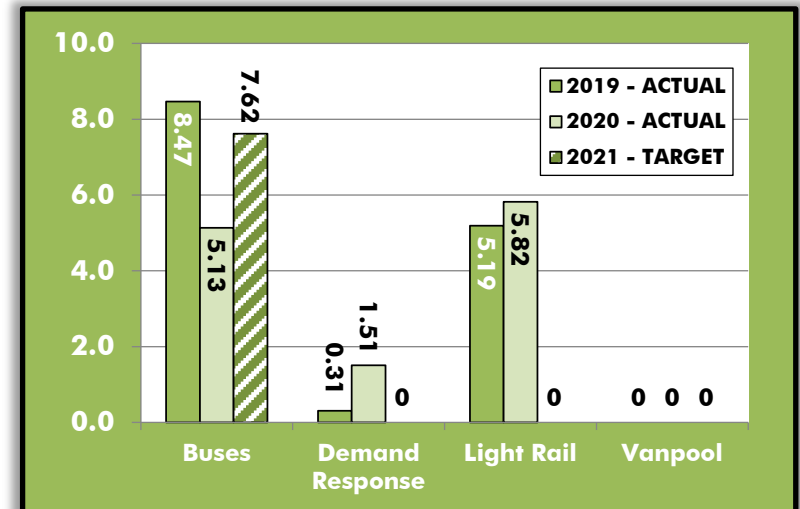
## TRANSIT FATALITY RATE TARGETS

### RATE PER 100,000 VEHICLE REVENUE MILES



## TRANSIT INJURY RATE TARGETS

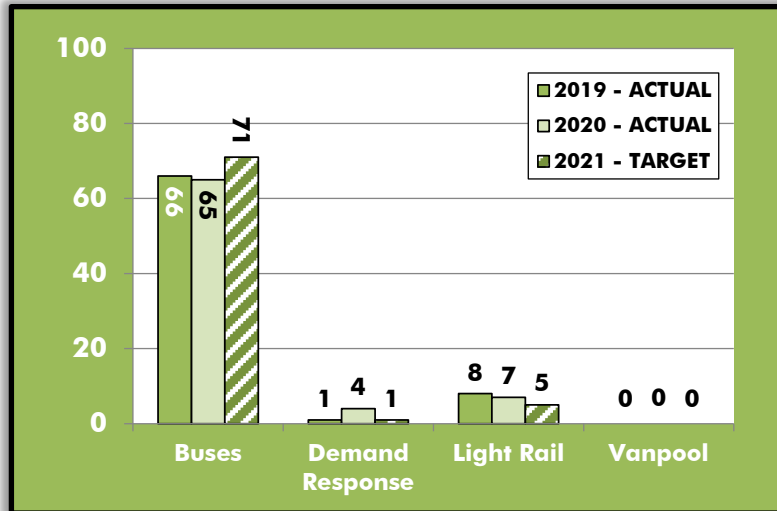
### RATE PER 100,000 VEHICLE REVENUE MILES



# TRANSIT SAFETY

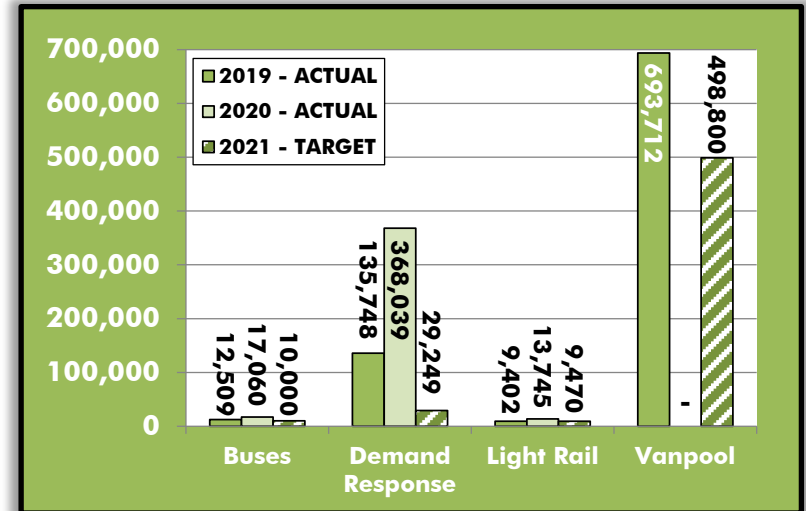
## TRANSIT SAFETY EVENT TARGETS

### TOTAL NUMBER OF REPORTABLE SAFETY EVENTS



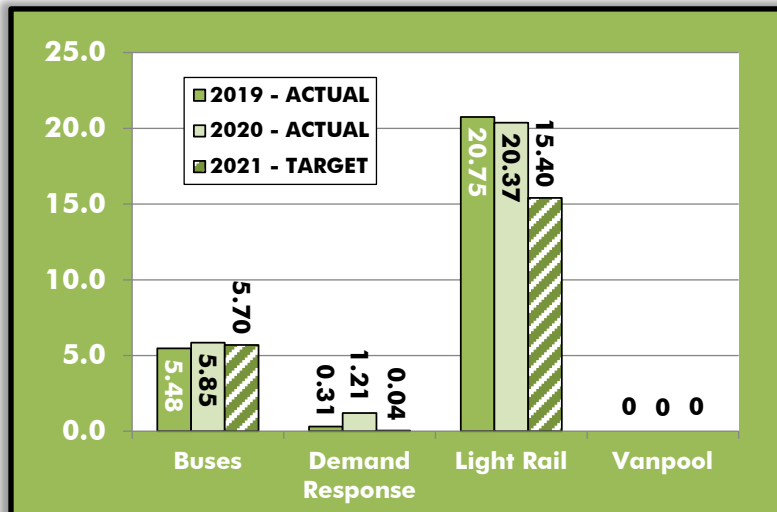
## TRANSIT SYSTEM RELIABILITY TARGETS

### DISTANCE BETWEEN MAJOR FAILURES IN MILES



## TRANSIT SAFETY EVENT RATE TARGETS

### RATE PER 100,000 VEHICLE REVENUE MILES



## **PROGRESS TOWARDS ACHIEVING TARGETS**

Similar to transit asset management, data for measuring progress towards achieving transit safety targets is obtained from the National Transit Database (NTD). As of the time of this report, the most recent data for transit safety in the NTD is the year 2020, which is prior to the data that was used to produce the initial 2021 targets.

In future years this section will reflect the progress made towards achieving regional transit safety targets as the NTD is updated to include information from 2021 and beyond.

# ROADWAY PERFORMANCE

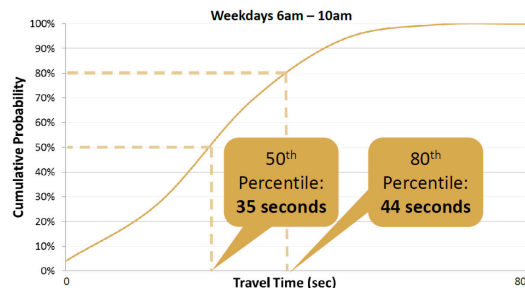
## MEASURES

- ▶ **Interstate Travel Time Reliability**  
(% reliable person-miles of travel)
- ▶ **Non-Interstate National Highway System**  
**Travel Time Reliability** (% reliable person-  
miles of travel)

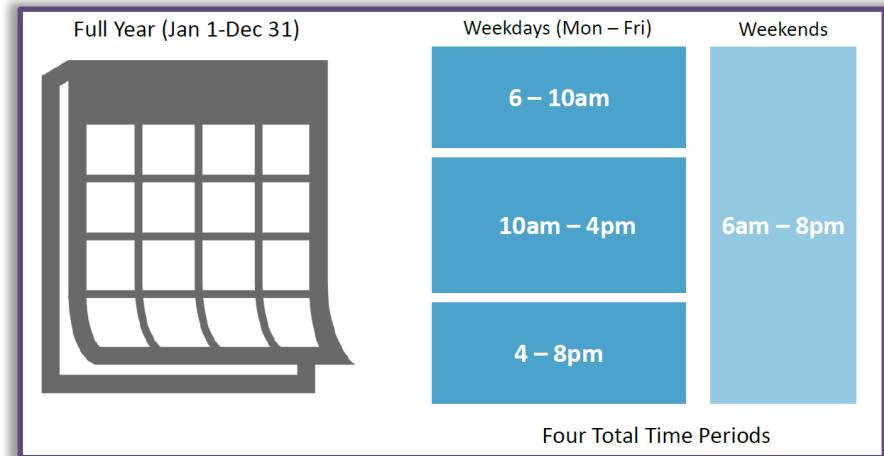
## METHODOLOGY

This measure examines the roadway performance of the National Highway System (NHS) based on the person-miles travelled that are classified as reliable. The reliability of the system is calculated using a metric referred to as the Level of Travel Time Reliability (LOTTR). The LOTTR is defined as the ratio of the 80<sup>th</sup> percentile travel time to the mean (50<sup>th</sup> percentile) travel time. Travel time information – which is provided through the National Performance Management Research Data Set (NPMRDS) – is collected throughout the year on each segment of the NHS in 15-minute intervals. An example of this calculation is shown below:

$$\text{Level of Travel Time Reliability} = \frac{\text{80th percentile travel time}}{\text{50th percentile travel time ("normal travel time")}}$$



