Introduction and Background

The Roanoke Valley Transportation Plan (RVTP) defines the region's transportation vision, identifies multimodal transportation needs and priority needs to address, establishes the region's transportation goals and objectives, lists funded and unfunded projects the region will implement over the next 25 years, and identifies priority needs that require further study and project development in order to establish future projects.

The RVTPO developed this System Performance Report to accompany the RVTP. This report documents transportation performance for federally required performance measures under the purview of the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA).

The RVTPO, Virginia Department of Transportation (VDOT), and providers of public transportation in the RVTPO planning area are required to monitor and report on recent and current performance and must apply a transportation performance management (TPM) approach when conducting their transportation planning and programming activities. TPM requires agencies to use a coordinated, performance-based approach to make transportation decisions that support national goals established in Moving Ahead for Progress in the 21st Century (MAP-21) for the federal-aid highway and public transportation programs. These national goals are:

National Goal Area	Goal
Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all public roads and public transportation systems
Infrastructure Condition	To maintain the highway infrastructure and transit capital asset systems in a state of good repair
Congestion Reduction	To achieve a significant reduction in congestion on the National Highway System (NHS)
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 practice

The US Department of Transportation (USDOT), in consultation with states, MPOs, and other stakeholders, established performance measures relevant to the national goals through a series of federal rulemakings. States, MPOs, and providers of public transportation must set performance targets for each measure, and then monitor performance and periodically report to USDOT on progress achieved toward meeting the targets.

The federal performance measure rules fall into five broad categories – highway safety, highway asset management, highway system performance, transit asset management, and public transportation safety.

Definitions Used in the TPM Framework

Performance measure: an expression based on a quantifiable indicator of performance that is used to establish targets and to assess progress toward meeting established targets.

Target: a quantifiable level of performance, expressed as a value for a measure, to be achieved within a time period.

Performance Area	What is Measured	Where it is Measured
Highway Safety	Vehicle, bicycle, and pedestrian fatalities and serious injuries	All public roads
Highway Asset Management	Physical condition of pavement and bridges	All National Highway System (NHS) roads
Highway System Performance	Reliability of highway passenger travel	All Interstate and non-Interstate NHS roads
	Reliability of highway truck freight travel	Interstate System only
	Highway congestion and emissions	NHS roads in some air quality nonattainment and maintenance areas (not applicable to RVTPO)
Transit Asset Management	Physical condition of transit vehicles, equipment, and facilities	Assets maintained by transit providers in RVTPO planning area
Transit Safety	Transit related fatalities, serious injuries, and incidents	Transit providers in RVTPO planning area

Establishing Performance Targets

RVTPO collaborates with the Virginia Office of Intermodal Planning and Investment (OIPI), VDOT, Department of Rail and Public Transportation (DRPT), and local public transportation providers to incorporate the new TPM requirements into planning and programming activities. The Commonwealth Transportation Board (CTB) has provided direction to OIPI, VDOT, and DRPT and has adopted statewide performance targets, starting in 2017, for several performance measures, consistent with Federal requirements. The CTB also adopts statewide performance targets for unique VDOT defined measures. More information on recent Federal and state measure performance trends and targets is available through OIPI's performance management program, including the Virginia-required Biennial Performance Report. This RVTPO System Performance Report focuses exclusively on the Federal-required measures, consistent with the requirements in 23 CFR 450.321.

Virginia, RVTPO, and regional transit providers regularly establish performance targets, as follows:

- For the highway safety performance measures, VDOT establishes statewide safety targets annually and reports them to FHWA each year by August 31 within the Highway Safety Improvement Program (HSIP) Annual Report.
- For the highway asset management and highway system performance measures, VDOT and OIPI establish statewide targets every two years. VDOT and OIPI subsequently review progress towards those targets in the time between
- For the transit asset measures, Valley Metro and RADAR establish targets in coordination with DRPT and other transit providers in development of the statewide Group Transit Asset Management (TAM) Plan. DRPTs TAM Plan includes performance analysis and targets for more than 30 eligible transit providers in Virginia (including Valley Metro and RADAR).
- For the transit safety targets, the eligible transit providers in the RVTPO region established initial targets in 2021 that are required to be reviewed and updated annually.

RVTPO has the flexibility to establish targets by either:

- Agreeing to plan and approve projects in the RVTP that contribute toward the accomplishment of the VDOT or DRPT (and transit provider) targets by adopting the same target.
- Or committing to a different quantifiable target for a performance measure for the RVTPO planning area than the target adopted by VDOT, DRPT, or transit provider. RVTPO will plan and approve projects that contribute to the RVTPO's unique numeric target.
- Regardless of the target setting decision, RVTPO is required to share its decision through documentation provided to the Commonwealth within 180 days of the establishment of the target by VDOT, OIPI, DRPT, or a transit provider.

These requirement details and responsibilities are also specified in RVTPOs "3C" Planning Agreement between RVTPO, the Commonwealth of Virginia, and Valley Metro and RADAR.

System Performance Report Content

A description of the federal performance measures and targets and a System Performance Report are required elements of the RVTP. The System Performance Report evaluates the condition and performance of the transportation system with respect to the federal performance targets, including progress achieved in meeting those targets. The RVTPO's federal performance measures, baseline and recent performance, performance targets, and progress made toward achieving the targets are detailed in the following sections, organized by RVTP goals, as presented in Table 1. An overview of the performance targets for the applicable federal transportation performance measures are presented in Table 2.

Note, not included within Table 2 are transit safety targets. Within the RVTPO planning area, Valley Metro is subject to FTAs public transportation agency safety plan (PTASP) requirements. Valley Metro is a participant in DRPT's Group PTASP Plan, which is available here and tracks performance and establishes targets for fatalities, fatality rate, serious injuries, serious injury rate, safety events, safety event rates, and system reliability.

Table 1 RVTP Goals and Objectives

Goal	Objective
1. Provide a safe and secure transportation system	A. Eliminate fatalities and reduce injuries on the multimodal transportation system.
2. Enable reliable mobility	A. Maintain vehicle travel time reliability on priority corridors. B. Improve transit and passenger rail on-time performance.
3. Enable convenient and affordable access to destinations	A. Provide motorized access to inaccessible properties identified for future development. B. Increase accessibility to key destinations by transit. C. Increase transportation connections to markets outside the region, including across Virginia and the U.S. D. Increase transit, bicycle and pedestrian connections for all users within multimodal centers and districts.
4. Foster environmental sustainability	A. Minimize emissions from motorized on-road transportation. B. Minimize / mitigate new impervious surfaces created by transportation infrastructure.
5. Maintain and operate an efficient and resilient transportation system	A. Maintain state and national standards for infrastructure and asset condition.
6. Support economic vitality	A. Ensure redevelopment and new developments in designated growth areas and multimodal centers/districts are supported by more than one mode of transportation infrastructure. B. Maintain truck travel time reliability. C. Maintain acceptable levels of congestion during peak travel periods on priority corridors.
7. Promote equitable transportation investments	A. Assess planning-level benefits or disproportionate adverse effects of transportation projects included in this plan on Equity Emphasis Areas and identify mitigation strategies. B. Ensure that non-drive alone mobility investments create opportunities for in Equity Emphasis Areas. C. Eliminate fatalities and reduce serious injuries in Equity Emphasis Areas. D. Maintain state and national standards for infrastructure condition in Equity Emphasis Areas.

Table 2 RVTPO's Federal Transportation Measure Performance and Targets

Performance Measure	2021 Performance	2021 Target	2022 Target	2023 Target
Highway Safety (all public roads, five-year rolling average) (Annual Target)				
Number of Fatalities	21.6	18.0	20.0	Pending, RVTPO to adopt in Jan. 2023
Rate of Fatalities per 100 Million VMT	1.101	0.924	0.945	
Number of Serious Injuries	198.0	193.0	184.0	
Rate of Serious Injuries per 100 Million VMT	10.092	9.660	8.879	
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	21.4	20.0	18.0	
Performance Measure	**2021* Performance**		**2022 Target**	
Transit Assets (Valley Metro, RADAR) (Biennial Target, by Federal Fiscal Year)				
Equipment – Percent of Vehicles Exceeding their Useful Life (8 years)	83%		25%	
Bus – Percent of Vehicles Exceeding their Useful Life (14 years)	47%		15%	
Cutaway – Percent of Vehicles Exceeding their Useful Life (10 years)	26%		10%	
Van – Percent of Vehicles Exceeding their Useful Life (8 years)	0%		20%	
Facilities – Percent of Facilities with a condition rating below 3.0 (on FTA Transit Economic Requirements Model scale)	0%		10%	
Performance Measure	**2021 Performance**	**2021 Target**	**2023 Target**	**2025 Target**
Pavement on the Interstate System (lane miles) (Biennial Target)				
% in good condition	53.0%	45.0%	Pending, RVTPO to adopt by July 2023	
% in poor condition	0.0%	3.0%		
Pavement on the non-Interstate NHS (lane miles) (Biennial Target)				
% in good condition	39.1%	25.0%	Pending, RVTPO to adopt by July 2023	
% in poor condition	0.3%	5.0%		
Bridges and Culverts on the NHS (deck area) (Biennial Target)				
% in good condition	10.6%	30.5%	Pending, RVTPO to adopt by July 2023	
% in poor condition	2.3%	3.0%		
Highway System Performance and Freight (Biennial Target)				
% reliable Interstate person miles traveled	100.0%	82.0%	Pending, RVTPO to adopt by July 2023	
% reliable non-Interstate NHS person miles traveled	95.2%	82.5%		
Truck Travel Time Reliability Index	1.29	1.56		

*Note: Asset condition data as of February 2022.

Goal 1: Provide a safe and secure transportation system

Objective: Eliminate fatalities and reduce injuries on the multimodal transportation system.

RVTPO measures progress towards this goal and objective via the following highway safety and transit safety federal performance measures.

