



COMMONWEALTH of VIRGINIA
Office of the
SECRETARY of TRANSPORTATION

Interstate 64/664 Corridor Improvement Plan

Commonwealth Transportation Board Meeting
October 20, 2020



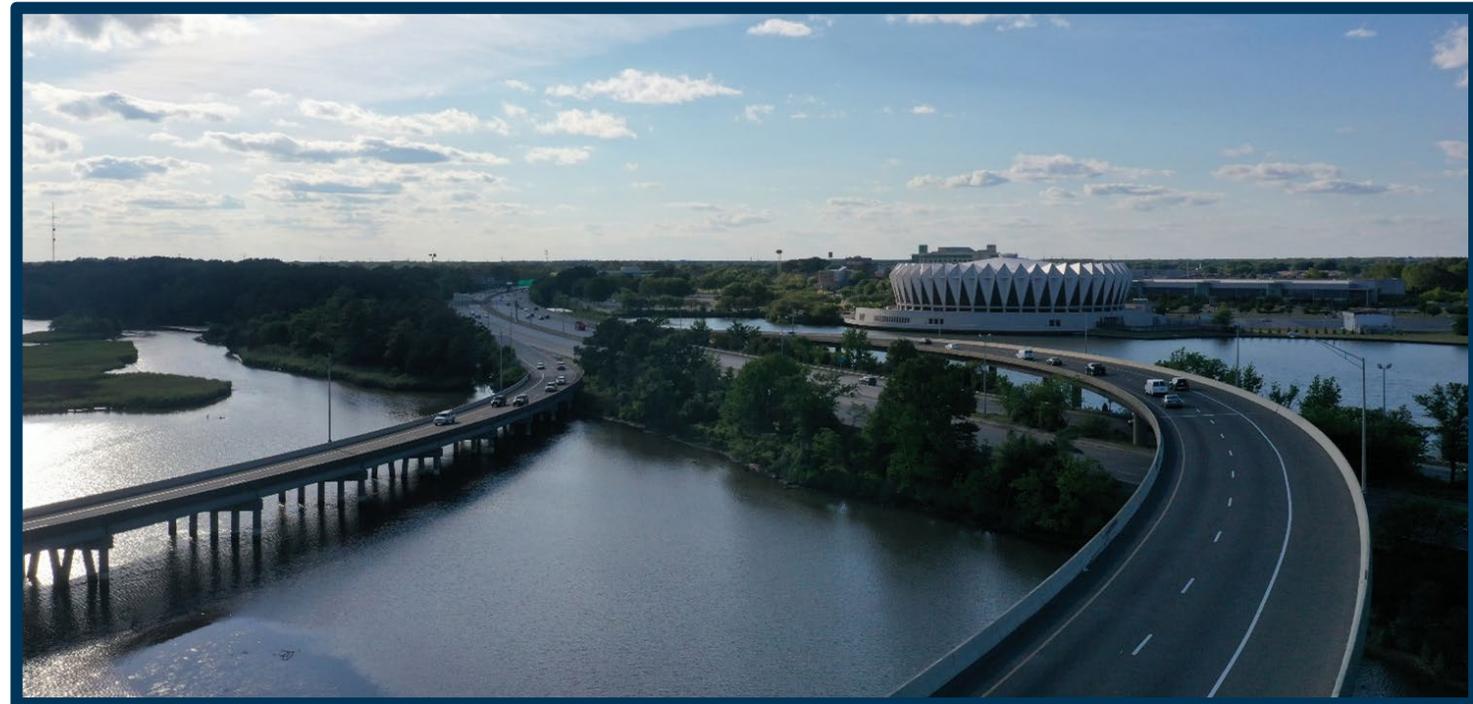
Agenda



Review of feedback from public involvement

Discussion of proposed improvements

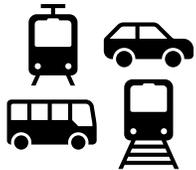
Project schedule update



I-64 Corridor Significance



Critical East-West Corridor



Multimodal Corridor

- Highway
- Park and Ride Lots
- Vanpools
- Commuter/Express Bus
- Carpools
- Intercity Rail



7.2 Million

Trucks Per Year



> 925 Incidents Per Year

(With Average Clearance Times About 1.5 Hours)



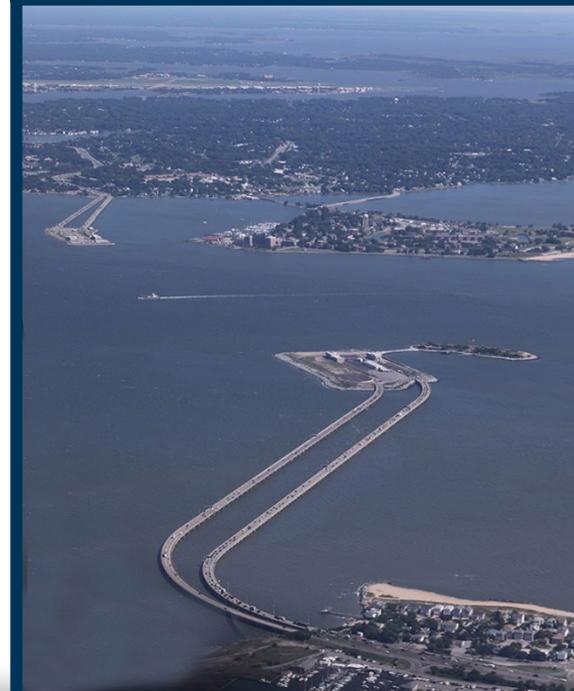
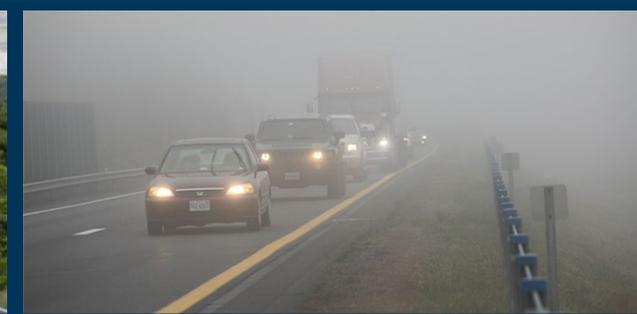
~ 21,500