Travel times throughout the year are divided into four reporting periods: Weekday morning peak, weekday midday, weekday afternoon peak, and weekends. The time of day that each period represents is shown below:



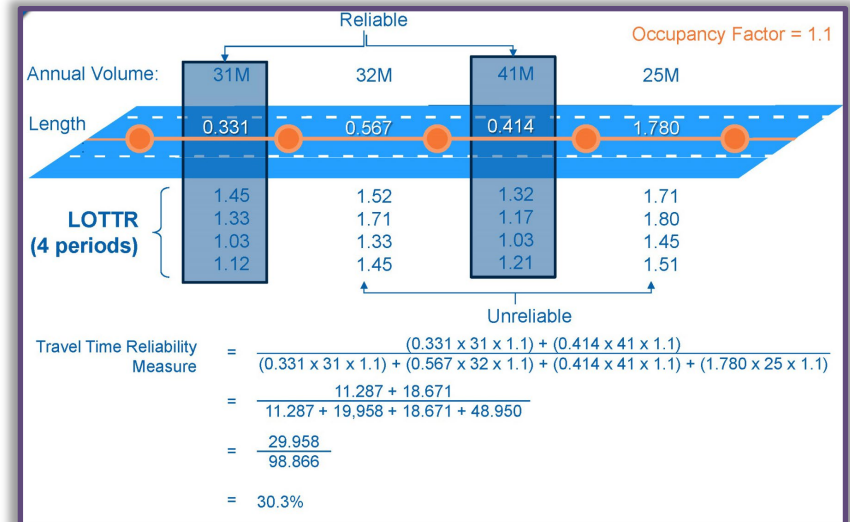
A LOTTR ratio is calculated for each Interstate and Non-Interstate NHS segment by direction for each of these time periods over the course of an entire year. This produces a total of four LOTTR ratios for each Interstate and Non-Interstate NHS segment. Segments are considered to be not reliable if any of these four LOTTR ratios are 1.50 or greater. For a segment to be classified as reliable, all four LOTTR ratios must be below 1.50. An example of this calculation is shown on the next page:

# ROADWAY PERFORMANCE

$$\frac{\text{Longer Travel Time (80th)}}{\text{Normal Travel Time (50th)}} = \frac{\# \text{ seconds}}{\# \text{ seconds}} = \text{Level of Travel Time Reliability Ratio}$$

Level of Travel Time Reliability (LOTTR) (Single Segment, Interstate Highway System)		
Monday – Friday	6am – 10am	LOTTR = $\frac{44 \text{ sec}}{35 \text{ sec}} = 1.26$
	10am – 4pm	LOTTR = 1.39
	4pm – 8pm	LOTTR = <b>1.54</b>
Weekends	6am – 8pm	LOTTR = 1.31
Must exhibit LOTTR below 1.50 during <u>all</u> of the time periods		<b>Segment is not reliable</b>

This procedure is followed for each Interstate and Non-Interstate NHS segment to determine whether the segment is reliable or not reliable. Each of the reliable individual Interstate and Non-Interstate NHS segments are then multiplied by the length of that particular segment, the annual vehicle volume on that segment, and an occupancy factor based on the average number of persons per vehicle that converts vehicular travel to person travel. These products are added together for the entire Interstate and Non-Interstate NHS network and divided by the same factors for the entire system to produce the regional percentage of reliable person-miles of travel on the Interstate and Non-Interstate NHS systems. An example of this calculation is shown to the right:



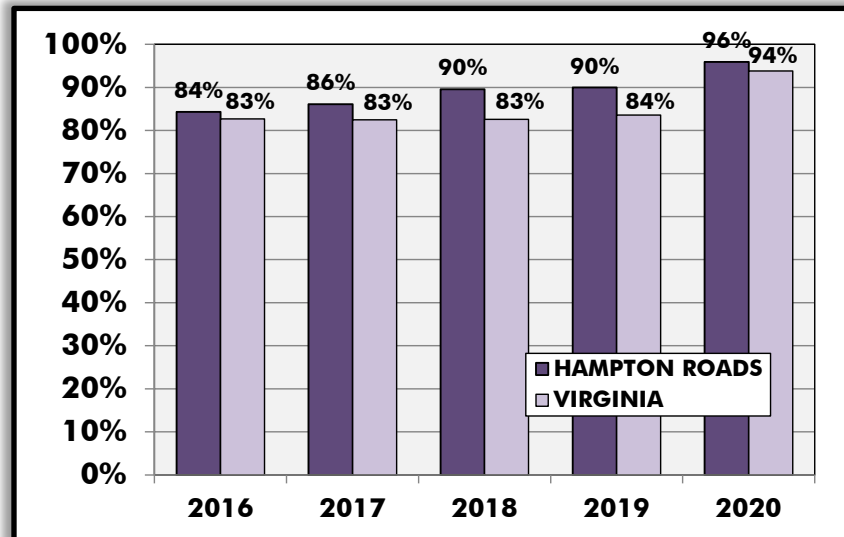
# ROADWAY PERFORMANCE

## CURRENT/HISTORICAL CONDITIONS

The following charts show the percentage of reliable person-miles of travel in Hampton Roads and throughout Virginia for 2016 through 2020. The chart on the left reflects the data for the Interstate system, and the chart on the right reflects the Non-Interstate NHS.

In addition, the maps on the following page show the LOTTR for Interstate and non-Interstate NHS in Hampton Roads in 2020.

**PERCENTAGE OF RELIABLE PERSON-MILES OF TRAVEL - INTERSTATE (2016 - 2020)**

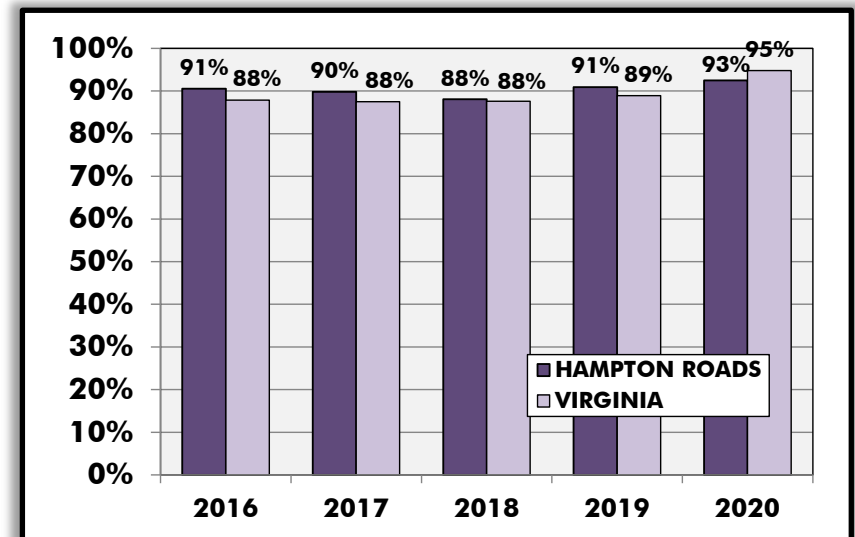


## STATEWIDE 4-YEAR TARGETS (2018-2021)

- ▶ **Percentage of Reliable Person-Miles of Travel - Interstate** > 82%
- ▶ **Percentage of Reliable Person-Miles of Travel - Non-Interstate NHS** > 82.5%

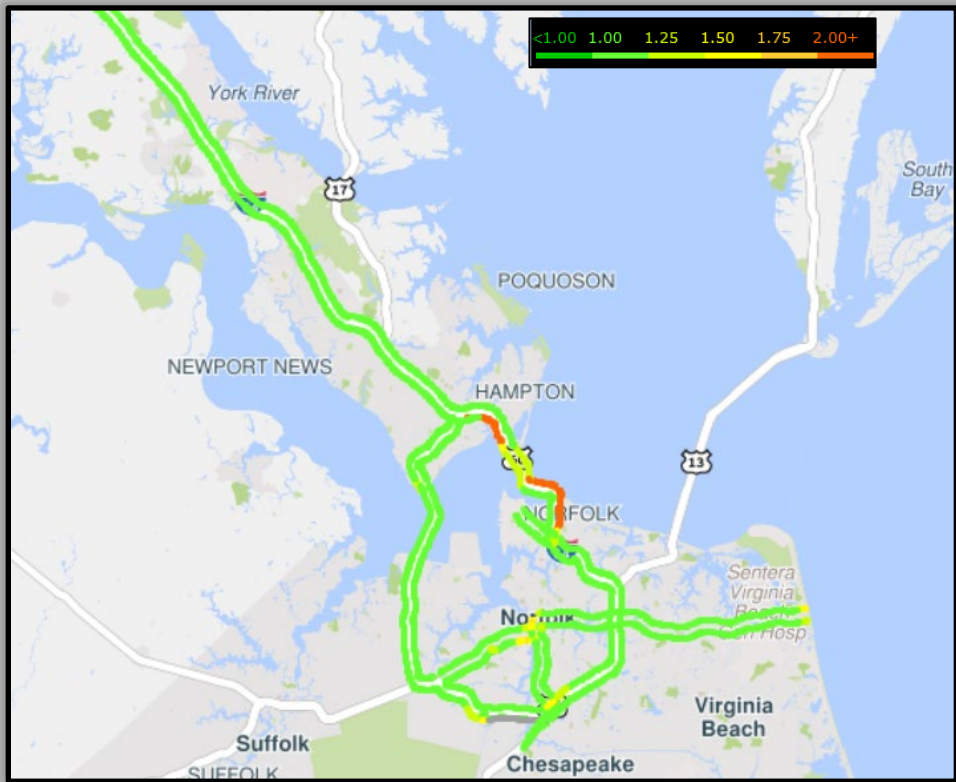
The statewide four-year targets established by the Commonwealth Transportation Board (CTB) are based on VDOT projections using an extrapolation of the statewide travel time reliability data from 2016 to 2017.