Highway Safety

FHWA established five highway safety performance measures:

1. Number of fatalities
2. Rate of fatalities per 100 million vehicle miles traveled (VMT)
3. Number of serious injuries
4. Rate of serious injuries per 100 million vehicle miles traveled
5. Number of combined non-motorized fatalities and non-motorized serious injuries.

This goal and objective are also consistent with the vision and goal of Virginia's 2022-2026 Strategic Highway Safety Plan (SHSP). The RVTP Needs Assessment documented highway, bicycle, and pedestrian safety needs identified by citizens. Needs were prioritized using data and tools developed by VDOT for the 2019 Roanoke Valley Regional Transportation Safety Study along with other criteria including multimodal areas, activity density, equity, and development priorities.

Highway Safety Performance and Targets

Table 3 presents Virginia's statewide five-year rolling average data for each highway safety measure for 2017 through 2020, along with targets for calendar year 2022 and 2023. RVTPO has agreed to support Virginia's 2021 and 2022 statewide safety targets and will be reviewing 2023 targets.

Table 3 Virginia Highway Safety Performance Measures and Targets

Virginia Performance Measures (five-year rolling average*)	2014-2018	2015-2019	2016-2020	2017-2021	2022 Virginia Target	2023 Virginia Target
Number of Fatalities	775.2	800.8	820.0	861.6	841.8	1,012
Rate of Fatalities per 100 Million VMT	0.924	0.944	0.986	1.042	1.004	1.216
Number of Serious Injuries	7,754.2	7,674.8	7,431.6	7,293.6	7,072.2	7,465
Rate of Serious Injuries per 100 Million VMT	9.264	9.072	8.918	8.810	8.444	8.971
Number of Combined Non-Motorized Fatalities and Non-Motorized Serious Injuries	729.0	727.0	709.8	702.4	660.0	662.0

*The annual five-year rolling average represents the average of five consecutive annual points of data. Use of the five-year rolling average provides a smoothing effect for variations in safety data from year to year and helps to better evaluate performance over time.

Table 4 presents safety performance for the RVTPO region for each federal highway safety performance measure. Note, 2021 fatality rate and serious injury rate measures at the RVTPO level are still being finalized as VMT data is confirmed by VDOT.

Table 4 RVTPO Highway Safety Performance

RVTPO Performance Measures (five-year rolling average*)	2014-2018	2015-2019	2016-2020	2017-2021
Number of Fatalities	16.6	18.6	20.4	21.6
Rate of Fatalities per 100 Million VMT	0.85	1.12	1.06	1.10
Number of Serious Injuries	204.8	199.8	191.2	198.0
Rate of Serious Injuries per 100 Million VMT	10.51	10.18	9.92	10.09
Number of Combined Non-Motorized Fatalities and Non-Motorized Serious Injuries	19.6	19.2	20.8	21.4

Performance: As shown in Table 3 and Table 4, Virginia experienced an increase in fatalities and fatality rate between 2018 and 2021. Serious injuries and serious injury rate trended downward over this time period, as did non-motorized fatalities and serious injuries. Performance trends in the RVTPO region moved in varying directions compared to the statewide trend.

- Between 2018 and 2021, the region experienced an increase in the five-year rolling average of fatalities and fatality rate, similar to the statewide trend. The fatality rate in the RVTPO region is at or slightly above the statewide fatality rate.

- Serious injuries and serious injury rate decreased in the RVTPO region between 2018 and 2021, following the statewide trend (although the serious injury rate within the RVTPO region is higher, by more than 1 serious injury annually per 100 million vehicle miles traveled).

- Non-motorized fatalities and serious injuries have steadily increased in the RVTPO region since 2018, which is counter to the steady decrease seen in the statewide trend.

RVTP Funded and Unfunded Projects:

The **RVTP includes 87 funded projects** that will support improved safety for vehicle passengers, transit users, bicyclists, and pedestrians throughout the Roanoke Valley. These projects address unique transportation safety needs identified by the RVTP Needs Assessment and supports national, state, and regional safety goals, as well as the RVTP objective to “eliminate fatalities and reduce injuries on the multimodal transportation system”. The **RVTP also includes 25 unfunded priority projects to pursue** for funding through 2045 that address safety needs. The funded and unfunded projects are provided in Table 15 at the end of this System Performance Report.

Table 5 presents the documented motor vehicle, pedestrian, and bicycle safety needs that have been or are in the process of being addressed by funded investments.

Table 5 Regional Safety Needs Addressed

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_256_1_MV_S	Safety (auto)	Virginia Avenue	City Limit to Bypass Road	Improved visibility-Virginia/Pollard intersection; signal timings; ped safety	**93**	Routes 35/36 Transit Service, Vinton has purchased new signal equipment to upgrade signals.	New signal equipment will address traffic flow and signal concerns. Visibility is a function of topography.
N_59_2_MV_S	Safety (auto)	Route 419	U.S. 220 to Ogden Road		**93**	#HB2.FY17 ROUTE 419 SAFETY IMPROVEMENTS AT TANGLEWOOD, Route 419/Route 220 Diverging Diamond Interchange.	Addition of one lane in each direction, signal upgrades are intended to make this segment of Route 419 safer for driving.
N_1740_MV_S	Safety (auto)	U.S. 220	Route 419	Speeding traffic, Short ramp, Turning movements slow traffic	**91**	#SMART20 - Route 419/Route 220 Diverging Diamond Interchange	Funded project aims to address needs identified.
N_1608_MV_S	Safety (auto)	Route 419	Starkey Road		**41**	Project UPC 119462, Route 419 Streetscape Improvements, Phase 2	Funded project includes a Thru-Cut at Route 419 and Starkey Road to improve safety.
N_1038_MV_S	Safety (auto)	I-81	Exit 137		**34**	Project UPC 116203, I-81 from MM 136 to MM 142, add lane in each direction	Project UPC 116203, I-81 from MM 136 to MM 142, will relieve congestion and improve Exit 137.
N_1511_MV_S	Safety (auto)	Cotton Hill Rd	Cotton Hill & Bent Mtn		**11**	Improvements to Cotton Hill Road and Bent Mountain Road were completed several years ago.	Funded projects addressed the need.
N_740_B_S	Safety (bike)	9th St SE	9th St SE		**90**	Route 41 & 42, 35 fixed-route transit; UPC 117994-9th Street Multimodal Improvements	Funded project with repaving will add bike lanes for much of this segment addressing bicycle safety needs.
N_673_B_S	Safety (bike)	Wiley Dr	Wiley Dr	Speeding traffic, distracted drivers	**87**	None	Adjacent greenway trail provides a safe space for bicyclists to be separate from motorists.
N_14_B_S	Safety (bike)	Walnut Avenue	Roanoke City Limit to 1st Street	Bicycle LOS D, Access from Glade Creek Greenway to Vinyard Park	**37**	Glade Creek Greenway Phase 2B (construction phase starting in 2023) and Glade Creek Greenway Phase 3 (PE starting in 2022)	Investment will address this need with a paved surface trail.

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_444_B_S	Safety (bike)	U.S. 220	Route 419		**34**	Project UPC 115460, Route 419/Route 220 Diverging Diamond Interchange	Project UPC 115460, Route 419/Route 220 Diverging Diamond Interchange includes bicycle lanes through the interchange to connect with Route 419 bicycle lanes and U.S. 220 Bus. bicycle lanes.
N_540_B_S	Safety (bike)	Kessler Mill Road	South end of Hanging Rock Battlefield Trail	Access to north end of Mason Creek Greenway	**25**	Greenway from Southend of Hanging Rock Trail to E. Main St construction to start Summer 2022.	Investment addresses this bike safety need.
N_434_B_S	Safety (bike)	Northside High School	Northside High School		**21**	Bicycle access along Peters Creek Road to and from the Northside campus.	Funded investment addresses this need.
N_523_B_S	Safety (bike)	Blue Ridge Drive	West end of Roanoke River Greenway segment	Access from here to east end of next segment	**20**	Roanoke River Greenway - Bridge St. to Aerial Way is funded, completion in August 2023.	
N_544_B_S	Safety (bike)	Explore Park	River trail	Access to Roanoke River Greenway	**17**	Project UPC 113567, Roanoke River Greenway Explore Park to Rutrough Point	Funded project addresses this need.
N_142_P_S	Safety (ped)	Campbell Avenue	at 8th Street SW		**88**	Route 71 & 72 fixed-route transit	Sidewalks and ADA ramps exist at this intersection; no other accommodations planned.
N_127_P_S	Safety (ped)	Patterson Avenue SW	12th Street to 13th Street		**88**	Route 65 & 66, 71 & 72 fixed-route transit	Sidewalks and ADA ramps exist at this intersection; no other accommodations planned.
N_139_P_S	Safety (ped)	9th Street SE	Tazewell Avenue SE to Buena Vista Boulevard SE		**88**	9th St. Multimodal improvements on portion of corridor	Corridor has pedestrian amenities.
N_215_P_S	Safety (ped)	Lee Avenue	Walnut Avenue to S. Pollard Street		**86**	None as of May 2022.	Sidewalks exist on Lee Avenue
N_163_P_S	Safety (ped)	Memorial Avenue	Edgewood Street to Campbell Avenue		**85**	ADA ramps installed at some intersections since the Pedestrian Plan approval.	Sidewalks, crosswalks, ADA ramps and pedestrian signals exist.
N_85_P_S	Safety (ped)	Pollard Street	N of Jefferson Ave. to W Jackson Ave.		**84**	Routes 35/36 Transit Service. Newer ADA ramps and sidewalks next to the library.	Sidewalks exist throughout the corridor.