Crashes Over 5 Years



\$135 Billion

in Goods Moved Per Year



July Public Meetings

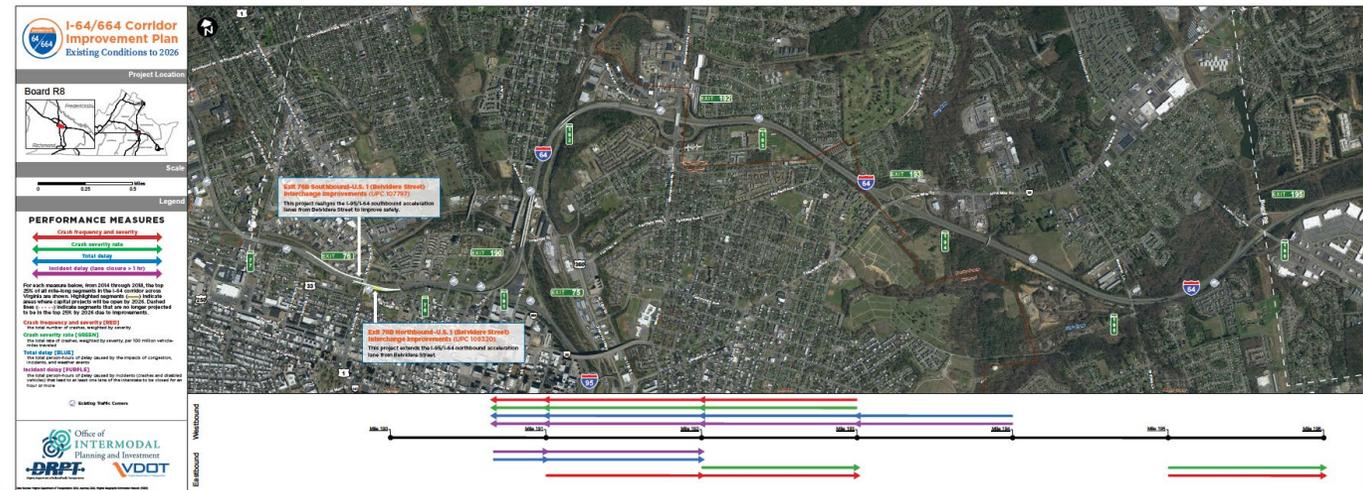
Problem Identification



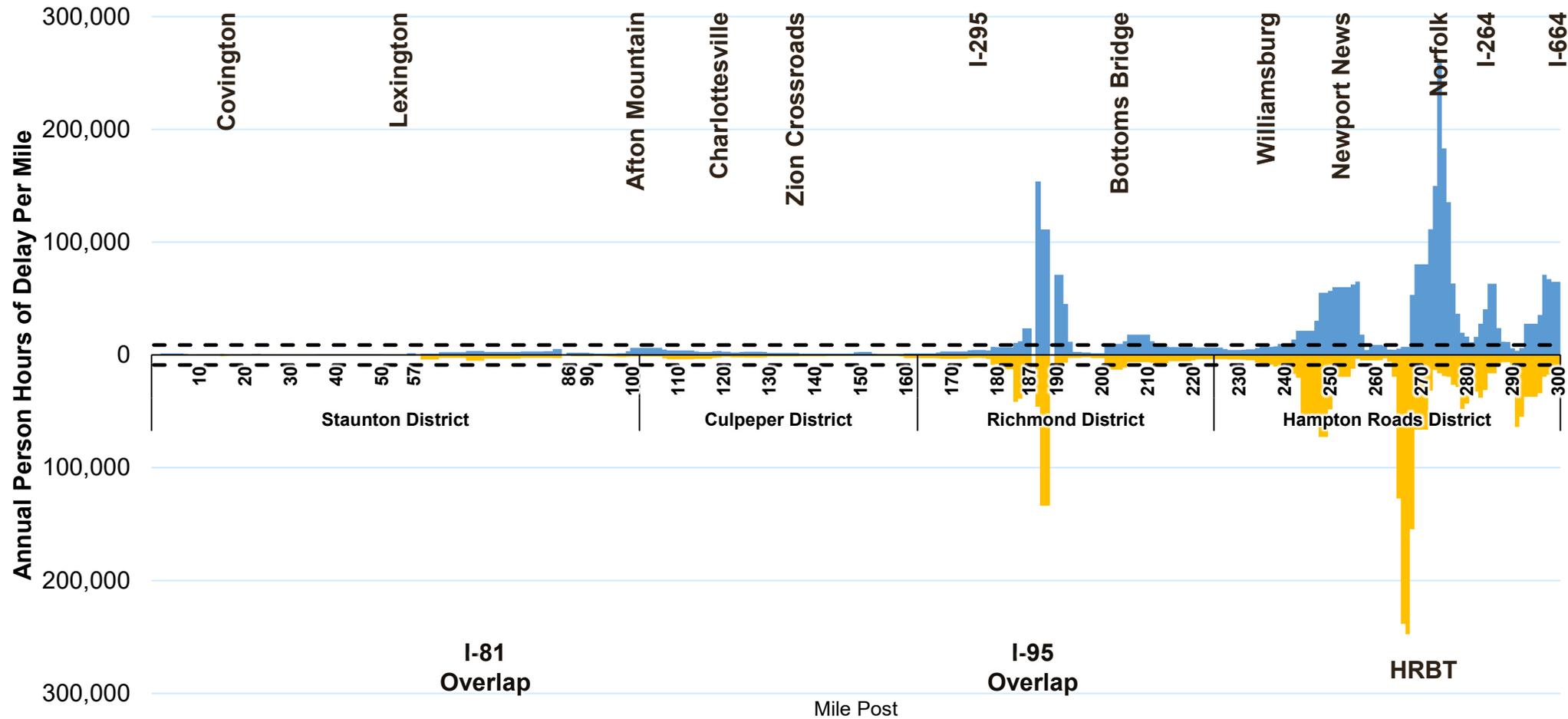
Reviewed entire I-64 and I-664 corridors to identify areas for improvement based on identified problems

- Safety: crash frequency and severity
- Congestion: person-hours of delay
- Resiliency: incidents or crashes causing lane closures greater than one hour