**PERCENTAGE OF RELIABLE PERSON-MILES OF TRAVEL - NON-INTERSTATE NHS (2016 - 2020)**



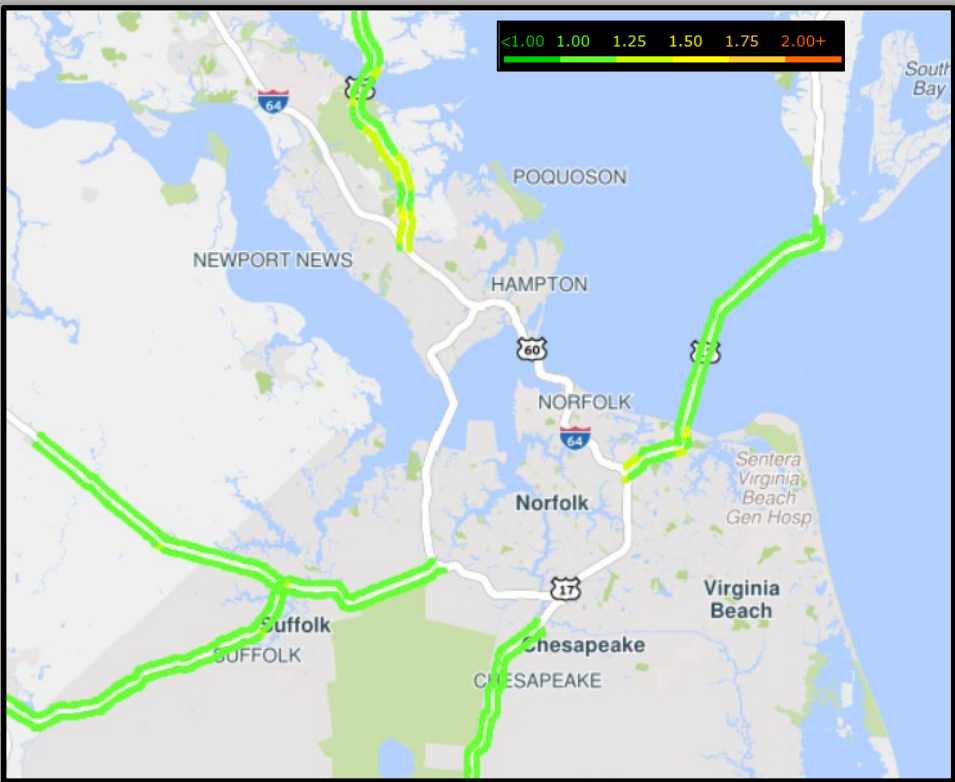
# ROADWAY PERFORMANCE

LEVEL OF TRAVEL TIME RELIABILITY  
INTERSTATE (2020)



Source: RITIS using NPMRDS data

LEVEL OF TRAVEL TIME RELIABILITY  
NON-INTERSTATE NHS (2020)



Source: RITIS using NPMRDS data

# ROADWAY PERFORMANCE

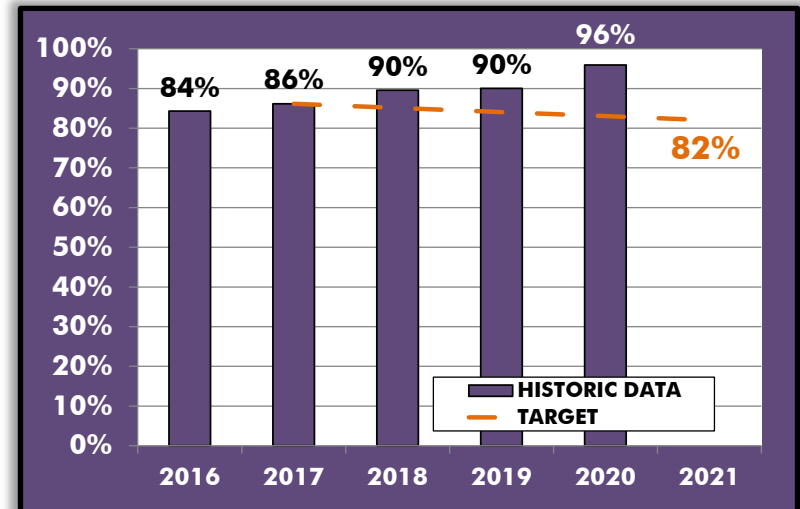
## HRTPO 4-YEAR TARGETS (2018-2021)

The HRTPO established four-year targets of greater than 82% of the Interstate travel in the region being reliable, and greater than 82.5% of the Non-Interstate NHS travel being reliable. **Both of these percentages match the statewide targets established by the CTB.**

This target was chosen largely because there are many changes occurring to the Hampton Roads roadway network. Major widening projects are occurring at the Hampton Roads Bridge-Tunnel and the High Rise Bridge, and projects were recently completed on I-64 on the Peninsula and at the I-64/I-264 interchange in Norfolk and Virginia Beach. These projects are leading to additional unreliable travel through the work zones. This uncertainty led to approving regional targets that matched statewide targets rather than trying to determine unique regional targets.

- ▶ **Interstate Travel Time Reliability**  
(% reliable person-miles) **> 82%**
- ▶ **Non-Interstate NHS Travel Time Reliability** (% reliable person-miles) **> 82.5%**

## PERCENTAGE OF RELIABLE PERSON-MILES OF TRAVEL – INTERSTATE



The 2016 and 2017 data is based on the Hampton Roads TMC Network in 2017, while the 2018-2020 data is based on the 2020 TMC Network. This impacts interpreting trends from year to year.

# ROADWAY PERFORMANCE

## PROGRESS TOWARDS ACHIEVING TARGETS

Hampton Roads is surpassing the level needed to reach the 2021 targets in both roadway performance measures as of 2020. More details on progress towards achieving targets for each of the two roadway performance measures is shown below:

### ► **Percentage of Reliable Person-Miles of Travel - Interstate System**

**SURPASSING TARGET**

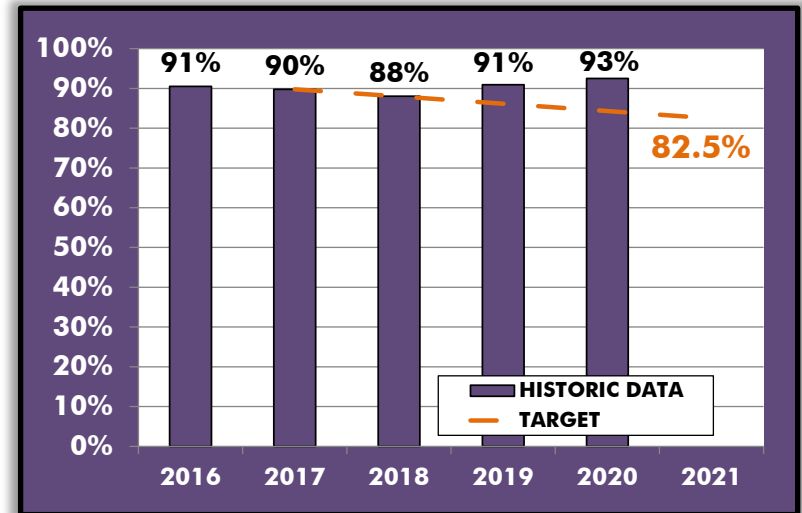
At 95.9% as of 2020, this is surpassing (above) the 83.0% level that would be necessary to be on pace to meet the 2021 target.

### ► **Percentage of Reliable Person-Miles of Travel – Non-Interstate NHS**

**SURPASSING TARGET**

At 92.5% as of 2020, this is surpassing (above) the 84.3% level that would be necessary to be on pace to meet the 2021 target.

## **PERCENTAGE OF RELIABLE PERSON-MILES OF TRAVEL - NON-INTERSTATE NHS**



The 2016 and 2017 data is based on the Hampton Roads TMC Network in 2017, while the 2018-2020 data is based on the 2020 TMC Network. This impacts interpreting trends from year to year.