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_185_P_S	Safety (ped)	Wells Avenue	Gainsboro Rd.to Shenandoah Ave.		**84**		Sidewalks exist.
N_297_P_S	Safety (ped)	U.S. 460 - W Main	Enterprise Drive		**62**	None as of May 2022	It is unclear where pedestrians would be walking to/from in this area. There are wide shoulders on the road.
N_59_2_P_S	Safety (ped)	Route 419	U.S. 220 to Ogden Road	Address and improve sidewalks	**40**	Project UPC 107061, Route 419 Widening, Safety and Multimodal Improvements	Funded project installed sidewalk along Route 419 between U.S. 220 and Ogden Road.
N_904_P_S	Safety (ped)	Route 419	Tanglewood Mall		**37**	Project UPC 107061, Route 419 Widening, Safety and Multimodal Improvements	Funded project installed sidewalk along Route 419 between U.S. 220 and Ogden Road.
N_429_P_S	Safety (ped)	LewisGale Medical Center			**34**	New and upgraded sidewalk west side of 419 with upgraded pedestrian signal improvements at Braeburn intersection.	Funded improvements address the need.
N_448_P_S	Safety (ped)	Walker Foundry/ Norwich			**25**	Greenway trail funded between Bridge St. and Aerial Way - complete by August 2023.	
N_521_P_S	Safety (ped)	Bridge Street	Norwich neighborhood	Nonmotorized access from here to Downtown Salem and east end of next segment	**25**	Greenway trail funded between Bridge St. and Aerial Way - complete by August 2023.	
N_523_P_S	Safety (ped)	Blue Ridge Drive	West end of Roanoke River Greenway	Access from here to east end of next segment	**20**	Roanoke River Greenway - Bridge St. to Aerial Way is funded, completion in August 2023.	
N_402_P_S	Safety (ped)	Explore Park	Explore Park		**20**	Project UPC 113567, Roanoke River Greenway Explore Park to Rutrough Point	Funded project addresses this need.
N_544_P_S	Safety (ped)	Explore Park	River trail	Access to Roanoke River Greenway	**17**	Project UPC 113567, Roanoke River Greenway Explore Park to Rutrough Point	Funded project addresses this need.
N_192_P_S	Safety (ped)	Thompson Memorial	Mountain Heights Drive to Penguin Lane		**10**	Sidewalk exists on this segment.	Investment addresses the need.
N_433_P_S	Safety (ped)	Montgomery County	Montgomery County		**8**	Montgomery County adds new sidewalks as development occurs.	Montgomery County adds new sidewalks as development occurs.

RVTPOs Performance Based Planning Process: The Developmental RVTP includes the continuous vetting of other documented transportation needs, project concepts or preferred solutions without complete scopes or cost estimates and possible solutions that will require further study and project development activities prior to developing priority projects. This ongoing process will include RVTPO and VDOT coordinating with each other through implementation of the new 2022-2026 SHSP and partnering on future project funding opportunities through the Virginia Highway Safety Improvement Program and future studies through the Office of Intermodal Planning and Investment's Project Pipeline Program.

Transit Safety

The Federal Transit Administration's Public Transportation Agency Safety Plan (PTSAP) rule requires certain operators of public transportation systems that receive federal financial assistance to develop and implement a PTASP based on a safety management systems approach. Development and implementation of PTSAPs is anticipated to help ensure that public transportation systems are safe nationwide. Transit providers subject to the rule set targets in the PTASP annually based on the following safety performance measures established by FTA:

1. Total number of reportable fatalities and rate of reportable fatalities per total vehicle revenue miles by mode.
2. Total number of reportable injuries and rate of reportable injuries per total vehicle revenue miles by mode.
3. Total number of reportable safety events and rate of reportable events per total vehicle revenue miles by mode.
4. System reliability - Mean distance between major mechanical failures by mode.

Under the PTASP rule, a state will draft and certify a PTASP on behalf of any small transit provider (fewer than 101 vehicles in peak revenue service and does not operate rail) unless that provider develops its own plan. DRPT is the sponsor for a Statewide Group PTASP Plan, available here, and acts as the plan coordinator for fifteen smaller transit agencies in the Commonwealth. The Tier II group plan documents Safety Management Systems (SMS), Safety Performance Targets and, Employee Reporting Programs for each of the participating agencies. While DRPT is the sponsor of the group plan, each transit agency is responsible for the plan's implementation and annual review.

Transit Safety Performance Targets

Within the RVTPO planning area, Valley Metro is subject to the PTASP requirements. Valley Metro is a participant in DRPT's Group PTASP Plan. Table 6 summarizes the current transit safety targets for Valley Metro.

Table 6 Transit Safety Targets

Transit Mode	Fatalities	Fatality Rate	Injuries	Injury Rate	Safety Events	Safety Events Rate	Distance Between Major Failures	Distance Between Minor Failures
Valley Metro Targets								
Fixed Route	0	0	9	<0.5 injuries per 100,000 vehicle revenue miles	17	<1 reportable event per 100,000 vehicle revenue miles	10,000 miles	3,200 miles
Demand Response	0	0	3	<0.5 injuries per 100,000 vehicle revenue miles	8	<1 reportable event per 100,000 vehicle revenue miles	10,000 miles	3,200 miles

There were no transit safety concerns identified by citizens. Any safety concerns related to getting to transit were captured under the bicycle or pedestrian safety need categories.

Goal 2: Enable reliable mobility

Objectives:

a. Maintain vehicle travel time reliability on priority corridors.

b. Maintain transit and passenger rail on-time performance (OTP).

Highway System Performance

FHWA established three measures to assess performance of the National Highway System and freight movement on the Interstate system that relate to reliability.

National Highway System Performance

1. Percent of person-miles on the Interstate system that are reliable
2. Percent of person-miles on the non-Interstate NHS that are reliable

Freight Movement on the Interstate

3. Truck Travel Time Reliability Index (TTTR)

The two system performance measures assess the reliability of travel times on Interstate and non-Interstate NHS roads. Reliability is an assessment of the difference in travel times on a given route from day to day. Travel that is reliable will usually take about the same amount of time on any given day, while travel that is unreliable means the amount of time required to complete a trip will vary widely, usually due to non-recurring bottlenecks, crashes and other incidents, or weather. These two measures are expressed in person-miles, which considers the number of people traveling in vehicles on these roads. A higher percentage for these measures means better performance.

The freight movement performance measure, similar to the first two measures, assesses the reliability of truck travel times on the Interstate, but is expressed as an index. A TTTR index is generated based on the ratio of actual truck travel times to normal travel times. A lower TTTR value means better performance, i.e., more reliable truck travel.

System Performance and Targets

Travel time data (based on in-vehicle GPS travel speed and location data) is collected and aggregated by INRIX and reported through FHWA's National Performance Management Research Data Set. This data is used to calculate and report the reliability performance measures. This data is also used as the basis for establishing two-year and four-year targets and for tracking performance and progress toward the targets. Table 7 presents Virginia's statewide performance since 2017 for each measure.

RVTPO agreed to support Virginia's 2021 targets and is reviewing new 2023 and 2025 targets recently adopted by the Commonwealth Transportation Board. By supporting the Virginia targets, RVTPO agrees to plan and program projects that will help VDOT make progress toward achieving the targets.

Table 7 Statewide System Performance

Performance Measure	Virginia 2017	Virginia 2018	Virginia 2019	Virginia 2020	Virginia 2021	Virginia Target (2021)	Virginia Target (2023)	Virginia Target (2025)
% reliable Interstate person miles traveled	84.3%	82.4%	83.6%	93.8%	86.3%	82.0%	85.0%	85.0%
% reliable non-Interstate NHS person miles traveled	86.8%	88.0%	88.9%	97.8%	95.0%	82.5%	88.0%	88.0%
Truck Travel Time Reliability Index	1.48	1.58	1.55	1.32	1.49	1.56	1.64	1.64

Table 8 presents RVTPO performance for the 2017 baseline year through 2021, the most recent year of available data.

Table 8 RVTPO System Performance

Performance Measure	RVTPO 2017	RVTPO 2018	RVTPO 2019	RVTPO 2020	RVTPO 2021
% reliable Interstate person miles traveled	100.0%	100.0%	100.0%	100.0%	100.0%
% reliable non-Interstate NHS person miles traveled	90.4%	90.6%	93.5%	93.8%	95.2%
Truck Travel Time Reliability Index	1.23	1.32	1.32	1.13	1.29

Reliability Performance: As shown in the Tables 7 and 8, reliability in 2020 was significantly better than the 2017 baseline for all three measures due to the travel-related impacts of the pandemic that reduced the amount of driving. Prior to the pandemic, the percent of person-miles traveled in reliable conditions statewide increased slightly between 2017 and 2019, reflecting a minor improvement in

performance. Virginia is positioned to achieve the 2021 targets on the Interstate system and Non-Interstate NHS. TTTR increased slightly between 2017 and 2019 from 1.48 to 1.55, reflecting a decline in overall performance.

In the RVTPO region, travel is significantly more reliable on the Interstate system and the non-Interstate NHS than it is statewide, the performance trend has followed the state pattern, however it is significantly better, particularly on the Interstate system.

Every two years, FHWA completes an assessment of progress for each state toward achieving established system performance targets. While significant progress is not assessed for MPOs, based on the RVTPO performance trend and targets, the region is making significant progress across all measures.

RVTP Funded and Unfunded Projects: The RVTP includes **33 funded projects** that will support improved travel time reliability in the Roanoke Valley. These projects address a suite of system management and congestion relief needs documented within the RVTP Needs Assessment. The RVTP includes **10 unfunded priority projects to pursue** that will address multiple needs and facilitate improved reliability. The funded and unfunded projects are provided in Table 14 at the end of this System Performance Report.

Table 9 presents the documented needs that have been or are in the process of being addressed by funded investments that will improvement travel time reliability on the NHS within the Roanoke Valley.