PERFORMANCE MEASURES



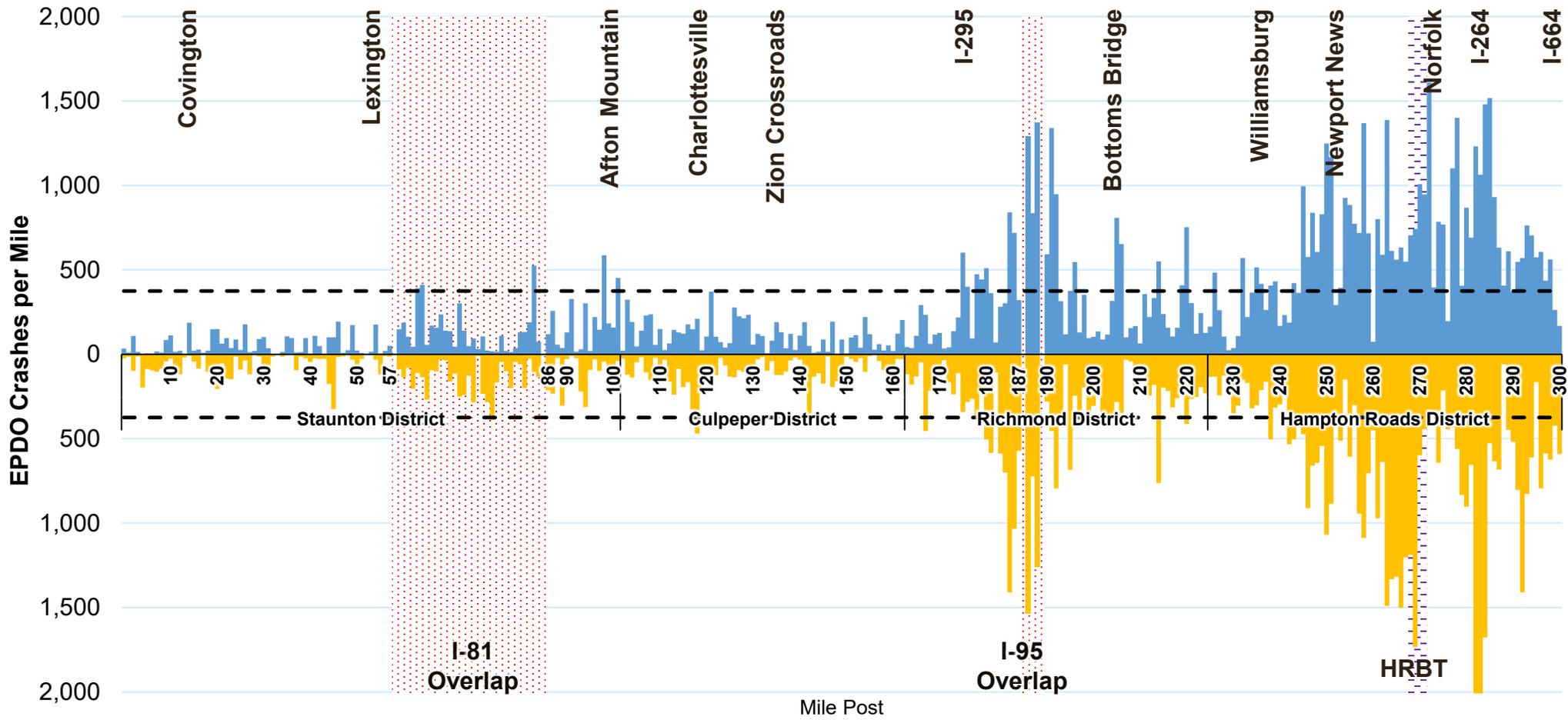
I-64 Annual Person Hours of Delay Per Mile



2014-2018 Data

-- Top 25%

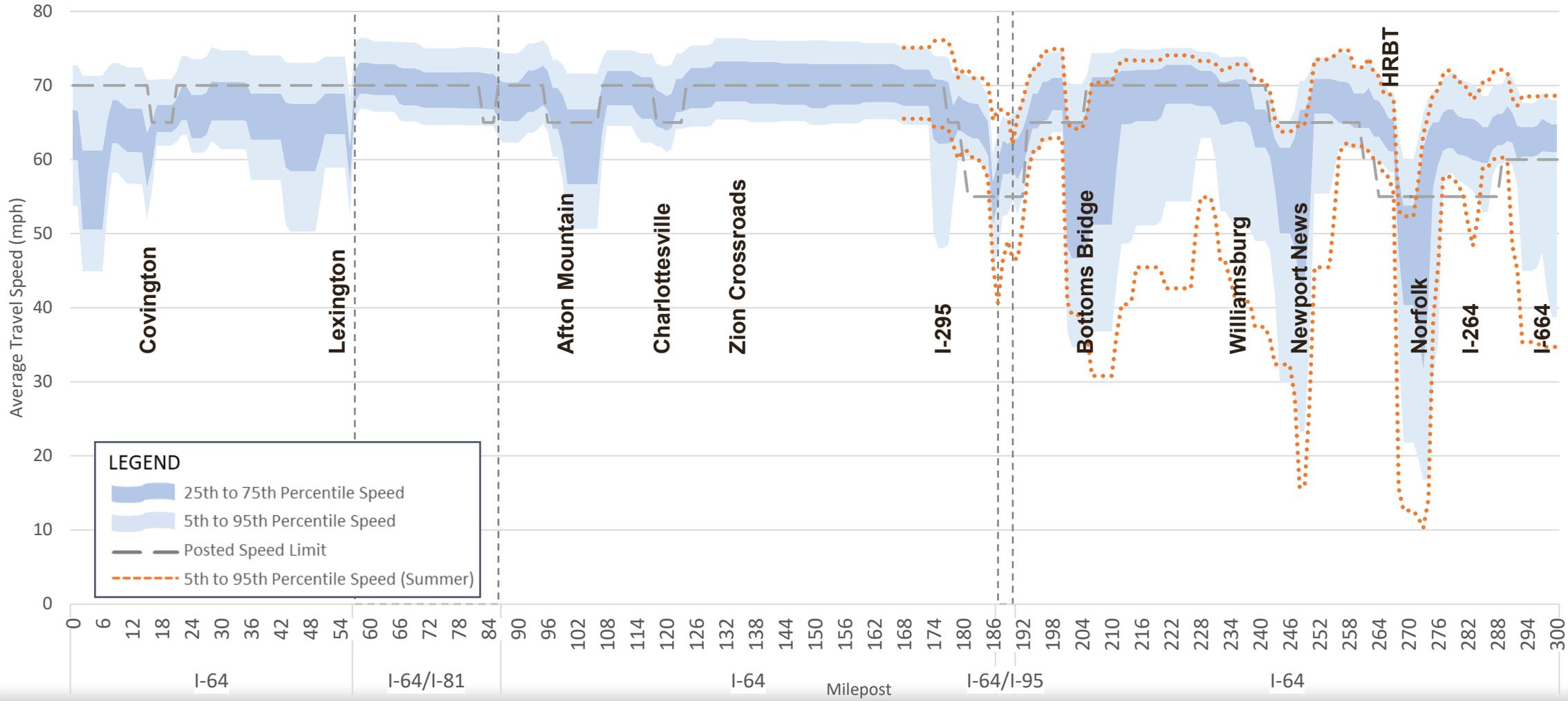
I-64 Equivalent Property Damage Only (EPDO) Crashes Per Mile