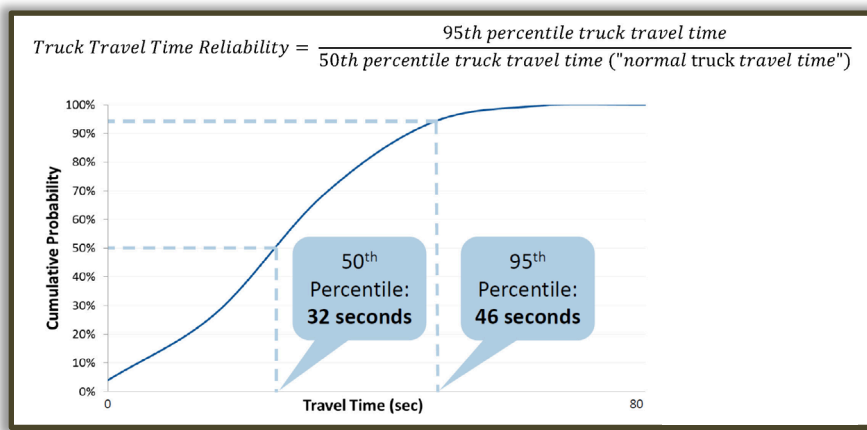
# FREIGHT

## MEASURES

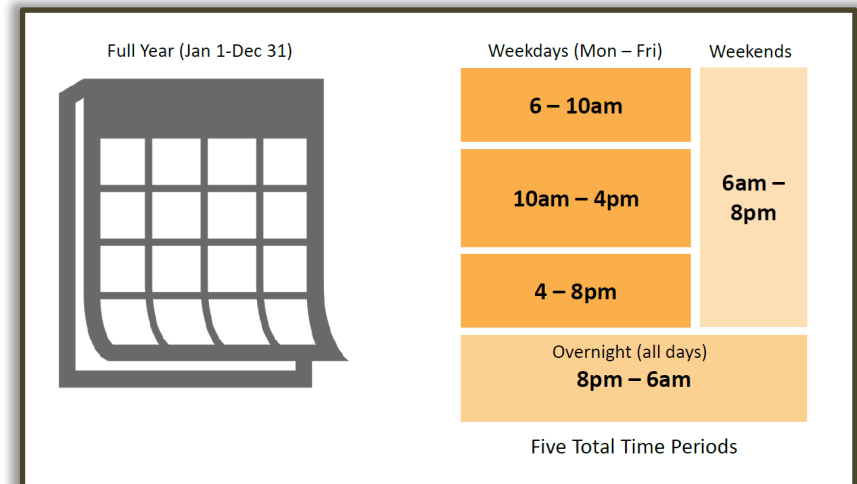
### ► Truck Travel Time Reliability (TTTR) Index on the Interstate system

## METHODOLOGY

This measure examines the reliability of moving freight via truck on the regional Interstate system. The reliability of freight movement is calculated using a metric referred to as the Truck Travel Time Reliability (TTTR) Index. The TTTR ratio is defined as the ratio of the 95<sup>th</sup> percentile travel time for trucks to the mean (50<sup>th</sup> percentile) travel time for trucks. This travel time information – which is provided through the National Performance Management Research Data Set (NPMRDS) – is collected throughout the year on each segment of the Interstate system in 15-minute intervals. An example of calculating this ratio is shown below:



Truck travel times throughout the year are divided into five reporting periods: Weekday morning peak, weekday midday, weekday afternoon peak, weekends, and overnight. The time of day that each period represents is shown below:



A TTTR ratio is calculated for each Interstate segment by direction for each of these time periods over the course of an entire year. This produces a total of five TTTR ratios for each Interstate segment. For each segment, the maximum of these five TTTR ratios is determined and used to calculate the regional index. This calculation is highlighted on the next page:

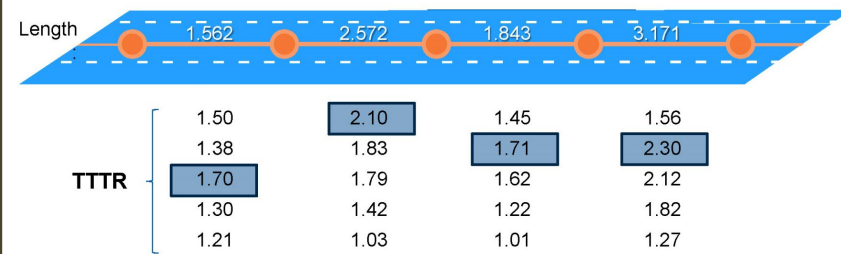
# FREIGHT

$$\frac{\text{Longer Truck Travel Time (95th)}}{\text{Normal Truck Travel Time (50th)}} = \frac{\# \text{ seconds}}{\# \text{ seconds}} = \text{Truck Travel Time Reliability (TTTR) Ratio}$$

## Truck Travel Time Reliability (TTTR) (Single Segment, Interstate Highway System)

Monday – Friday	6am – 10am	TTTR = $\frac{72 \text{ sec}}{50 \text{ sec}} = 1.44$
	10am – 4pm	TTTR = 1.39
	4pm – 8pm	TTTR = <b>1.49</b>
Weekends	6am – 8pm	TTTR = 1.31
Overnight	8pm – 6am	TTTR = 1.20
Maximum TTTR		<b>1.49</b>

These individual Interstate segment Maximum TTTR ratios are then multiplied by the length of that particular segment. These products are added together for the entire region and divided by the total directional length of the regional Interstate system to produce the regional Truck Travel Time Reliability Index. An example of this calculation is shown to the right:



$$\begin{aligned} &= \frac{(1.70 \times 1.562) + (2.10 \times 2.572) + (1.71 \times 1.843) + (2.30 \times 3.171)}{(1.562 + 2.572 + 1.843 + 3.171)} \\ \text{TTTR} &= \frac{2.655 + 5.401 + 3.152 + 7.293}{9.148} \\ &= 2.022 \end{aligned}$$

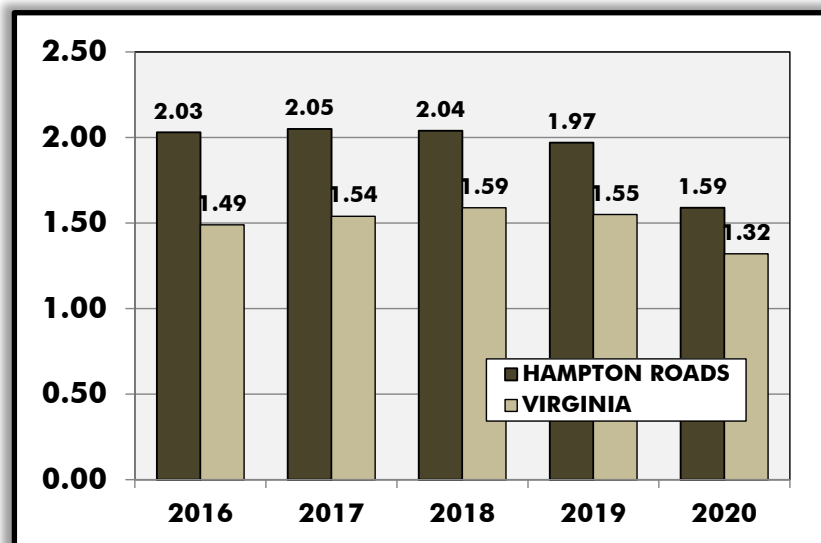
# FREIGHT

## CURRENT/HISTORICAL CONDITIONS

The following chart shows the Truck Travel Time Reliability (TTTR) Index for the Interstate system in Hampton Roads and throughout Virginia for 2016 through 2020.

In addition, the map to the right graphically shows the TTTR on Interstate roadways in Hampton Roads in 2020.

**TRUCK TRAVEL TIME RELIABILITY INDEX - INTERSTATE (2016 – 2020)**



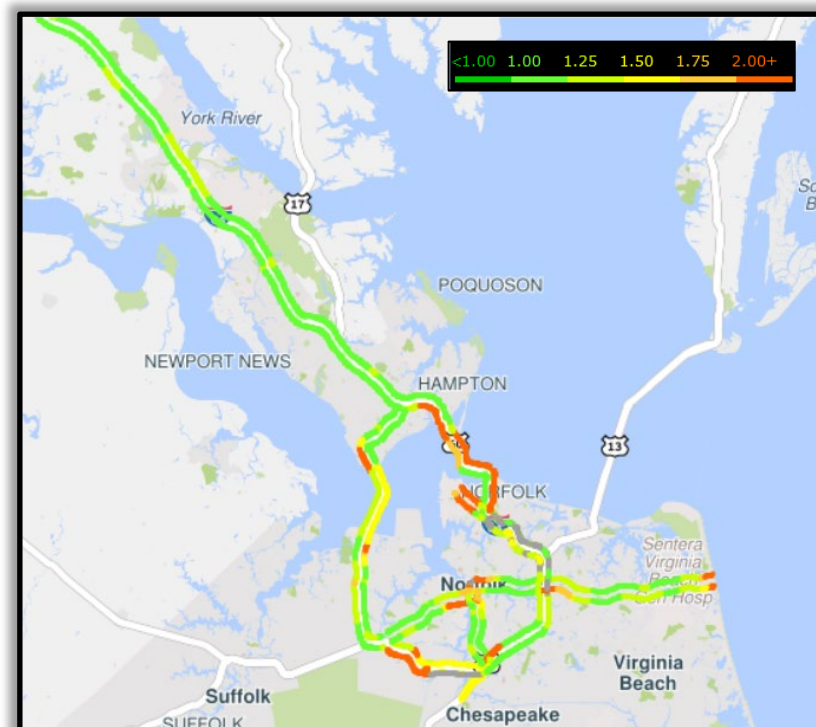
The 2016 and 2017 data is based on the Hampton Roads TMC Network in 2017, while the 2018-2020 data is based on the 2020 TMC Network. This impacts interpreting trends from year to year.