Table 9 Reliability Needs Addressed

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_63_T	Congestion	U.S. 460 - Orange	24th St. NE to Blue Hills Drive NE		**86**	Addresses need: #SMART20 - ORANGE AVE (US 460) IMPROVEMENTS, #SMART22 - ROUTE 460 (ORANGE AVENUE) IMPROVEMENTS AT KING STREET and Route 31 & 32 Fixed-Route Transit Service	#SMART20 and #SMART22 projects address congestion (primary need)
N_59_3_T	Congestion	Route 419	Starkey Road to Brambleton Avenue	Timing of lights on 419 often means hitting every single one- every single one. This is why people use shortcuts like Brandon, leading to other issues.	**73**	#SMART18 - ROUTE 419 & RTE 221 ADAPTIVE TRAFFIC CONTROL includes improvements to 7 existing traffic signals on Electric Rd. but does not go full length of corridor;	All signals on Route 419 between the City of Salem and City of Roanoke are coordinated through two different systems.
N_248_T	Congestion	Downtown Vinton	Downtown Vinton	Delay, signal coordination/timing, speed, trucks	**72**	Vinton will be replacing all of the traffic signal equipment in the town within the next three years (through 2025).	Monitor congestion via CMP.

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_2070_T	Congestion	Route 419	Brambleton Avenue		**49**	Meets need: #SMART18 - ROUTE 419 & RTE 221 ADAPTIVE TRAFFIC CONTROL	Signal coordination project improved traffic flow on Route 419
N_634_T	Congestion	Exit 143	Exit 143	Left lane, exits/entrances	**42**	Project UPC 111373. I-81 Widening from Exit 143 to 141 Southbound	Funded project extended the left turn lane to Exit 141.
N_2084_T	Congestion	Cloverdale Road	near U.S. 460		**39**	#SMART22 - Route 460 at Alternate Route 220 Intersection Improvements	#SMART22 - Route 460 at Alt. Route 220 Intersection Improvements will reduce congestion and improve traffic flow on both Cloverdale Road and Route 460
N_59_2_MV_S	Safety (auto)	Route 419	U.S. 220 to Ogden Road		**93**	#HB2.FY17 ROUTE 419 SAFETY IMPROVEMENTS AT TANGLEWOOD, Route 419/Route 220 Diverging Diamond Interchange	Addition of one lane in each direction, signal upgrades are intended to make this segment of Route 419 safer for driving.
N_1740_MV_S	Safety (auto)	U.S. 220	Route 419	Speeding traffic, Short ramp, Turning movements slow traffic	**91**	#SMART20 - ROUTE 419 & ROUTE 220 DIVERGING DIAMOND INTERCHANGE	Funded project aims to address needs identified.
N_1608_MV_S	Safety (auto)	Route 419	Starkey Road		**41**	Project UPC 119462, Route 419 Streetscape Improvements, Phase 2	Funded project includes a Thru-Cut at Route 419 and Starkey Road to improve traffic flow and safety.
N_1038_MV_S	Safety (auto)	I-81	Exit 137		**34**	Project UPC 116203, I-81 from MM 136 to MM 142, add lane in each direction	Project UPC 116203, I-81 from MM 136 to MM 142, add lane in each direction will relieve congestion and improve the Exit 137 interchange.
N_444_B_S	Safety (bike)	U.S. 220	Route 419		**34**	Project UPC 115460, Route 419/Route 220 Diverging Diamond Interchange	Project UPC 115460, Route 419/Route 220 Diverging Diamond Interchange includes bicycle lanes through the interchange to connect with Route 419 bicycle lanes and U.S. 220 Business bicycle lanes.

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_981_N_SM	System Management (operations, assets)	U.S. 460 - Orange	near King Street		**88**	#SMART22 - ROUTE 460 (ORANGE AVENUE) IMPROVEMENTS AT KING STREET - signal coordination/re-timing	Funded project aims to address this need.
N_1748_N_SM	System Management (operations, assets)	U.S. 460 - E Main	Thompson Memorial Drive		**68**	East Main Street - Widen to 3 Lanes w/ Bike Lane, Curb, Sidewalk, Downtown Salem Streetscape and Intersection Improvements.	East Main Street - Widen to 3 Lanes w/ Bike Lane, Curb, Sidewalk project and Downtown Salem Streetscape and Intersection Improvements include improved assets and turn movements, etc.
N_333_N_SM	System Management (operations, assets)	Route 419	Grandin Road		**59**	Project UPC T24550, Oak Grove Streetscape Improvements; #SMART18 - ROUTE 419 & RTE 221 ADAPTIVE TRAFFIC CONTROL	Project UPC T24550, Oak Grove Streetscape Improvements will install pedestrian signals and crosswalks at the existing traffic signal; #SMART18 - ROUTE 419 & RTE 221 ADAPTIVE TRAFFIC CONTROL coordinated Route 419 traffic signals

RVTPOs Performance Based Planning Process: The Developmental RVTP includes the continuous vetting of other documented transportation needs, project concepts or preferred solutions without complete scopes or cost estimates and possible solutions that will require further study and project development activities prior to developing priority projects. This ongoing process will include RVTPO and VDOT collaboration and coordination with the I-81 Advisory Committee to identify and develop strategies for potential development into projects and forthcoming grant cycles. These efforts will not solely focus on projects, but also should focus on safety, operational, and demand management strategies to minimize the impact of work zones, crashes, and other incidents on travel time variability. This is particularly a potential future issue as the I-81 widening projects continue. The entire I-81 Corridor Improvement Program creates new opportunities to address reliability issues throughout a mix of solutions in the Roanoke Valley, including widenings, traffic management, incident management, and weather information

Goal 3: Enable convenient and affordable access to destinations

There are no federal performance measures to measure Access. Citizens noted transit access and non-transit access needs several of which are being addressed by funded and unfunded projects as noted in Table 15. Several candidate performance measures have been proposed in the RVTP Goals, Objectives, and Performance Measures Attachment.

Goal 4: Foster environmental sustainability

FHWA established measures related to Air Quality. Currently, the Congestion Mitigation and Air Quality (CMAQ) measures do not apply to the RVTPO region and therefore are not addressed in this System Performance Report. Funded and unfunded projects addressing this goal and associated objectives are noted in Table 15. Candidate measures to address the objectives within this RVTP goal have been suggested in the RVTP Goals, Objectives, and Performance Measures Attachment.

Goal 5: Maintain and operate an efficient and resilient transportation system

Objective: Maintain state and national standards for infrastructure and asset condition.

Highway Asset Management (Bridge and Pavement Condition)

FHWA established six performance measures to assess pavement condition and bridge condition for the National Highway Performance Program:

1. Percent of Interstate pavements in good condition
2. Percent of Interstate pavements in poor condition
3. Percent of non-Interstate National Highway System (NHS) pavements in good condition
4. Percent of non-Interstate NHS pavements in poor condition
5. Percent of NHS bridges by deck area classified as in good condition
6. Percent of NHS bridges by deck area classified as in poor condition

The four pavement condition measures represent the percentage of lane-miles on the Interstate or non-Interstate NHS that are in good and poor condition based on an assessment of roughness and cracking, rutting, faulting, or serviceability. The bridge condition measures represent the percentage of bridges on the NHS, by deck area, which are in good or poor condition based on an assessment of primary bridge components. Pavement and bridges in good condition do not require major investment, while those in poor condition will need substantial reconstruction or replacement.

Highway Asset Performance and Targets

Virginia collects and reports pavement and bridge condition data to FHWA each year. This data is used as the basis for establishing two-year and four-year targets and for tracking performance and progress toward the targets. Table 10 presents Virginia's statewide performance since 2017 for each measure.

RVTPO agreed to support Virginia's 2021 targets and is reviewing new 2023 and 2025 targets recently adopted by the Commonwealth Transportation Board. By supporting the Virginia targets, RVTPO agrees to plan and program projects that will help VDOT make progress toward achieving the targets.

Table 10 Statewide Bridge and Pavement Performance

Virginia Performance Measures	2017	2018	2019	2020	2021	Virginia Target (2021)	Virginia Target (2023)	Virginia Target (2025)
Pavement on the Interstate System (lane miles)								
% in good condition	57.8%	57.5%	57.9%	56.3%	57.3%	45.0%	45.0%	45.0%
% in poor condition	0.5%	0.3%	0.3%	0.2%	0.1%	3.0%	3.0%	3.0%
Pavement on the non-Interstate NHS (lane miles)								
% in good condition	35.4%	34.8%	36.7%	36.6%	33.5%	25.0%	25.0%	25.0%
% in poor condition	1.0%	0.9%	0.9%	0.8%	0.8%	5.0%	5.0%	5.0%
Bridges and culverts on the NHS (deck area)								
% in good condition	33.6%	32.5%	31.8%	29.4%	29.8%	30.5%	27.2%	25.1%
% in poor condition	3.5%	3.0%	2.6%	3.1%	3.0%	3.0%	3.3%	3.6%

Table 11 presents RVTPO pavement and bridge performance for the 2017 baseline year through 2021, the most recent year of available data.

Table 11 RVTPO Bridge and Pavement Performance

RVTPO Performance Measures	2017	2018	2019	2020	2021
Pavement on the Interstate System (lane miles)					
% in good condition	43.9%	42.9%	58.3%	57.6%	53.0%
% in poor condition	0.3%	0.3%	0%	0%	0%
Pavement on the non-Interstate NHS (lane miles)					
% in good condition	46.5%	42.2%	40.8%	42.7%	39.1%
% in poor condition	0%	0.1%	0.1%	0.1%	0.3%
Bridges and culverts on the NHS (deck area)					
% in good condition	13.6%	13.2%	13.1%	10.6%	10.6%
% in poor condition	2.5%	2.5%	2.4%	1.7%	2.3%

Pavement Performance: As shown in Table 11, pavement condition on the Interstate improved significantly starting in 2019 (over a 15-percentage point increase) as a result of pavement maintenance and rehabilitation activities on I-81 and I-581. These improvements brought the Roanoke Valley closer to the statewide Interstate pavement percent good average. Poor Interstate pavement within the region has remained at or near 0 percent poor over the last five years.