2014-2018 Data

--- HRBT
 ... I-81 and I-95 Overlaps
 █ Westbound
 █ Eastbound
 - - Top 25%

Reliability of Westbound I-64 Sunday (9:00 AM - 6:00 PM), 2018



July Public Involvement Enhanced Project Website



- GIS-based website
- Included two-minute introductory video
- Embedded July CTB presentation
- Replicated materials typically displayed at in-person meetings
- Updated FAQs as public feedback was received
- Directed users to MetroQuest survey
- Over 600 website views

The screenshot shows the top of a website page. At the top left is the VDOT logo. To its right is the text "I-64/664 Corridor Improvement Plan" followed by navigation links: "Performance Measures", "Potential Solutions", and "Feedback". On the far right are social media icons for Instagram, Twitter, and Facebook. Below this is a blue header with a map background. On the left of the header is the Interstate 64/664 logo. To its right is the text "I-64/664 Corridor Improvement Plan" and "Existing Conditions". Below the header is an orange section with the heading "Welcome!". The text in this section reads: "Thank you for joining us to learn more about the I-64/664 Corridor Improvement Plan existing conditions. This website is intended to introduce you to the study and give you an opportunity to provide input to the study team. Please begin by listening to the 3-minute project introduction video below." It continues: "On the top and bottom of this page, there are links to additional pages with information for you to review. The **Performance Measures** page describes the measures used in this study and then shows you where the study team is focusing its attention as they start to develop targeted improvements at the locations of greatest safety and congestion need. The **Potential Solutions** page shows many of the potential improvements that could be implemented in this corridor." It then states: "Most importantly, we are looking for you to provide feedback to the study team using the survey on the **Feedback page**. We know that data does not tell the whole story of congestion and safety in the corridor, which is why we are looking for your input. Using the survey, please take time to identify any issues you experience in the corridor and provide us with some of your recommended solutions to fix them. The study team will use this input as they develop potential solutions in the corridor including operations, multimodal, and highway capital improvements." Finally, it says: "As we receive comments and questions, we will be developing a list of frequently asked questions with corresponding responses. We will be adding information to this website as the study progresses, so please stay connected with us."

I-64/664 Corridor Improvement Plan Survey



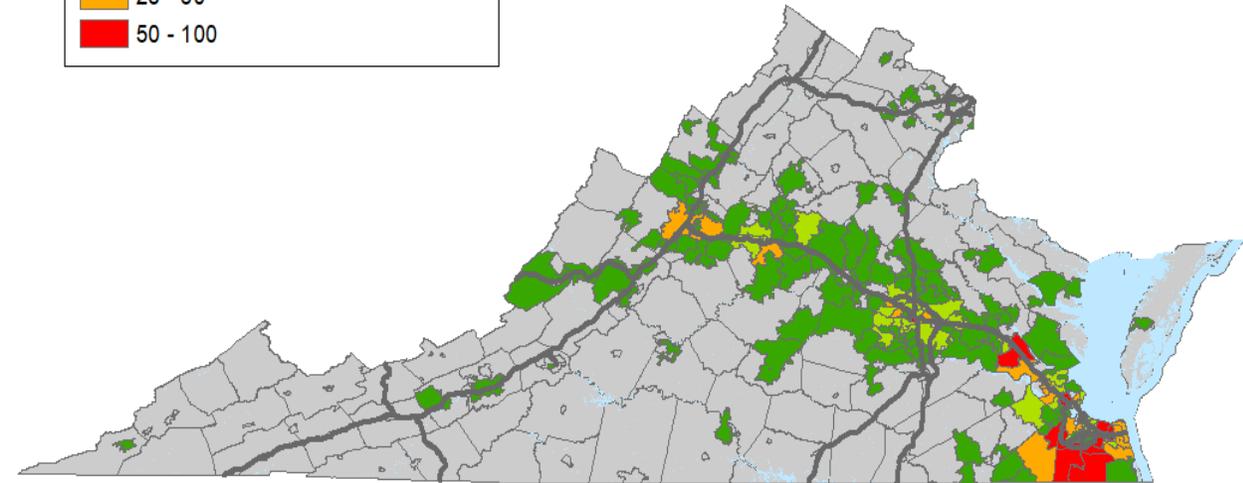
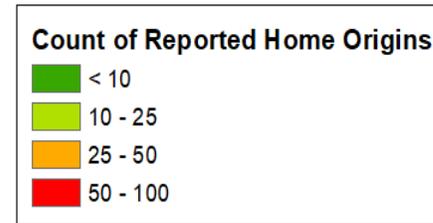
- MetroQuest survey platform
- Survey dates: July 13 – August 15
- Included survey questions and map markers
- 4,570 participants
- Participants placed 7,452 map markers
- Received 21 emails
- Outreach through social media, print media, and local groups