## STATEWIDE 4-YEAR TARGETS (2018-2021)

- **Truck Travel Time Reliability (TTTR) Index - Interstate** < 1.56

The statewide four-year target established by the Commonwealth Transportation Board (CTB) is based on VDOT's projection of a 1.06% annual increase statewide in the TTTR Index.

**TRUCK TRAVEL TIME RELIABILITY INDEX - INTERSTATE (2020)**



Source: RITIS using NPMRDS data.

# FREIGHT

## HRTPO 4-YEAR TARGETS (2018-2021)

The HRTPO established a four-year target for the Truck Travel Time Reliability Index on the Interstate system of less than 2.13. **This target was chosen by applying VDOT's expected annual statewide increase in the TTTR Index (1.06%) to the TTTR Index (2.05) in Hampton Roads in 2017.**

► **Truck Travel Time Reliability Index (Interstate System) < 2.13**

## PROGRESS TOWARDS ACHIEVING TARGETS

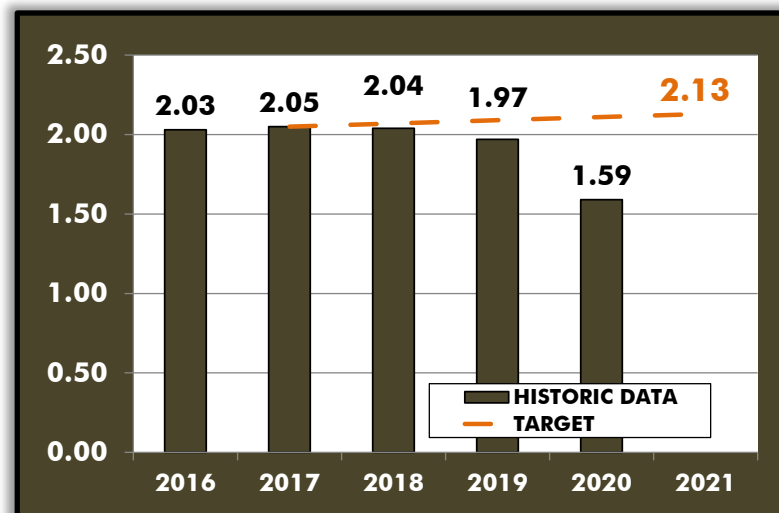
Hampton Roads is surpassing the level needed to reach the 2021 target in the freight measure as shown below:

### ► **Truck Travel Time Reliability Index (Interstate System)**

**SURPASSING TARGET**

At 1.59 as of 2020, this is surpassing (below) the 2.11 level that would be necessary to be on pace to meet the 2021 target.

## **TRUCK TRAVEL TIME RELIABILITY INDEX – INTERSTATE**



The 2016 and 2017 data is based on the Hampton Roads TMC Network in 2017, while the 2018-2020 data is based on the 2020 TMC Network. This impacts interpreting trends from year to year.

# SUMMARY

The Moving Ahead for Progress in the 21<sup>st</sup> Century (MAP-21) surface transportation legislation established a performance- and outcome-based program. As part of this program, States and Metropolitan Planning Organizations (MPOs) prepare and use a set of federally-established performance measures that are tied to national performance goals.

Each MPO must set regional targets in the areas of roadway safety, pavement condition, bridge condition, transit asset management, transit safety, roadway performance, and freight. These performance measures and targets must be reported based on the MPO's Metropolitan Planning Area (MPA). The Hampton Roads MPA is comprised of 15 localities including all of Chesapeake, Hampton, Isle of Wight County, James City County, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg, and York County and portions of Franklin, Gloucester County, and Southampton County.

For roadway safety, transit asset management, and transit safety, targets are established for a one-year time horizon and must be set on an annual basis. For the bridge condition, pavement condition, roadway performance and freight measures, MPO targets are established for a four-year time horizon, whereas states establish both two-year and four-year targets. For target setting, MPOs may adopt the statewide targets but report metrics specific to the MPA; select unique, MPO specific targets, and report metrics specific to the MPA; or use a combination of statewide and unique targets.

Setting the initial and subsequent HRTPO targets – which are shown on the following pages – was a collaborative effort. The Transportation Technical Advisory Committee (TTAC) recommended targets for the HRTPO Board to consider. In order to assist the TTAC, the committee formed a Regional Performance Measures Working Group. This group includes staff from localities, transit agencies, VDOT, and subject-matter experts.

This Regional Performance Measures – System Performance Report is updated on an annual basis to reflect revised targets as well as progress towards meeting the established targets. The progress that Hampton Roads is making towards meeting the targets is summarized on the following pages.

In addition to this document, the HRTPO also maintains a Regional Performance Measures and Targets website that includes information on each of these performance measures as well as the basis for selecting each regional target. The HRTPO Regional Performance Measures and Targets website is <https://www.hrtpo.org/page/regional-performance-measures-and-targets>.

# SUMMARY

## CURRENT HAMPTON ROADS REGIONAL TARGETS ESTABLISHED BY THE HRTPO BOARD AND PROGRESS TOWARD ACHIEVING ESTABLISHED TARGETS

### ONE-YEAR TARGETS

#### ROADWAY SAFETY AND TRANSIT ASSET MANAGEMENT

Area	Measures	HRTPO Approved One-Year Target (2022)	Progress Towards Meeting Target (as of Most Recent Data)
Roadway Safety	Fatalities	125	MISSING TARGET
	Fatality Rate	0.85	MISSING TARGET
	Serious Injuries	1,498	MISSING TARGET
	Serious Injury Rate	10.19	MISSING TARGET
	Non-Motorized Fatalities & Serious Injuries	179	MISSING TARGET
Transit Asset Management	<u>Rolling Stock</u> - % of revenue vehicles within each asset class that have met or exceeded their useful life benchmark		
	Bus	< 10%	MISSING TARGET
	Cutaway Buses	< 5%	MISSING TARGET
	Ferry Boat	< 25%	SURPASSING TARGET
	Light Rail Vehicles	0%	SURPASSING TARGET
	Minibus	< 20%	SURPASSING TARGET
	Trolley Buses	< 1%	SURPASSING TARGET
	Van	< 25%	SURPASSING TARGET
	<u>Equipment/Service Vehicles</u> - % of vehicles that have met or exceeded their useful life benchmark		
	Non-Revenue/ Service Vehicles	< 62%	MISSING TARGET
	Trucks & Other Rubber Tire Vehs	< 17%	MISSING TARGET
	<u>Infrastructure</u> - % of track segments, signals, and systems with performance restrictions		
	Light Rail Infrastructure	< 0.3%	MISSING TARGET
	<u>Facilities</u> - % of facilities in each asset class rated under 3.0 on FTA's TERM scale		
	Passenger/Parking	< 1%	SURPASSING TARGET
	Maintenance	< 10%	MISSING TARGET
	Administrative	< 10%	SURPASSING TARGET

# SUMMARY

## CURRENT HAMPTON ROADS REGIONAL TARGETS ESTABLISHED BY THE HRTPO BOARD AND PROGRESS TOWARD ACHIEVING ESTABLISHED TARGETS

### ONE-YEAR TARGETS

#### TRANSIT SAFETY

Area	Measures	HRTPO Approved One-Year Target (2022)	Progress Towards Meeting Target (as of Most Recent Data)
Transit Safety	<u>Transit Fatalities</u>		NO UPDATED DATA AVAILABLE
	Bus	0	
	Demand Response	0	
	Light Rail	0	
	Vanpool	0	
	<u>Transit Fatality Rate</u>		
	Bus	0.0	
	Demand Response	0.0	
	Light Rail	0.0	
	Vanpool	0.0	
	<u>Transit Injuries</u>		
	Bus	< 83	
	Demand Response	0	
	Light Rail	0	
	Vanpool	0	
	<u>Transit Injury Rate</u>		
	Bus	< 7.62	
	Demand Response	0.0	
	Light Rail	0.0	
	Vanpool	0.0	
	<u>Safety Events</u>		
	Bus	< 71	
	Demand Response	< 1	
	Light Rail	< 5	
	Vanpool	0	
	<u>Safety Event Rate</u>		
	Bus	< 5.70	
	Demand Response	< 0.04	
	Light Rail	< 15.40	
	Vanpool	0.0	
	<u>System Reliability</u>		
	Bus	> 10,000	
	Demand Response	> 29,249	
	Light Rail	> 9,470	
	Vanpool	> 498,800	