Pavement condition on the non-Interstate NHS within the region has trended downward over the last five years, with percent good steady declining (from 46.5 percent in 2017 to 39.1 percent in 2021) and percent poor slightly increasing (from 0.0% in 2017 to 0.3 percent in 2021). Overall regional

performance is better than the statewide performance trend over the last five years. The downward trend in the region is following the same statewide downward trend.

Bridge Performance: Federal performance management rules require that states include the deck area of federally owned bridges and bridges owned by adjacent states when calculating bridge performance. The performance data for 2017 through 2021 in Table 11 includes the federally owned bridges in the Roanoke Valley (on the Blue Ridge Parkway).

Bridge performance between 2017 and 2021 showed mixed results. The percent of bridge deck area in good condition decreased (worsening performance) from 13.6 percent to 10.6 percent over this period. The percent of NHS bridge deck area in poor condition slightly decreased (improved performance) from 2.5 percent to 2.3 percent. The share of good condition bridges in the RVTPO region is less than statewide performance, with only 10.6 percent of deck area rated as good. However, the share of poor condition bridges in the RVTPO (2.3 percent) is substantively less than the statewide share.

Every two years, FHWA completes an assessment of progress for each state toward achieving established pavement and bridge targets. While significant progress is not assessed for MPOs, based on the RVTPO performance trend and targets, the region is making significant progress across all measures except the percent of bridges in good condition.

RVTP Funded and Unfunded Projects: The RVTP includes **81 funded projects** that will support improved pavement and bridge condition within the Roanoke Valley. These projects address a suite of multimodal transportation needs while also, as a result of the project scope, improving pavement and bridge condition.

The RVTP includes **20 unfunded priority projects to pursue** for funding over the next 10 years that will address multiple needs and facilitate improved infrastructure condition. These funded and unfunded projects are provided in Table 14 at the end of this System Performance Report.

Table 12 presents the documented needs that have been or are in the process of being addressed by funded investments that will improve pavement or bridge condition on the NHS within the Roanoke Valley.

Table 12 Asset Management Needs Addressed

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_63_T	Congestion	U.S. 460 - Orange	24th St. NE to Blue Hills Drive NE		**86**	Addresses need: #SMART20 - ORANGE AVE (US 460) IMPROVEMENTS, #SMART22 - ROUTE 460 (ORANGE AVE.) IMPROVEMENTS AT KING STREET	#SMART20 and #SMART22 projects address congestion (primary need)
N_634_T	Congestion	Exit 143	Exit 143	Left lane, exits/entrances	**42**	Project UPC 111373. I-81 Widening from Exit 143 to 141 SB	Funded project extended the left turn lane to Exit 141.

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_2084_T	Congestion	Cloverdale Road	near U.S. 460		**39**	#SMART22 - Route 460 at Alternate Route 220 Intersection Improvements	#SMART22 - Route 460 at Alt. Route 220 Intersection Improvements will reduce congestion and improve traffic flow
N_59_2_MV_S	Safety (auto)	Route 419	U.S. 220 to Ogden Road		**93**	Meets need: #HB2.FY17 ROUTE 419 SAFETY IMPROVEMENTS AT TANGLEWOOD, Route 419/Route 220 Diverging Diamond Interchange	Addition of one lane in each direction, signal upgrades are intended to make this segment of Route 419 safer for driving.
N_1740_MV_S	Safety (auto)	U.S. 220	Route 419	Speeding traffic, Short ramp, Turning movements slow traffic	**91**	#SMART20 - ROUTE 419 & ROUTE 220 DIVERGING DIAMOND INTERCHANGE	Funded project aims to address needs identified.
N_1038_MV_S	Safety (auto)	I-81	Exit 137		**34**	Project UPC 116203, I-81 from MM 136 to MM 142, add lane in each direction	Project UPC 116203, I-81 from MM 136 to MM 142, add lane in each direction will relieve congestion and improve the Exit 137 interchange.
N_444_B_S	Safety (bike)	U.S. 220	Route 419		**34**	Project UPC 115460, Route 419/Route 220 Diverging Diamond Interchange	Project UPC 115460, Route 419/Route 220 Diverging Diamond Interchange includes bicycle lanes through the interchange to connect with Route 419 bicycle lanes and U.S. 220 Business bicycle lanes.
N_1748_N_SM	System Management (operations, assets)	U.S. 460 - E Main	Thompson Memorial Drive		**68**	East Main Street - Widen to 3 Lanes w/ Bike Lane, Curb, Sidewalk, Downtown Salem Streetscape and Intersection Improvements	East Main Street - Widen to 3 Lanes w/ Bike Lane, Curb, Sidewalk project and Downtown Salem Streetscape and Intersection Improvements
N_333_N_SM	System Management (operations, assets)	Route 419	Grandin Road		**59**	Project UPC T24550, Oak Grove Streetscape Improvements; #SMART18 - ROUTE 419 & RTE 221 ADAPTIVE TRAFFIC CONTROL	Project UPC T24550, Oak Grove Streetscape Improvements will install pedestrian signals and crosswalks at the existing traffic signal

RVTPOs Performance Based Planning Process: The Developmental RVTP includes the continuous vetting of other documented transportation needs, project concepts or preferred solutions without complete scopes or cost estimates and possible solutions that will require further study and project development activities prior to developing priority projects. This ongoing process will include RVTPO and VDOT collaboration through project development within the State of Good Repair Program, and to support localities through Revenue Sharing (and other local assistance programs). In 2019, the CTB adopted Statewide pavement and bridge performance measures and targets and an investment strategy based on the Maintenance and Operations Comprehensive Review. This ongoing process will also include RVTPO and VDOT coordinating with each other through implementation of the new 2022 Transportation Asset Management Plan (TAMP) which identifies Virginia's investment plan and implementation strategies for maintaining the condition of the National Highway System over the next decade.

Transit Asset Management

Public transportation providers that receive Federal Transit Administration (FTA) funding are required to develop Transit Asset Management (TAM) plans to maintain transit assets, such as vehicles, equipment, railways, and infrastructure, in a state of good repair. FTA created TAM performance measures for four categories of transit assets:

- Rolling Stock: percent of revenue vehicles exceeding useful life benchmark (ULB)
- Equipment: percent of non-revenue service vehicles exceeding ULB
- Facilities: percent of facilities rated under 3.0 on FTA's Transit Economic Requirements (TERM) scale
- Infrastructure: percent of track segments under performance restrictions

Useful life benchmark (ULB) is defined as the expected lifecycle of a capital asset, or the acceptable period of use in service, for a particular transit provider's operating environment.

To implement the TAM requirements, FTA defines two tiers of public transportation providers based primarily on size parameters. Tier I providers are those that operate rail service or more than 100 vehicles in all fixed route modes, or more than 100 vehicles in one non-fixed route mode. Tier II providers are those that are a subrecipient of FTA 5311 funds, or an American Indian Tribe, or have 100 or less vehicles across all fixed route modes or have 100 vehicles or less in one nob-fixed route mode. A Tier II provider has the option to establish its own TAM plan and targets, or to participate in a Group TAM Plan with other Tier II providers. A plan sponsor, typically a state DOT, develops a group plan for Tier II providers.

These federal transit asset management measures are aligned with two RVTP Goals: Ensure Reliable Mobility and Maintain and Operate an Efficient and Resilient Transportation System.

Transit Asset Performance and Targets

Public transportation providers set and report TAM targets annually for the following fiscal year. They are required to provide their asset conditions and TAM targets to each MPO in which the transit

provider's projects and services are programmed in the MPO's TIP. MPOs must then establish transit asset targets within 180 days of the date that the provider of public transportation established initial targets. Unlike with the highway safety, highway asset, and system performance measures developed by FHWA, FTA does not require MPOs to establish new transit asset targets annually each time the public transportation provider establishes targets. Instead, subsequent MPO targets must be established when the MPO updates its MTP.

MPOs can either agree to program projects that will support the transit provider's targets or set their own separate regional targets for the MPO's planning area. Regional TAM targets may differ from agency TAM targets, especially if there are multiple transit agencies in the MPO's planning area, or in the event that one or more transit agencies have not provided TAM targets to the MPO.

In the RVTPO planning area there are two public transportation providers that must establish TAM targets – Valley Metro and RADAR. Both Valley Metro and RADAR participated in DRPTs Tier II Group TAM Plan. DRPTs Draft 2022 TAM Plan includes performance analysis and targets for 33 eligible transit providers in Virginia. The TAM performance measure targets are presented in Table 13, with a comparison to Valley Metro and RADAR performance data (based on condition as of February 2022).

Table 13 Statewide System Performance

Performance Measure	Valley Metro	RADAR	RVTPO Region	2022 Target*
Equipment (age) – Percentage of vehicles that have met or exceeded their useful life				
Non Revenue/Service Automobile (8 years)	81%	100%	83%	25%
Rolling Stock (age) – Percentage of vehicles within a particular asset class that have met or exceeded their useful life				
Bus (14 years)	47%	N/A	47%	15%
Cutaway (10 years)	79%	8%	26%	10%
Van (8 years)	N/A	0%	0%	20%
Facilities – Percent of facilities (by group) with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) scale	0%	0%	0%	10%

*Note: Targets are set biennially and represent performance by federal fiscal year.

Valley Metro and RADAR both exceed most of the performance targets for the assets within their fleets and infrastructure. For example, 25 of 53 Valley Metro buses (47 percent) are at or beyond the useful life benchmark of 14 years, which is significantly above the statewide 15 percent target. The pattern is similar for cutaway vehicles, where 14 of 54 vehicles for Valley Metro and RADAR (26 percent) are at or beyond the useful life benchmark of 10 years, which is significantly above the statewide target.