Origins of Participants



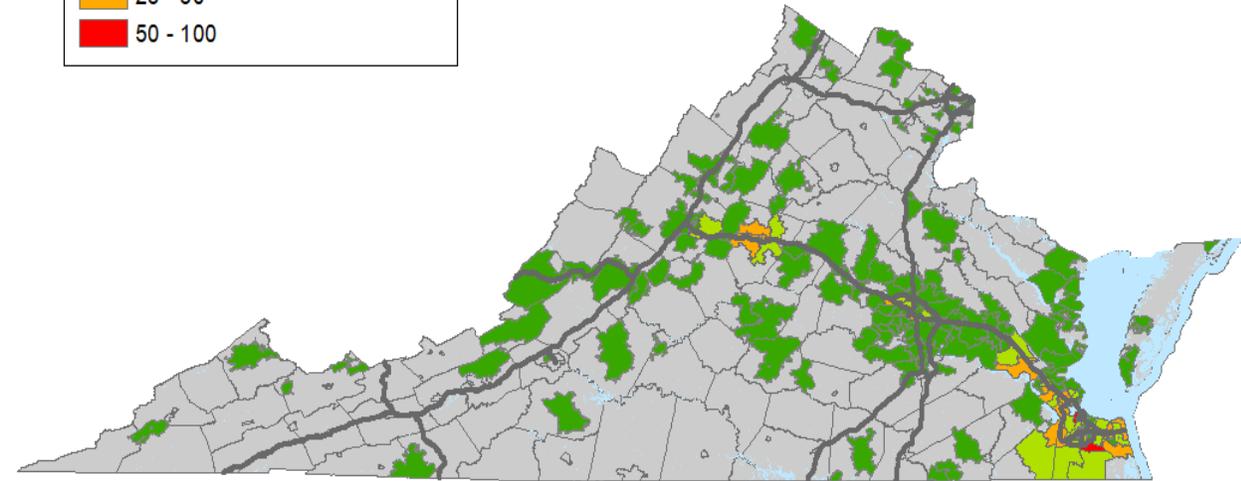
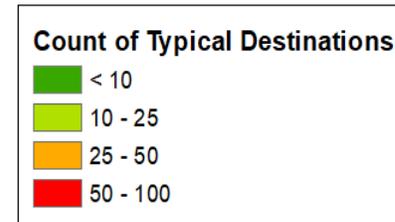
- Most responses were from residents along the I-64 and I-664 corridors
- Highest concentration of responses were from residents in Hampton Roads
- 8 responses were from zip codes outside of Virginia



Typical Destinations of Participants



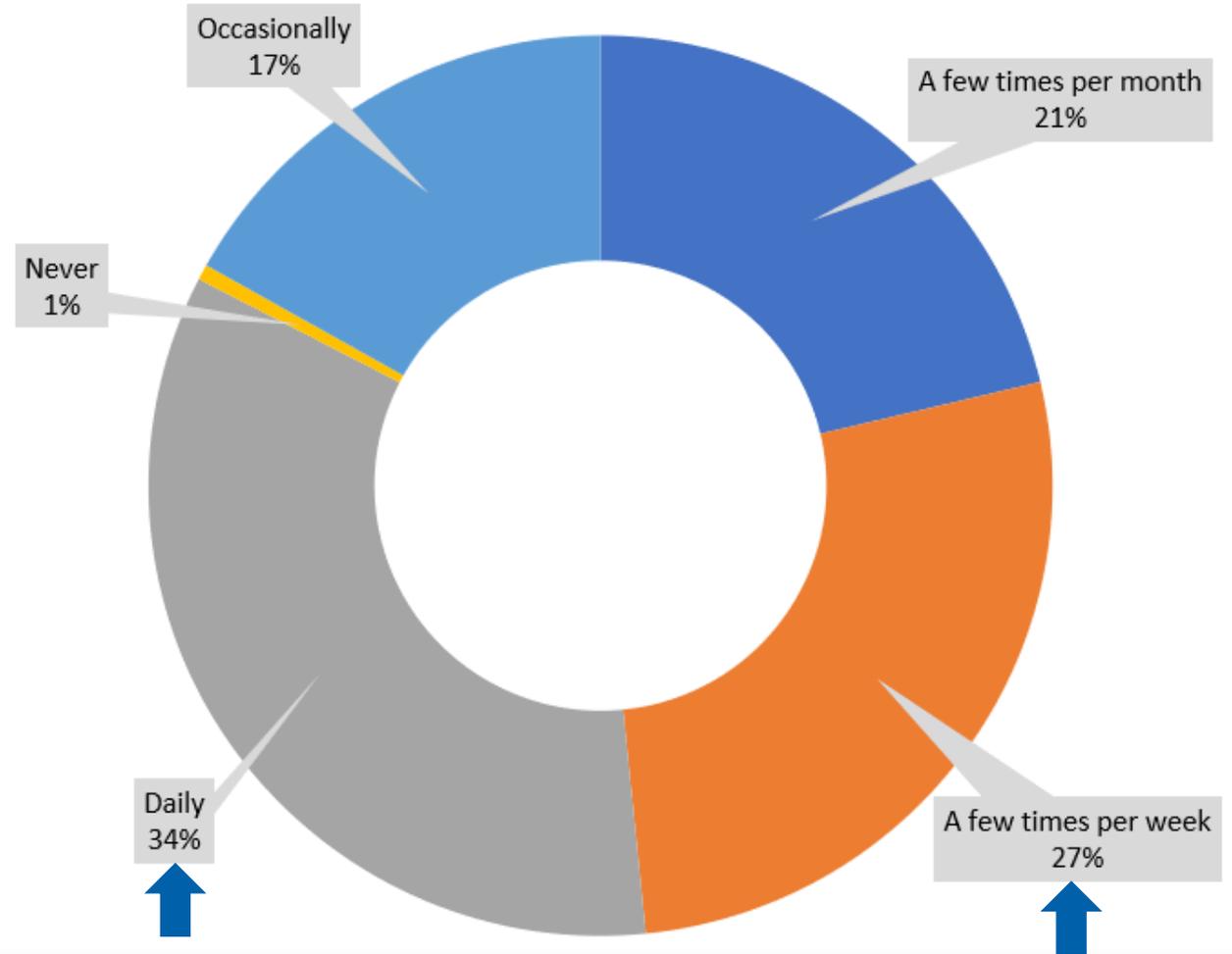
- Most destinations were in the I-64 and I-664 corridors, though more diverse than the origins
- Highest concentration of destination responses were in Hampton Roads
- Out of 1,856 destination responses, only 53 reported a destination outside of Virginia