# SUMMARY

## CURRENT HAMPTON ROADS REGIONAL TARGETS ESTABLISHED BY THE HRTPO BOARD AND PROGRESS TOWARD ACHIEVING ESTABLISHED TARGETS

### FOUR-YEAR TARGETS

#### BRIDGE CONDITION, PAVEMENT CONDITION, ROADWAY PERFORMANCE, AND FREIGHT

Area	Measures	HRTPO Approved Four-Year Target (2021)	Progress Towards Meeting Target (as of Most Recent Data)
Bridge Condition	NHS bridge deck area in good condition	> 27%	MISSING TARGET
	NHS bridge deck area in poor condition	< 3.0%	MISSING TARGET
Pavement Condition	Interstate System pavement in good condition	> 45%	SURPASSING TARGET
	Interstate System pavement in poor condition	< 3%	SURPASSING TARGET
	Non-Interstate System NHS pavement in good condition	> 25%	MISSING TARGET
	Non-Interstate System NHS pavement in poor condition	< 5%	SURPASSING TARGET
Roadway Performance	Interstate Travel Time Reliability	> 82%	SURPASSING TARGET
	Non-Interstate NHS Travel Time Reliability	> 82.5%	SURPASSING TARGET
Freight	Truck Travel Time Reliability Index	< 2.13	SURPASSING TARGET

# IMPACTS OF COVID-19 ON MEASURES AND TARGETS

The COVID-19 pandemic has impacted the world in so many ways since the Spring of 2020. Many routine activities were suspended and non-essential businesses were closed in order to reduce the spread of COVID-19. These restrictions have been tightened and loosened since then based on the number of COVID-19 cases, hospitalizations, and deaths.

The impact that COVID-19 has had on transportation in Hampton Roads is unprecedented. Passenger volumes at the region's airports dropped by as much as 95% in a matter of weeks, as did Amtrak ridership. Public transportation usage in Hampton Roads dropped by 67% and has remained lower due to a number of factors including more people working from home. Traffic volumes throughout the region were 39% lower in April 2020 than in April 2019, which resulted in peak period congestion being nearly nonexistent, particularly during the morning peak period.

The impacts of COVID-19 will greatly influence the region meeting the targets described throughout this report. For example, the trends in areas including roadway performance and freight should easily exceed the trends needed to meet the four-year targets.

There has been little guidance on how to account for the COVID-19 epidemic in setting regional targets and measuring progress at the time this document was published. HRTPO staff will continue to monitor guidance related to regional performance measures and targets, including guidance related to COVID-19 impacts.

# STATE PERFORMANCE MEASURES

In 2009, the General Assembly of Virginia passed legislation codifying regional transportation performance measurement. In response to the legislation, HRTPO staff, in cooperation with other Virginia metropolitan areas and Virginia's Office of Intermodal Planning and Investment (OIPI), developed a list of regional performance measures (RPMs). The HRTPO Board approved this list in January 2011 and the Commonwealth Transportation Board (CTB) approved it in June 2011.

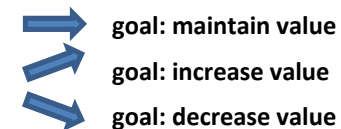
The Hampton Roads regional performance measures (RPMs) include approximately 70 measures, which are organized in the following 12 categories:

- ▶ Transportation System Measures
  - ▶ Congestion Reduction
  - ▶ Safety
  - ▶ Transit Usage
  - ▶ HOV Usage
  - ▶ Job-to-Housing Ratios
  - ▶ Job and Housing Access to Transit
  - ▶ Job and Housing Access to Pedestrian Facilities
  - ▶ Air Quality
  - ▶ Movement of Freight
  - ▶ Vehicle-Miles Traveled (VMT)
  - ▶ Maintenance
- ▶ Financial System Measures

The first ten categories were suggested by the Commonwealth; the last two – Maintenance and Financial – were added by the Transportation Technical Advisory Committee (TTAC).

In April 2012, the HRTPO Board approved a set of targets for its RPMs. Lacking a basis for setting numerical targets, the HRTPO, with the approval of the TTAC's RPM Task Force, decided to set trend targets – increasing a particular value, decreasing a particular value, or maintaining that particular value.

This HRTPO Regional Performance Measures effort is updated annually as part of this System Performance Report. The RPM values and targets are presented on the following pages. The desired direction of each target and the progress in meeting these goals is indicated by the following:



- Green indicates that the actual trend is following the desired trend
- Orange indicates that the actual trend is directionally opposite to the desired trend
- Blue indicates an unclear trend.

# STATE PERFORMANCE MEASURES

	Data Source	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Desired Trend
<b>A. Transportation System Performance Measures<sup>13</sup></b>														
Actual Trend is Following Desired Trend														
Actual Trend is Going Against Desired Trend														
Actual Trend Unclear														
<b>1. congestion reduction</b>														
Annual Delay, hours per peak auto commuter	TTI	38	39	39	41	43	44	46	46	44	43	22	n.a.	→
Annual Excess Fuel Consumed, gallons per peak auto commuter	TTI	16	16	16	16	16	15	15	15	15	15	8	n.a.	→
Travel Time Index (extra time during peak period), %	TTI/FHWA	1.17	1.17	1.18	1.18	1.17	1.17	1.17	1.17	1.16	1.16	1.06	n.a.	→
<b>2. safety</b>														
Annual Roadway Fatalities, number	DMV <sup>24</sup>	121	136	99	131	125	121	125	155	139	147	150	n.a.	→
Annual Roadway Fatalities, per 100 million VMT <sup>25</sup>	DMV <sup>24</sup>	0.89	0.86	0.81	0.84	0.88	0.84	0.84	1.03	0.93	0.96	1.11	n.a.	→
Annual Roadway Injuries, number	DMV <sup>24</sup>	13,449	14,038	15,034	15,432	14,715	14,955	16,628	16,578	16,448	16,895	15,002	n.a.	→
Annual Roadway Injuries, per million VMT	DMV <sup>24</sup>	0.90	0.96	1.04	1.07	1.04	1.03	1.11	1.11	1.10	1.11	1.11	n.a.	→
Annual Roadway Crashes, number	DMV <sup>24</sup>	23,142	24,115	25,192	25,374	24,874	25,310	26,853	26,765	26,916	26,250	23,466	n.a.	→
Annual Roadway Crashes, per million VMT	DMV <sup>24</sup>	1.55	1.65	1.74	1.77	1.76	1.75	1.80	1.79	1.81	1.72	1.74	n.a.	→
Annual Transit Fatalities, number	FTA <sup>6</sup>	0	1	1	0	0	0	3	0	0	0	1	n.a.	0
Annual Transit Fatalities, per 100 million PMT	FTA <sup>6</sup>	0.00	0.85	0.81	0.00	0.00	0.00	3.65	0.00	0.00	0.00	1.80	n.a.	0
Annual Transit Injuries, number	FTA <sup>6</sup>	135	113	73	95	98	123	187	114	101	105	64	n.a.	→
Annual Transit Injuries, per 100 million PMT	FTA <sup>6</sup>	118	96	59	86	101	145	227	130	127	134	115	n.a.	→
Annual Transit Collisions <sup>19</sup> , number	FTA <sup>6</sup>	40	30	26	35	30	39	49	79	79	76	89	n.a.	→
Annual Transit Collisions <sup>19</sup> , per 100 million PMT	FTA <sup>6</sup>	35	26	21	32	31	46	60	90	99	97	160	n.a.	→
Annual Aviation Fatalities <sup>22</sup> , number <sup>23</sup>	NTSB	1	2	0	8	0	3	0	0	3	0	0	0	0
Annual Aviation Accidents <sup>22</sup> , number <sup>23</sup>	NTSB	8	3	1	5	3	3	9	4	4	4	3	0	→
Annual Hwy-Rail Crossing Accidents <sup>20</sup> , per million population	FRA	2	1	4	4	5	3	3	3	5	5	5	5	→
<b>3. transit usage</b>														
Annual Unlinked Passenger Trips (UPT), number	APTA/FTA <sup>6</sup>	18,646,984	19,371,225	21,234,400	21,361,191	19,987,547	19,085,376	17,942,371	16,814,136	15,753,209	15,083,291	8,041,122	7,187,593	→
Annual Unlinked Passenger Trips (UPT), per capita <sup>21</sup>	HRTPO Calc.	13	13	14	14	13	12	12	11	10	10	5	5	→
Annual Vehicle Revenue Miles (VRM), number	FTA <sup>6</sup>	15,972,878	16,016,548	16,158,133	15,634,645	15,552,017	16,084,113	16,857,027	16,963,577	16,719,945	16,985,301	15,586,906	n.a.	→
Annual Vehicle Revenue Miles (VRM), per capita <sup>21</sup>	HRTPO Calc.	11	11	11	10	10	10	11	11	11	11	10	n.a.	→
Annual Passenger Miles Traveled (PMT), number	FTA <sup>6</sup>	114,165,464	117,148,805	123,461,216	110,291,173	96,842,639	84,926,722	82,243,560	87,652,931	79,496,447	78,201,357	55,654,185	n.a.	→
Annual Passenger Miles Traveled (PMT), per capita <sup>21</sup>	HRTPO Calc.	77	78	82	72	63	55	53	57	52	51	36	n.a.	→
Passengers Boarding or Departing Amtrak Trains (HR) <sup>32</sup>	Amtrak	163,405	175,494	195,263	229,524	215,578	221,917	211,887	214,501	204,375	214,568	134,900	163,458	→
Endpoint On-Time Performance, Amtrak (Rich/NN/Nor) <sup>5 32</sup>	Amtrak	n.a.	76%	85%	84%	73%	71%	78%	73%	69%	75%	83%	80%	→
Operating Cost Ratio <sup>30</sup> , Amtrak ("Washington-NN" & "Washington-Norfolk") <sup>5</sup>	Amtrak	n.a.	0.99	0.87	0.98	0.76	0.81	0.76	0.78	0.80	0.83	1.13	1.17	→