RVTP Funded and Unfunded Projects: The RVTP FY 2024-2027 Transportation Improvement Program (TIP) obligates over $41.9 million in Federal, state, and local funds from FY 2024 through 2027 to support capital investments and operations for fixed-route and demand response transit operators in the Roanoke Valley. The capital investments will go to vehicle replacements that will help ensure that service remains reliable, comfortable, and safe for transit riders.

Table 14 presents the documented needs that have been or are in the process of being addressed by funded investments that will improvement asset condition for Valley Metro and RADAR. Note, this table

is limited to needs identified through the needs assessment and associated projects. There are a number of ongoing and programmed projects to improve transit asset condition in the region not included within this table. The funded and unfunded projects are provided in Table 15 at the end of this System Performance Report.

Table 14 Transit System Management Needs Addressed

Need ID	Need Type	Simple Location	Detailed Location	Need	Score	Investment to Date	Rationale
N_465_T_A	Access (Transit)	Airport	Airport		**75**	SMART WAY Base and Routes 25/26 - Fixed-Route Transit Service	Multiple routes serve the airport - SMART WAY and Routes 25/26.
N_1596_T_A	Access (Transit)	Melrose Avenue	near Food Giant		**67**	Route 91 & 92 fixed routes	Need is addressed by investment.
N_1404_T_A	Access (Transit)	Downtown Salem	Downtown Salem		**50**	Routes 91 & 92 serve Downtown Salem.	Funded investment address transit access need.
N_1487_T_A	Access (Transit)	Roanoke Country Club	Roanoke Country Club		**50**	Routes 91 & 92 serve Melrose Ave. with a stop at Country Club Drive.	Funded investment addresses transit access need.
N_1598_T_A	Access (Transit)	Salem Village Mobile Home Park	Salem Village Mobile Home Park		**50**	Routes 91 & 92 serve Roanoke Blvd. Stop at entrance of mobile home park (but 1/3 mile from closest mobile home).	Funded investment addresses transit access need.
N_631_T_A	Access (Transit)	12th Street	Rugby Boulevard		**50**	Routes 11 & 12 with stops at 12th & Rugby.	Funded investment addresses transit access need.
N_864_T_A	Access (Transit)	Williamson Road	Crockett Avenue		**50**	Routes 21 &22 go by this location.	Funded investment addresses transit access need.
N_1254_T_A	Access (Transit)	Franklin Road	Plasma Resources, Carilion Clinic		**42**	Routes 51 & 52 fixed routes	Investment addresses transit access need.
N_260_T_SM	System Management (transit)	Campbell Court		Space for transit operations	**59**	Downtown Multimodal Station	Station has moved to Third St.

Goal 6: Support Economic Vitality

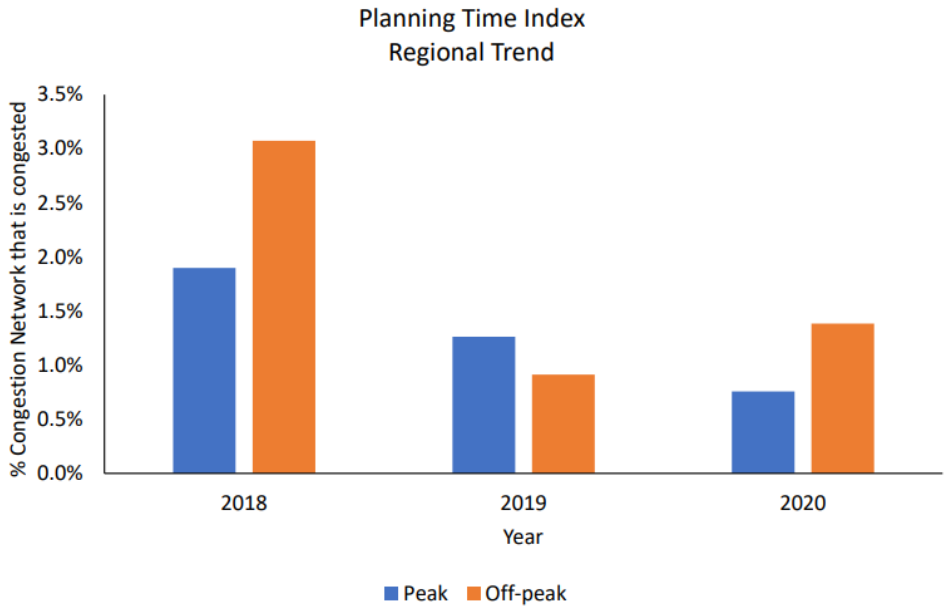
The Interstate truck travel time reliability measure has been reported within Goal 2. There are no other federal performance measures to that address the objectives within this goal. Funded projects addressing this goal and associated objectives along with unfunded priority projects to pursue are noted in Table 14. Candidate measures to address the objectives within this RVTP goal have been suggested in the RVTP Goals, Objectives, and Performance Measures Attachment.

Within this goal, as well as Goal 2, RVTPOs Congestion Management Process tracks regional traffic congestion trends and the monitors the impact of traffic management strategies. The Traffic Congestion

Management Process adopted by RVTPO in 2020 states that RVTPO will produce an annual Traffic Congestion Management Process report. The 2022 report is available for review here.

As part of the Congestion Management Process, RVTPO adopted a Planning Time Index on Congestion Management Process Priority Corridors as the primary measure to track regional traffic congestion trends. The RVTPO has defined the acceptable level of congestion as less than 3% of the congestion network with planning time index greater than 3 during peak hours or greater than 2.5 during off-peak hours. (The congestion network consists of those roads for which data is available to generate a planning time index.) In 2020, the RVTPO congestion network operated at acceptable congestion levels. The percent of miles of the congestion network experiencing traffic congestion during peak and off-peak hours was lower in 2019 and 2020 than in 2018 as indicated in Figure 1.

Figure 1 Percent of the Congestion Network that is Congested During Peak and Off-Peak Hours



Goal 7: Promote equitable transportation investments

There are no federal performance measures to address this goal and associated objectives. Candidate measures to address the objectives within this RVTP goal have been suggested in the RVTP Goals, Objectives, and Performance Measures Attachment.

Funded and Unfunded Project Alignment with Goals and Objectives

Table 15 and Table 16 align each funded and unfunded project within the RVTP to the RVTP goals and objectives (as presented in Table 1) that the project scope is anticipated to address.

Table 15 RVTP Funded Project Alignment with Goals and Objectives

State ID	Locality	RVTPO Title	Cost	Goals	Objectives
Funded Projects					
688	City of Roanoke	13th Street SE Improvements	$25,223,724	1,3,5,7	1A,3D,5A,7A,7B,7C,7D
8753	City of Salem	East Main Street - Widen to 3 Lanes w/ Bike Lane, Curb, Sidewalk	$15,997,819	1,2,3,5,6,7	1A,2A,3A,3D,5A,6B,6C,7A,7B,7C,7D
77305	Roanoke County	Route 116 over Back Creek Bridge Replacement	$7,171,589	5,7	5A,7D
82193	Roanoke County	Rte. 220 over Back Creek Bridge Replacement	$19,208,000	5	5A
91191	Roanoke County	Roanoke River Greenway - City of Roanoke limit to Route 618 (Highland Rd.)	$3,067,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
94726	Roanoke County	Rt. 221 over Martins Creek Bridge Replacement	$3,648,000	5	5A
97171	Roanoke County	Roanoke River Greenway - Green Hill Park to Riverside Park	$12,697,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
106265	City of Roanoke	Garden City Boulevard Greenway	$1,000,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
106268	City of Salem	Hanging Rock Battlefield Trail	$809,959	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
107055	Roanoke County	Williamson Road/Peters Creek Road Pedestrian Safety Improvements	$1,503,000	1,3,4,7	1A,3D,4A,4B,7A,7B,7C,7D
107061	Roanoke County	Route 419 Safety Improvements at Tanglewood	$7,048,000	1,2,3,5,6,7	1A,2A,3D,5A,6A,6B,6C,7A,7B,7C,7D
108896	City of Roanoke	Colonial Avenue Improvements	$7,000,000	1,3,4,7	1A,3B,3D,4A,4B,7A,7B,7C
108906	Roanoke County	I-81 NB Auxiliary Lanes - Exit 141 to 143	$22,816,357	1,2,3,5,6,	1A,2A,3C,5A,6B,6C
108991	Salem District-wide	Roadway Departure Treatments	$2,810,000	1,5,7	1A,5A,7C,7D
109570	City of Roanoke	Route 460 /Hollins Road Traffic Signal Upgrade	$562,000	2,6	2A,6B,6C
109611	Town of Vinton	Glade Creek Greenway, Phase 2A	$705,177	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
109612	City of Salem	Downtown Salem Streetscape Improvements	$1,130,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
110101	City of Roanoke	Tinker Creek Trail Extension	$9,100,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
110155	Roanoke County	Roanoke River Greenway - Blue Ridge Parkway to Explore Park	$1,751,432	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
110395	Roanoke County	I-81 Auxiliary Lane from Exit 141 to 143	$28,193,617	1,2,3,5,6,	1A,2A,3C,5A,6B,6C
110574	City of Salem	Apperson Drive Bridge Replacement	$8,438,000	5,6,	5A,6B,6C
110620	Roanoke County	Diuguids Lane Bridge Replacement over the Roanoke River	$2,281,000	5,7	5A,7D
110624	Montgomery County	Rte. 11 over Norfolk Southern Bridge Deck Replacement	$2,635,165	3,5,6,	3C,5A,6B