Frequency and Purpose



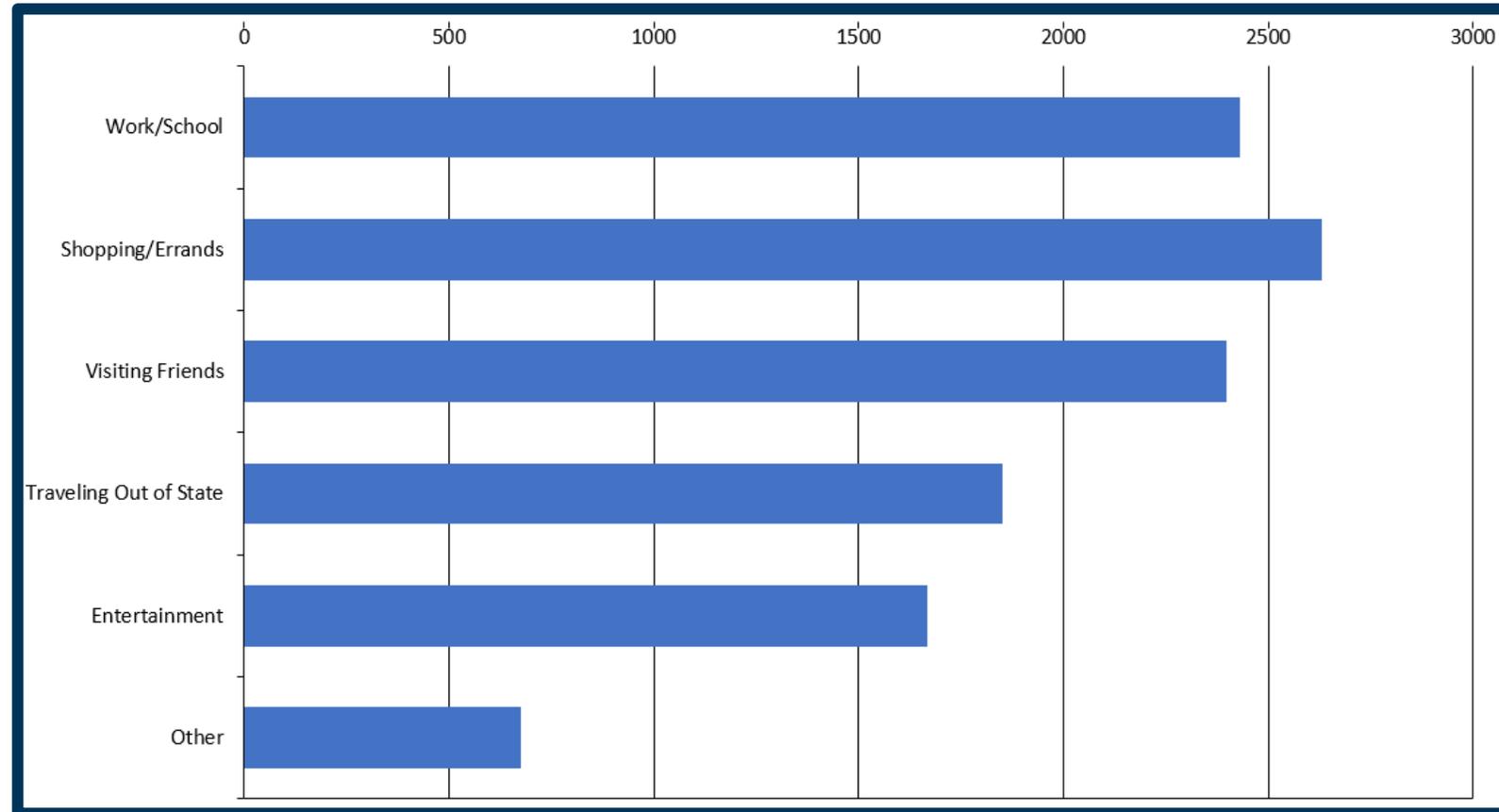
Most respondents (61%) travel in the I-64 and I-664 corridors at least a few times per week



Frequency and Purpose



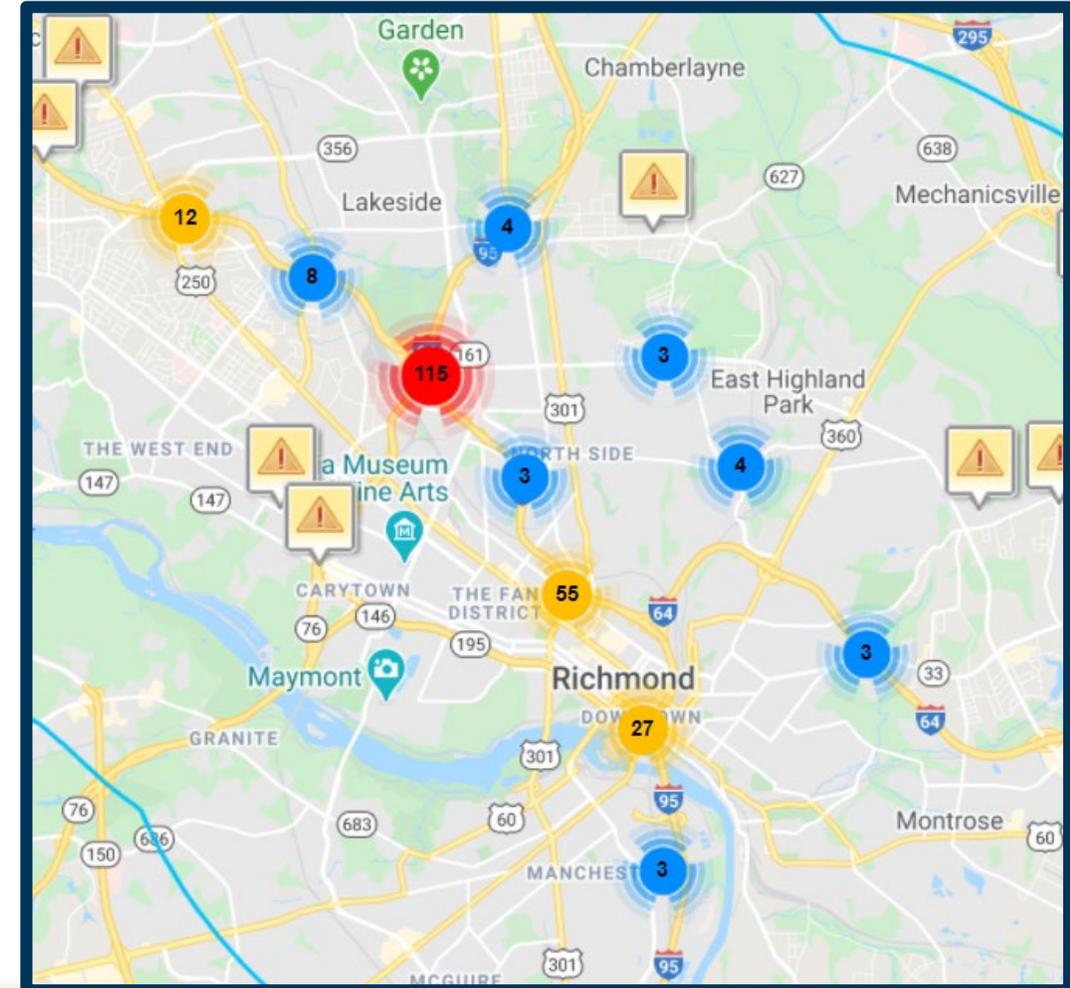
About 25% of the respondents use I-64 and I-664 for work or school (considered “regular” commuters)