See page 51 for an explanation of footnotes.

# STATE PERFORMANCE MEASURES

	Data Source	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Desired Trend
<b>4. HOV usage</b>														
Persons per Hour per HOV Ln During Peak Period, avg of count stations	VDOT	685	571	638	598	612	525	679	717	722	901	542	n.a.	
# of Park and Ride Spaces	VDOT	n.a.	n.a.	4,423	n.a.	n.a.	4,193	3,069	3,075	3,075	4,124	n.a.	n.a.	
# of Occupied Park and Ride Spaces (HRD + Glo)	Va. Dept. of Transportation (	n.a.	n.a.	n.a.	n.a.	1,243	1,159	1,137	1005	1113.333333	1025			
Population (HRD + Glo)	Weldon Cooper	n.a.	n.a.	n.a.	n.a.	0	1,801,242	1,802,188	1803382	1794505	1796337	1812194	1822326	
# of Occupied Park and Ride Spaces, per 100,000 population	VDOT	n.a.	n.a.	n.a.	n.a.	n.a.	64	63	56	62	57	n.a.	n.a.	
% of Commuters with Journey-to-Work via Carpool <sup>10</sup>	Census	9.4%	8.1%	8.9%	8.3%	8.2%	7.8%	9.3%	7.9%	8.5%	7.8%	n.a.	n.a.	
<b>5. job-to-housing ratios</b>														
Ratio of Jobs to Labor Force <sup>2</sup>														
Hampton Roads VWC <sup>34</sup> & HRPDC		0.92	0.91	0.92	0.92	0.90	0.93	0.93	0.92	0.92	0.91	0.93	n.a.	
Chesapeake VWC <sup>34</sup> & HRPDC		0.90	0.89	0.88	0.87	0.86	0.88	0.87	0.86	0.86	0.85	0.88	n.a.	
Franklin VWC <sup>34</sup> & HRPDC		1.24	1.26	1.30	1.31	1.29	1.34	1.33	1.26	1.27	1.24	1.26	n.a.	
Gloucester VWC <sup>34</sup> & HRPDC		0.51	0.51	0.52	0.52	0.50	0.51	0.51	0.50	0.50	0.49	0.51	n.a.	n.a.
Hampton VWC <sup>34</sup> & HRPDC		0.92	0.90	0.91	0.90	0.88	0.89	0.90	0.89	0.88	0.86	0.86	n.a.	n.a.
Isle of Wight VWC <sup>34</sup> & HRPDC		0.58	0.55	0.57	0.59	0.58	0.60	0.60	0.58	0.59	0.57	0.59	n.a.	n.a.
James City VWC <sup>34</sup> & HRPDC		0.87	0.86	0.87	0.84	0.84	0.85	0.87	0.85	0.86	0.85	0.78	n.a.	n.a.
Newport News VWC <sup>34</sup> & HRPDC		1.15	1.16	1.16	1.15	1.15	1.16	1.14	1.15	1.19	1.20	1.24	n.a.	n.a.
Norfolk VWC <sup>34</sup> & HRPDC		1.33	1.33	1.32	1.30	1.28	1.34	1.34	1.33	1.33	1.30	1.33	n.a.	n.a.
Poquoson VWC <sup>34</sup> & HRPDC		0.30	0.29	0.29	0.27	0.27	0.28	0.29	0.30	0.30	0.29	0.29	n.a.	n.a.
Portsmouth VWC <sup>34</sup> & HRPDC		1.03	1.04	1.05	1.07	1.05	1.08	1.06	1.04	1.05	1.04	1.09	n.a.	n.a.
Southampton VWC <sup>34</sup> & HRPDC		0.43	0.41	0.42	0.41	0.41	0.43	0.43	0.42	0.41	0.41	0.40	n.a.	
Suffolk VWC <sup>34</sup> & HRPDC		0.65	0.64	0.69	0.68	0.68	0.71	0.73	0.73	0.75	0.75	0.78	n.a.	n.a.
Virginia Beach VWC <sup>34</sup> & HRPDC		0.77	0.76	0.76	0.77	0.77	0.79	0.80	0.80	0.79	0.79	0.79	n.a.	n.a.
Williamsburg VWC <sup>34</sup> & HRPDC		2.42	2.18	2.18	2.14	2.09	2.11	2.06	2.04	2.01	1.97	1.80	n.a.	n.a.
York VWC <sup>34</sup> & HRPDC		0.71	0.71	0.70	0.70	0.69	0.71	0.71	0.69	0.68	0.67	0.65	n.a.	n.a.
Jobs - Labor Force <sup>2</sup> Regional Linear Dissimilarity Index, 0.0 to 1.0 <sup>3</sup>	VWC <sup>34</sup> & HRPDC	0.11	0.11	0.11	0.11	0.10	0.11	0.10	0.10	0.11	0.11	0.11	n.a.	
% of Workers Working Outside Locality (City/County) in Which They Live	Census	48%	47%	49%	46%	47%	49%	48%	48%	47%	48%	n.a.	n.a.	
Mean Travel Time to Work, minutes	Census	23.7	23.3	24.0	24.0	24.1	24.8	24.0	24.4	25.0	24.6	n.a.	n.a.	
<b>6. job and housing access to transit</b>														
% of Employment in TAZs <sup>1</sup> Served by Transit <sup>18</sup>	HRTPO <sup>1</sup>	n.a.	84%	84%	84%	84%	85%	85%	84%	84%	84%	84%	n.a.	
% of Households in TAZs <sup>1</sup> Served by Transit <sup>18</sup>	HRTPO <sup>1</sup>	n.a.	73%	73%	73%	73%	75%	75%	74%	74%	74%	74%	n.a.	
<b>7. job and housing access to pedestrian facilities</b>														
% of Housing Units <sup>9</sup> in areas <sup>17</sup> with 1%+ Walk-To-Work Mode Share	CTPP & ACS <sup>33</sup>	n.a.	37%	38%	n.a.	38%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
<b>8. air quality</b>														
Annual # of Days when Ozone Levels were Above 8-Hour Standard	DEQ	6	7	3	0	0	0	3	0	0	0	0	n.a.	0
NOx <sup>7</sup> (from motor vehicles), tons per day (near future) <sup>15</sup>	VDOT	n.a.	43	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	31.4	n.a.	n.a.	n.a.	32
NOx <sup>7</sup> (from motor vehicles), grams per capita per day (near future) <sup>15</sup>	VDOT	n.a.	23	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	16.5	n.a.	n.a.	n.a.	
VOC <sup>7</sup> (from motor vehicles), tons per day (near future) <sup>15</sup>	VDOT	n.a.	35	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	20.9	n.a.	n.a.	n.a.	28
VOC <sup>7</sup> (from motor vehicles), grams per capita per day (near future) <sup>15</sup>	VDOT	n.a.	19	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	10.9	n.a.	n.a.	n.a.	
CO <sub>2</sub> (greenhouse gas, from motor veh's), tons per day (near future) <sup>15</sup>	VDOT <sup>16</sup>	n.a.	22,464	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
CO <sub>2</sub> (greenhouse gas, from motor veh's), grams/capita/day (near future) <sup>15</sup>	VDOT <sup>16</sup>	n.a.	12,076	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	

See page 51 for an explanation of footnotes.