State ID	Locality	RVTPO Title	Cost	Goals	Objectives
110887	Salem District-wide	Route 220 Access Management Improvements Project	$11,696,083	1,2,3,6	1A,2A,3A,3C,6B,6C
111135	City of Roanoke	Flashing Yellow Arrow - various locations, City of Roanoke	$277,000	1,6,7	1A,6C,7C
111137	City of Roanoke	Rectangular Rapid Flashing Beacons - City of Roanoke	$108,000	1,3,6,7	1A,3D,6C,7C
111317	Roanoke County	Williamson Road Pedestrian Improvements Peters Creek Road to Plantation Road	$1,934,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
111360	City of Roanoke	Franklin Road Sidewalk Improvements	$764,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C
111366	Roanoke County	Plantation Road Improvements Phase II Walrond Drive to Gander Way	$2,321,596	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C
111367	City of Salem	Mason Creek Greenway - Route 460 to Roanoke River Greenway	$2,610,310	1,3,4,7	1A,3D,4A,4B,7A,7B,7C
111370	City of Roanoke	Hollins Road and Orange Avenue Intersection Improvements	$5,117,482	1,2,5,6,7	1A,2A,5A,6B,6C,7A,7C,7D
111371	City of Salem	Downtown Salem Streetscape and Intersection Improvements	$3,629,869	1,2,3,6,7	1A,2A,3A,3B,3D,6B,6C,7A,7B,7C
111373	Roanoke County	I-81 Southbound Auxiliary Lane - Exit 143 and 141	$13,829,000	1,2,3,5,6	1A,2A,3C,5A,6B,6C
111407	Roanoke County	Adaptive Traffic Control Improvements: Brambleton Avenue (Colonial Ave. to Ranchcrest Dr.) and Electric Road (Springwood Park Dr. to McVitty Rd.; Carriage Ln. to Valley Dr.)	$663,457	1,2,4,5,6,7	1A,2A,4A,4B,5A,6B,6C,7A,7C
111649	Town of Vinton	Walnut Avenue Bicycle and Pedestrian Accommodations 5th Street to Roanoke City/Town West Limits	$2,068,142	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
111983	Roanoke County	I - 81 Auxiliary Lane from Exit 143 to 141	$15,785,499	1,2,3,5,6	1A,2A,3C,5A,6B,6C
113144	Roanoke County	Starkey Road/Buck Mountain Road Intersection Improvements	$5,841,480	1,2,3,6	1A,2A,3D,6B,6C
113322	Town of Vinton	Hardy Road/Dillon Woods Crosswalk	$497,911	1,3,4,7	1A,3D,4A,7B
113324	City of Roanoke	Installation of Pedestrian Countdown Signal on Orange Avenue	$108,000	1,3,4,7	1A,3D,4A,7B
113356	Roanoke County	Roanoke River Greenway, Parkway Crossing	$708,258	1,3,4,6,7	1A,3D,4A,4B,6A,7A,7B,7C
113565	Town of Vinton	Walnut Avenue Bicycle and Pedestrian Accommodations - West Lee Avenue to 1st Street	$881,360	1,3,7	1A,3D,7B
113566	City of Salem	Elizabeth Greenway	$1,832,171	1,3,4,7	1A,3A,3B,3D,4A,4B,7A,7B,7C,7D
113567	Roanoke County	Roanoke River Greenway Extension through Explore Park to Rutrough Rd.	$4,222,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
113570	City of Roanoke	I-581 Exit 2 Interchange Study	$190,000	1,6	1A,6B,6C
113947	Roanoke County	Pedestrian Improvements on Route 11 - North Roanoke Assisted Living to Clubhouse Drive	$2,573,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D

State ID	Locality	RVTPO Title	Cost	Goals	Objectives
114331	Salem District-wide	Advanced Signal Control Technology and Communication Installation	$407,136	1,2,4,5,6,	1A,2A,4A,4B,5A,6B,6C
115457	Botetourt County	Route 220 and International Parkway Intersection	$4,551,000	1,2,6,	1A,2A,6B,6C
115460	Roanoke County	Route 419/Route 220 Diverging Diamond Interchange	$17,505,000	1,2,3,6	1A,2A,3A,3C,6B,6C
115473	Roanoke County	Route 813 Bridge over Roanoke River	$2,411,233	5,7	5A,7D
116077	Salem District-wide	Safety Prescoping Salem	$1,560,914	1,7	1A,7C
116197	Roanoke County	I-81 NB Widening - Exit 128 to Exit 137	$265,372,320	1,2,3,5,6	1A,2A,3C,5A,6B,6C
116201	Roanoke County	I-81 Widening - MM 144 to Exit 150	$322,157,080	1,2,3,5,7	1A,2A,3C,5A,6B,6C
116203	Roanoke County	I-81 Widening - MM136 to MM141	$292,480,000	1,2,3,5,8	1A,2A,3C,5A,6B,6C
116326	Roanoke County	Maintenance of Cameras, Congestion Monitoring System	$1,598,224	1,2,3,5,9	1A,2A,3C,5A,6B,6C
116328	Roanoke County	Management Fee for Cameras, Congestion Monitoring System	$188,492	1,2,5,6	1A,2A,5A,6B,6C
117211	Salem District-wide	Curve Delineation	$839,921	1,5	1A,5A
117212	Salem District-wide	Pedestrian Crossing Improvements on 419 and at Plantation/Hershberger Intersections	$615,000	1,3,4,7	1A,3D,4A,4B,7A,7B,7C,7D
117213	Salem District-wide	FY21 Unsignalized Intersections	$62,574	1	1A
117215	Salem District-wide	Edgeline Rumble Strips Installation	$791,322	1,5	1A,5A
117221	City of Roanoke	Franklin Road Sidewalk Improvements Phase 2	$2,241,000	1,3,4,7	1A,3D,4A,4B,7A,7B,7C
117972	City of Salem	I-81 Detour Improvements	$2,800,000	1,2,5,6,	1A,2A,5A,6B,6C
117994	City of Roanoke	9th Street Pedestrian and Transit Improvements	$889,000	1,3,4,5,7	1A,3B,3D,4A,4B,5A,7A,7B,7C,7D
117995	Town of Vinton	Glade Creek Greenway, Phase 2B	$784,659	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
118034	Roanoke County	I-81 Detour Improvements - Signal Communications	$450,000	1,2,6	1A,2A,6B,6C
119452	Botetourt County	Route 460 at Laymantown Road Intersection Improvement	$7,623,347	1,2,6,7	1A,2A,6B,6C,7A,7C
119462	Roanoke County	Route 419 Streetscape Improvements Phase 2, Ogden Road to Starkey Road	$18,469,482	1,3,4,5,7	1A,3D,4A,5A,7A,7B,7C
119468	Roanoke County	Valleypointe Parkway Realignment	$9,837,072	1,2,3,5,6	1A,2A,3A,5A,6B,6C
119472	Town of Vinton	Walnut Avenue Corridor Improvements - 1st to 4th St.	$7,399,781	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
119473	City of Salem	Main Street / Market Street Intersection Improvements	$2,312,000	1,3,4,7	1A,3D,4A,7A,7B,7C
119474	City of Salem	Apperson Drive / Orchard Drive Intersection Improvement	$2,388,000	3,5,6,	3A,5A,6A,6B,6C
119475	City of Salem	College Avenue Streetscape	$3,017,132	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
119555	City of Roanoke	Aviation Drive / Valley View Boulevard Pedestrian Improvements	$7,178,491	1,3,4,5,6,7	1A,3C,3D,4A,5A,6A,7A,7B,7C,7D

State ID	Locality	RVTPO Title	Cost	Goals	Objectives
119562	City of Salem	Roanoke River Greenway - Rotary Park to Bridge St.	$4,521,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
119586	City of Roanoke	Riverland Road Greenway	$1,313,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
119666	City of Roanoke	Roanoke River Greenway - Bennington Street to Tinker Creek Greenway	$6,400,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
119668	Salem District-wide	Edgeline Rumble Strips Installation	$2,844,247	1,5	1A,5A
119669	Salem District-wide	Centerline Rumble Strips Installation	$54,457	1,5	1A,5A
119671	Salem District-wide	Centerline Rumble Strips Installation	$208,671	1,5	1A,5A
119911	Town of Vinton	Gus Nicks Boulevard Pedestrian/Bicycle Crossing	$404,000	1,3,4,7	1A,3D,4A,7A,7B,7C
120611	Roanoke County	Route 460 at Alternate Route 220 Intersection Improvements	$21,796,984	1,2,6,7	1A,2A,6B,6C,7A,7C
120899	Salem District-wide	FY23 Curve Delineation	$6,616,897	1,5	1A,5A
120900	Salem District-wide	FY23 Unsignalized Intersections	$3,177,426	1	1A
120996	Botetourt County	Salem Bridge Rehabilitation Contract	$6,156,000	5	5A
121433	Roanoke County	Route 419/220 Diverging Diamond Interchange	$4,043,556	1,2,5,6,7	1A,2A,5A,6B,6C,7A,7C
121708	Systemwide	Resurfacing Roanoke & Craig Primaries	$1,595,016	5,7	5A,7D
121971	City of Roanoke	1556 Campbell Avenue SW Resurfacing	$381,000	5	5A
121977	City of Roanoke	1554 Campbell Avenue SW Resurfacing	$451,235	5	5A
122101	Roanoke County	Glade Creek Greenway Vinyard Park West Roanoke County	$651,375	1,3,4,7	1A,3D,4A,4B,7A,7B,7C
122110	Roanoke County	Route 460 Intersections W. Ruritan Road to Huntridge Road	$10,304,328	1,2,3,5,6	1A,2A,3C,5A,6B,6C
GRT0001	City of Roanoke	VM Fixed-Routes: 11, 12, 15, 16, 21, 22, 25, 26, 31, 32, 35, 36, 41, 42, 51, 52, 55, 56, 61, 62, 65, 66, 71, 72, 75, 76, 85, 86, 91, 92. SmartWay: Base, Express and Connector. Starline Trolley.	$43,703,841	2,3,4,6,7	2B,3B,3D,4A,6A,7A,7B
GRT0002	City of Roanoke	Preventative Maintenance for Valley Metro Vehicles	$3,595,308	2,3,4,5,7	2B,3B,4A,5A,7B,7D
GRT0003	City of Roanoke	Replace Valley Metro transit vehicles	$13,720,152	2,3,4,5,7	2B,3B,4A,5A,7B,7D
GRT0004	City of Roanoke	Valley Metro Support Vehicles	$240,000	2,3,4,5,7	2B,3B,4A,5A,7B,7D
GRT0005	City of Roanoke	Bus Stop Enhancements	$600,000	1,2,3,4,5,7	1A,2B,3B,4A,5A,7B,7D
GRT0006	City of Roanoke	Renovation of Administration and Maintenance Building	$1,000,000	2,3,4,5,7	2B,3B,4A,5A,7B,7D
GRT0007	Systemwide	Shop Equipment	$80,000	2,3,4,5,7	2B,3B,4A,5A,7B,7D
RAD0001	Roanoke County	Purchase of RADAR paratransit vehicles	$640,000	1,2,3,4,5,7	1A,2B,3B,4A,5A,7B,7D