Safety Map Markers



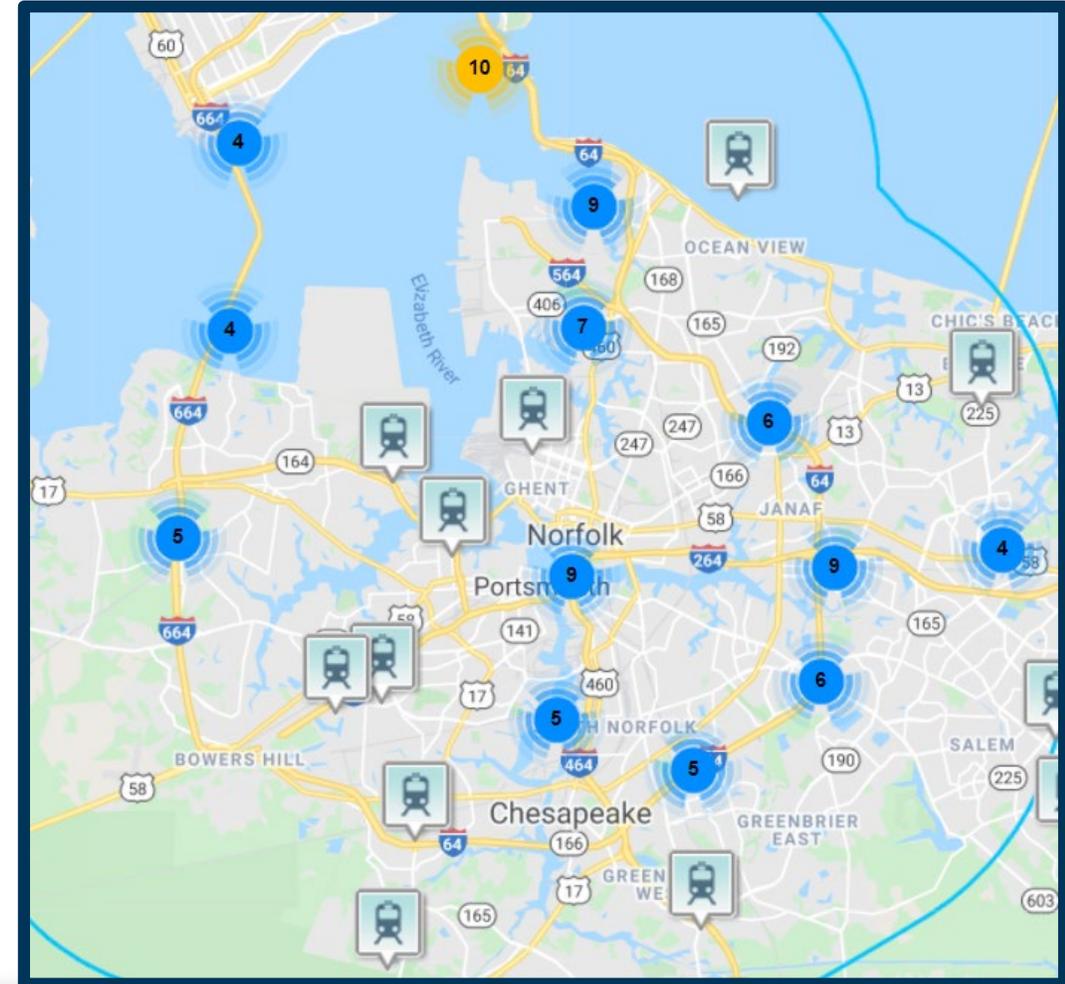
- Hampton Roads largest clusters
 - Both I-264 interchanges
- Richmond largest cluster
 - I-64/I-95/I-195 (Bryan Park interchange)
- West of Richmond largest cluster
 - US 29 interchange (Exit 118) in Charlottesville