# STATE PERFORMANCE MEASURES

	Data Source	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Desired Trend
<b>9. movement of freight</b>														
Shares (%) of General Cargo Handled by Port of Virginia, by container	VPA													
Barge	VPA	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	4%	4%	Blue arrow up
Rail	VPA	28%	30%	32%	34%	33%	33%	37%	35%	35%	34%	32%	33%	Blue arrow up
Truck	VPA	68%	66%	64%	62%	63%	64%	61%	62%	62%	63%	64%	63%	Blue arrow up
		100%	100%	100%	100%	100%	100%	101%	100%	100%	100%	100%	100%	
Rail Mode Share (%), freight with HR origins, by value and tonnage	FAF													
by tonnage <sup>26</sup>	FAF	35%	n.a.	8%	n.a.	n.a.	1.6%	n.a.	4.1%	n.a.	n.a.	n.a.	n.a.	Green arrow up
by value <sup>26</sup>	FAF	3%	n.a.	14%	n.a.	n.a.	1.2%	n.a.	2.9%	n.a.	n.a.	n.a.	n.a.	Green arrow up
Rail Mode Share (%), freight with HR destinations, by value and tonnage	FAF													
by tonnage <sup>26</sup>	FAF	44%	n.a.	61%	n.a.	n.a.	48%	n.a.	32%	n.a.	n.a.	n.a.	n.a.	Orange arrow up
by value <sup>26</sup>	FAF	5%	n.a.	23%	n.a.	n.a.	9%	n.a.	5%	n.a.	n.a.	n.a.	n.a.	Orange arrow up
<b>10. per capita vehicle miles traveled</b>														
Daily Vehicle Miles Traveled (VMT) per capita	VDOT	23.8	23.6	23.1	22.7	22.3	22.7	23.3	23.4	23.3	23.8	20.8	n.a.	Blue arrow up
% of Commuters with Journey-to-Work by Alternate Modes <sup>8</sup>	Census	19%	19%	19%	18%	18%	18%	20%	19%	19%	19%	n.a.	n.a.	Blue arrow up
<b>11. maintenance</b>														
% of Pavement in Non-Deficient Condition, VDOT-maintained roads <sup>27</sup>	VDOT	66%	76%	75%	83%	85%	89%	93%	93%	93%	90%	n.a.	n.a.	Blue arrow up
% of Bridges Not Structurally Deficient	VDOT	94%	94%	94%	94%	94%	93%	94%	95%	95%	95%	96%	96%	Green arrow up
Total Transit Revenue Service Interruptions (mechanical) per million PMT	FTA <sup>6</sup>	45	38	29	27	32	58	46	34	41	41	41	n.a.	Blue arrow up
<b>B. Financial System Performance Measures</b>														
Actual Obligations / Planned Obligations <sup>11</sup>	VDOT	n.a.	n.a.	1.28	0.95	1.14	0.60	0.53	0.72	0.60	0.65	0.94	0.85	n.a.
Average Age of Federal Dollars Spent on TIP Projects <sup>14</sup>	VDOT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Mid-Fiscal-Year Total of Unspent Obligations for TIP Projects <sup>12</sup>	VDOT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
% of Total District Allocn's in SYIP (i.e. omitting St'wide <sup>31</sup> ), year one <sup>4</sup>	VDOT													
Bristol HRTPO Calculator		8%	10%	10%	11%	8%	5%	5%	6%	3%	4%	4%	7%	n.a.
Culpeper HRTPO Calculator		3%	2%	3%	8%	5%	3%	4%	4%	3%	3%	1%	3%	n.a.
Fredericksburg HRTPO Calculator		4%	3%	6%	5%	4%	6%	7%	9%	4%	4%	7%	6%	n.a.
Hampton Roads HRTPO Calculator		13%	16%	21%	29%	28%	36%	34%	27%	22%	31%	27%	29%	Blue arrow up
Lynchburg HRTPO Calculator		3%	2%	2%	2%	1%	2%	4%	5%	3%	3%	2%	3%	n.a.
Northern VA HRTPO Calculator		46%	51%	37%	25%	31%	26%	27%	22%	49%	38%	44%	25%	n.a.
Richmond HRTPO Calculator		11%	8%	8%	8%	7%	9%	10%	11%	9%	7%	4%	9%	n.a.
Salem HRTPO Calculator		7%	3%	7%	8%	8%	6%	6%	8%	5%	6%	8%	12%	n.a.
Staunton HRTPO Calculator		6%	5%	6%	4%	7%	6%	4%	7%	3%	4%	2%	5%	n.a.
total		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

See page 51 for an explanation of footnotes.

# STATE PERFORMANCE MEASURES

## Footnotes

- 1 Transportation Analysis Zone (TAZ) data from regional 4-step model
- 2 Data employment by job location as "jobs" measure; employment by home location as "labor force" measure
- 3 Calculated via equation 2 in "Feasibility of Using Jobs/Housing Balance in Virginia Statewide Planning", VTRC, Aug 2010, pg. 26; 0: perfectly balanced; 1: perfectly unbalanced.
- 4 First fiscal year shown in SYIP, e.g. the "2013" number shown herein comes from the FY13 column of the FY13-18 SYIP.
- 5 New performance measure for FY13 evaluation (i.e. not included in FY12 evaluation).
- 6 FTA's National Transit Database
- 7 These two pollutants (NOx and VOC)--precursors of ground-level ozone--are measured in several Va. MPOs for AQ conformity.  
Note: "2011" numbers are from VDOT's MOBILE 6.2 model; subsequent numbers will be calculated using MOVES model, making comparison to earlier numbers difficult.
- 8 Sum of all modes other than Drove Alone (i.e. including bike, ped, transit, work-at-home, carpool, etc.).
- 9 Given the necessary proximity of jobs to houses of persons who walk to work, this measure is intended to cover both job and housing access to pedestrian facilities.
- 10 The goal of HOV lanes--carpooling--is measured herein.
- 11 Actual obligations ("Obligated") / planned obligations ("TIP"); source: Annual Obligation Report (AOR).
- 12 "Total" = "Unspent Obligations" for each project, summed over all projects in TIP.  
Due to large amount of funds typically obligated near end of fiscal years, "Total" calculated via financial "snapshot" taken near middle of subject fiscal year.  
"Unspent Obligations" for a project = (total obligations for any year up to and including FY of snapshot) - (total spent in any year up to snapshot date).  
Because the "total obligations" will exclude matching funds, the "total spent" should exclude matching funds.
- 13 The source of the first ten category names is Section 33.1-23.03 Code of Va. [amended via Chapter 670], except that "movement of freight" is used herein instead of original "movement of freight by rail"; category 11 and financial RPMs were added by HRTPO.
- 14 This calculation covers all federal transportation dollars spent during the subject fiscal year.  
"Average Age" is a weighted average of the ages of each payment made during the subject fiscal year.  
The age of a specific payment is calculated by comparing the date of the payment to the date of the appropriate obligation for that payment.  
To calculate "Average Age", weight the age of each payment by the amount of that payment.  
If the actual dates are not available, monthly or FY data may be used, e.g. the age of a payment made in FY11 for an obligation made in FY09 is 2.0 years.
- 15 For air quality conformity, VDOT estimates emissions for various future years including one near future year; NOx and VOC emissions for the ozone season, and CO2 emissions as annual averages.
- 16 In addition to the pollutants required for AQ conformity, VDOT calculates CO2 when it conducts analyses for conformity.
- 17 Due to slow release of TAZ data by the CTPP, in later years staff used ACS data by Block Group (block groups being similar in size to TAZs).
- 18 Due to the relatively large size of a typical TAZ, consider only those TAZs which are bordered or penetrated by transit as being served by transit.
- 19 FTA's "National Transit Database" uses the term "collisions" ("Collision\_Total"), instead of "crashes".
- 20 FRA uses the term "accidents".
- 21 Using July estimates from Weldon Cooper for nine localities (Ches., Norf., Ports., Suf., VaB., Hamp., JCC, NN, Wlmbg.).  
Note: The Urbanized Area (UZA) population (which is typically used by FTA) could not be found for inter-census years.  
For year 2000, the HR9 Weldon Cooper population (1,413,272) is similar to the Urbanized Area (UZA) population (1,394,439).
- 22 "Fatalities"= number of people died; "Accidents"=number of crash events; NTSB and FAA use the term "accidents".
- 23 No rate (e.g. "per PMT") is included here because the number of person-miles-of-travel (PMT) in the airspace above Hampton Roads is not known.
- 24 "DMV": Department of Motor Vehicles.
- 25 Rate shown is for a 3-year period ending in year shown.
- 26 Including domestic portion of international freight movement.
- 27 VDOT-maintained roadways only.
- 28 VMT for this year not yet available.
- 29 PMT for this year not yet available.
- 30 OCR = "Total Costs excl. OPEB's, Capital Charge and Other Costs" / "Total Revenue". (OPEB: other post-employment benefits)
- 31 Note: Some large projects (e.g. US 460, I-95 HOT Lanes) are in "Statewide".
- 32 Note: Norfolk Amtrak began on 12-12-12.
- 33 CTPP: Census Transportation Planning Products; ACS: American Community Survey
- 34 VWC: Virginia Workforce Connection

# PUBLIC REVIEW AND COMMENTS

As part of the Hampton Roads Transportation Planning Organization's (HRTPO) efforts to provide opportunities for the public and stakeholders to review and comment on this draft report prior to the final product being published, a public review period was conducted from June 3, 2022, through June 22, 2022. No public comments were received.