State ID	Locality	RVTPO Title	Cost	Goals	Objectives
ROA0001	Roanoke County	CORTRAN turnkey third-party provided operating assistance	$1,200,000	1,2,3,4,6,7	1A,2B,3B,3D,4A,6A,7A,7B
TBD-001	City of Roanoke	Wiley Drive Bridge Replacement over Roanoke River	$3,780,000	5	5A
T21476	Salem District-wide	Guardrail Installation	$500,000	1,5,7	1A,5A,7C,7D
T21479	Salem District-wide	Rumble Strip Installation	$500,000	1,5,7	1A,5A,7C,7D
122050	Roanoke County	Oak Grove Streetscape - Route 419/Carriage/Grandin Intersection	$218,748	1,3,5,7	1A,3D,5A,7A,7B,7C,7D
T24579	Roanoke County	Orange Market Park and Ride / Parking Lot Improvements	$1,250,000	1,2,3,4,6,7	1A,2B,3B,3D,4A,6A,7A,7B,7C
T24740	Botetourt County	Rte. 220 Superstreet Improvement	$15,461,000	1,2,3,6,	1A,2A,3A,3C,6B,6C
T26750	Town of Vinton	Glade Creek Greenway Phase 3 PE/Study	$275,000	1,3,4,7	1A,3D,4A,7A,7B,7C
T26754	City of Roanoke, Roanoke County	I-581 Exit 2 (Peters Creek Road) Interchange Improvements Phase 1	$20,438,688	1,2,3,6,7	1A,2A,3A,3C,6A,6B,6C,7A
122099	City of Roanoke	Williamson Road Pedestrian Safety - Roanoke	$575,000	1,3,7	1A,3D,7A,7B,7C
T27104	City of Roanoke	Persinger Road Bridge Replacement	$3,905,000	5,7	5A,7D
T27105	City of Roanoke	13th Street Bridge Replacement over Tinker Creek	$6,822,000	5,7	5A,7D
122120	City of Roanoke	Orange Avenue Improvements, Hickory Woods Drive to Blue Hills Village Drive	$13,842,213	1,2,3,5,6,7	1A,2A,2B,3B,3D,5A,6B,6C,7A,7B,7C,7D
109612	City of Salem	Downtown Salem Streetscape Improvements	$1,130,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D
110101	City of Roanoke	Tinker Creek Trail Extension	$9,100,000	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C,7D

Table 16 RVTP Unfunded Project Alignment with Goals and Objectives

RVTPO Title	Street	Total Cost	Project Horizon	Goals	Objectives
Unfunded Projects					
Campbell Avenue Bicycle and Pedestrian Improvements	Campbell Avenue / Norfolk Avenue	$18,372,860	Short-Term Constrained	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C
Cove Road / Peters Creek Pedestrian Improvements	Cove Road / Peters Creek Road	$8,139,217	Short-Term Constrained	1,3,4,6,7	1A,3D,4A,6A,7A,7B,7C
Cove Road Streetscape	Cove Road	$20,000,000	Long-Term Constrained	1,3,4,5,7	1A,3D,4A,5A,7A,7B
East Main Street Phase 2, Parkdale Drive to Mason Creek	East Main Street	$20,316,619	Short-Term Constrained (SSR5)	1,2,3,4,5,6,7	1A,2B,3B,3D,4A,5A,6A,7A,7B,7C, 7D
East Main Street Phase III	East Main Street	$22,131,630	Long-Term Constrained	1,2,3,4,5,6	1A,2A,3A,3D,4B,5A,6B,6C
East Roanoke River Greenway Gap, Phase 2	Off-Road	$27,624,647	Short-Term Constrained (SSR5)	1,3,4,7	1A,3D,4A,4B,7A,7B,7C
Electric Road Pedestrian Signal Improvements	Electric Road	$3,944,955	Short-Term Constrained (SSR5)	1,3,4,6,7	1A,3D,4A,4B,6A,7A,7B,7C
Electric Road Safety Improvements, Grandin Rd. Ext. to Keagy Rd.	Electric Road	$13,602,562	Short-Term Constrained (SSR5)	1,2,3,4,6,7	1A,2A,3D,4A,6B,6C,7A,7C
Electric Road Safety Improvements, Stoneybrook to Grandin Rd. Ext.	Electric Road	$6,624,464	Short-Term Constrained (SSR5)	1,3,6,7	1A,3D,6C,7A,7C
Hardy Road and Bypass Road Roundabout	Bypass Road	$17,123,028	Short-Term Constrained (SSR5)	1,2,3,5,6,7	1A,2A,3D,5A,6C,7A,7C,7D
I-581 at Peters Creek Road Interchange Improvements	Peters Creek Road	$17,356,847	Short-Term Constrained (SSR5)	1,2,3,5,6,7	1A,2A,3A,3D,5A,6B,6C,7A,7C
I-581/ U.S. 460/ U.S. 11 Improvements	Orange Avenue	$25,670,186	Short-Term Constrained (SSR5)	1,2,6,7	1A,2A,6B,6C,7A,7C
Jefferson Street Safety Improvements	Jefferson Street	$14,880,469	Short-Term Constrained	1,3,4,7	1A,3D,4A,7A,7B,7C
Orange Avenue - 11th to 24th Operational Intersection Improvements	Orange Avenue	$28,251,041	Short-Term Constrained (SSR5)	1,2,6	1A,2A,6B,6C,7A
Orange Avenue/ Kimball/ Plantation Road Improvements	Orange Avenue	$8,533,761	Short-Term Constrained (SSR5)	1,5,6,	1A,5A,6C,7A
Roanoke River Greenway - Underhill	Off-Road	$8,710,000	Long-Term Constrained	1,3,4,7	1A,3D,4A,4B,7A,7B,7C
Texas Street Widening	Texas Street	$23,505,499	Short-Term Constrained (SSR5)	1,2,3,5,6,	1A,2A,3A,3C,3D,5A,6B,6C,7A
U.S. 220 Access Management	U.S. 220	$15,831,723	Short-Term Constrained (SSR5)	1,2,3,5,6,	1A,2A,3A,3C,5A,6B,6C
U.S. 220 Access Management and Park & Ride	U.S. 220	$31,543,823	Short-Term Constrained (SSR5)	1,3,4,6,7	1A,3B,3D,4A,6A,7A,7B,7C
U.S. 220 in Daleville - Intersection Conversions to RCUTs	U.S. 220	$20,511,303	Short-Term Constrained (SSR5)	1,2,3,5,6,	1A,2A,3A,5A,6B,6C

RVTPO Title	Street	Total Cost	Project Horizon	Goals	Objectives
Valley Road sidewalk under I-81	Valley Road (Rt. 779)	$3,001,973	Short-Term Constrained (SSR5)	1,3,4	1A,3D,4A,4B
Walrond Drive Pedestrian Improvements	Walrond Drive	$7,217,718	Short-Term Constrained (SSR5)	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C
West Main Street Pedestrian Improvements, Phase 3	West Main Street	$7,059,184	Short-Term Constrained (SSR5)	1,3,4,5,7	1A,3D,4A,4B,5A,7A,7B,7C
Williamson Road Multimodal Improvements	Williamson Road	$66,712,353	Short-Term Constrained (SSR5)	1,2,3,4,6,7	1A,2A,3D,4A,6B,6C,7A,7B,7C
Williamson Road Sidewalk	Williamson Road	$6,700,942	Short-Term Constrained (SSR5)	1,3,4,7	1A,3D,4A,4B,7A,7B,7C
GRT0001	City of Roanoke	$43,703,841	Short-Term Constrained (SSR5)	2,3,4,6,7	2B,3B,3D,4A,6A,7A,7B
GRT0002	City of Roanoke	$3,595,308	Short-Term Constrained (SSR5)	2,3,4,5,7	2B,3B,4A,5A,7B,7D
GRT0003	City of Roanoke	$13,720,152	Short-Term Constrained (SSR5)	2,3,4,5,7	2B,3B,4A,5A,7B,7D
GRT0004	City of Roanoke	$240,000	Short-Term Constrained (SSR5)	2,3,4,5,7	2B,3B,4A,5A,7B,7D
GRT0005	City of Roanoke	$600,000	Short-Term Constrained (SSR5)	1,2,3,4,5,7	1A,2B,3B,4A,5A,7B,7D
GRT0006	City of Roanoke	$1,000,000	Short-Term Constrained (SSR5)	2,3,4,5,7	2B,3B,4A,5A,7B,7D
GRT0007	Systemwide	$80,000	Short-Term Constrained (SSR5)	2,3,4,5,7	2B,3B,4A,5A,7B,7D
RAD0001	Roanoke County	$640,000	Short-Term Constrained (SSR5)	1,2,3,4,5,7	1A,2B,3B,4A,5A,7B,7D
ROA0001	Roanoke County	$1,200,000	Short-Term Constrained (SSR5)	1,2,3,4,6,7	1A,2B,3B,3D,4A,6A,7A,7B