Multimodal Map Markers



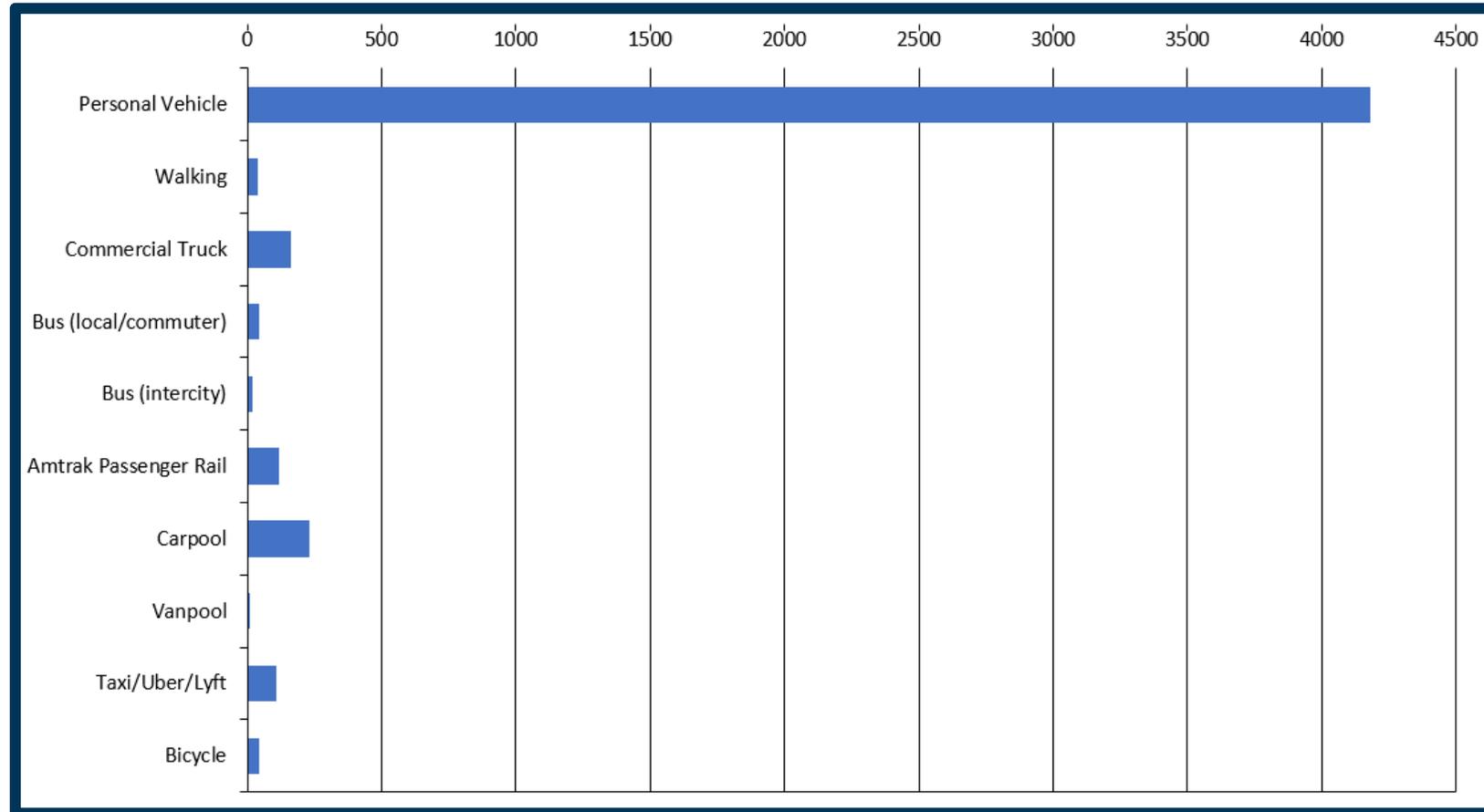
- Map markers for multimodal needs were more evenly distributed
- Out of 309 markers, 181 (59%) specifically indicated a need for improved rail service
- 27% of markers had no specific need indicated, only noting a need for a non-SOV improvement



Multimodal Trips



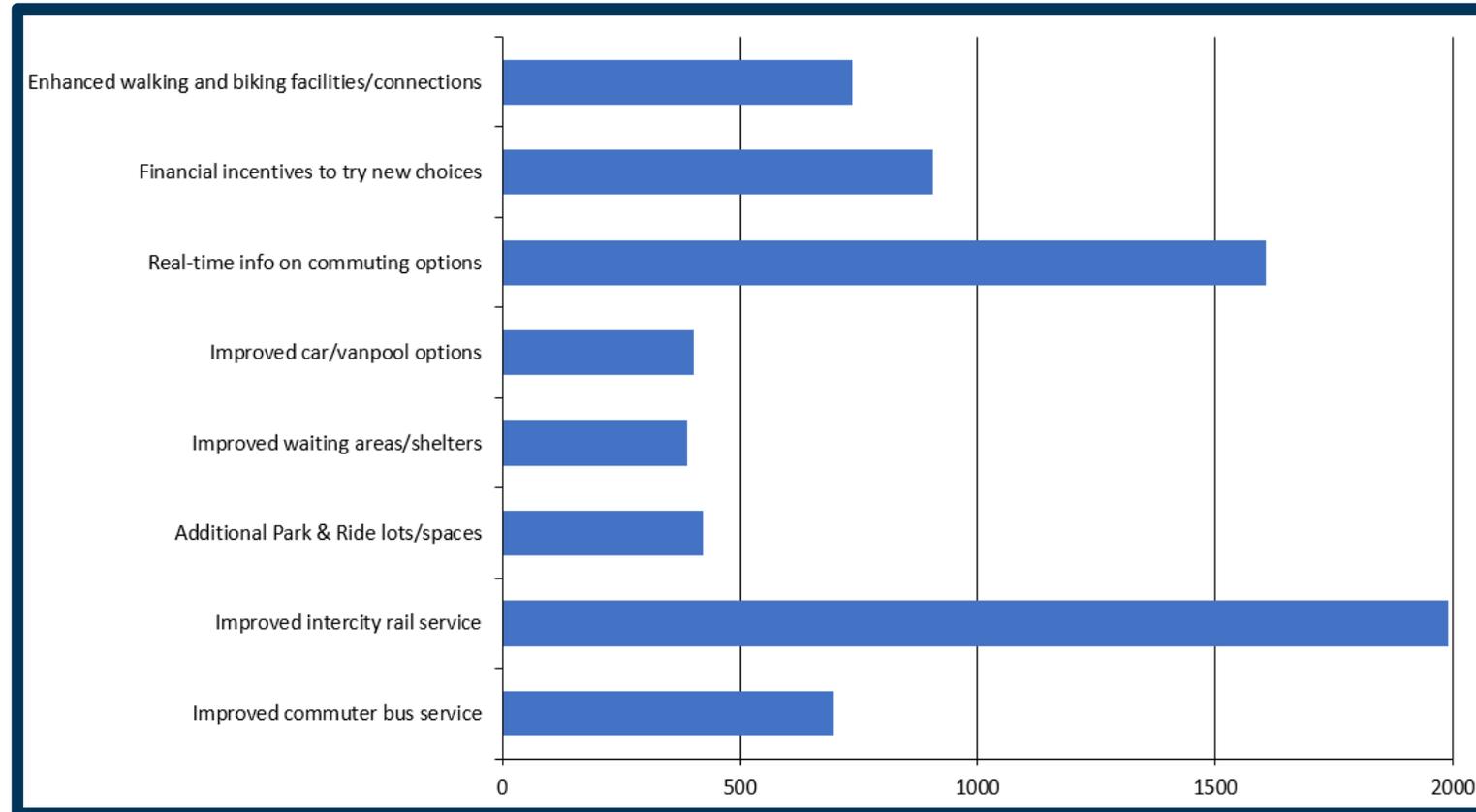
- Respondents were able to select multiple modes used for typical trips
- Personal vehicles were selected more often than all other modes combined



Opportunities for More Multimodal Trips



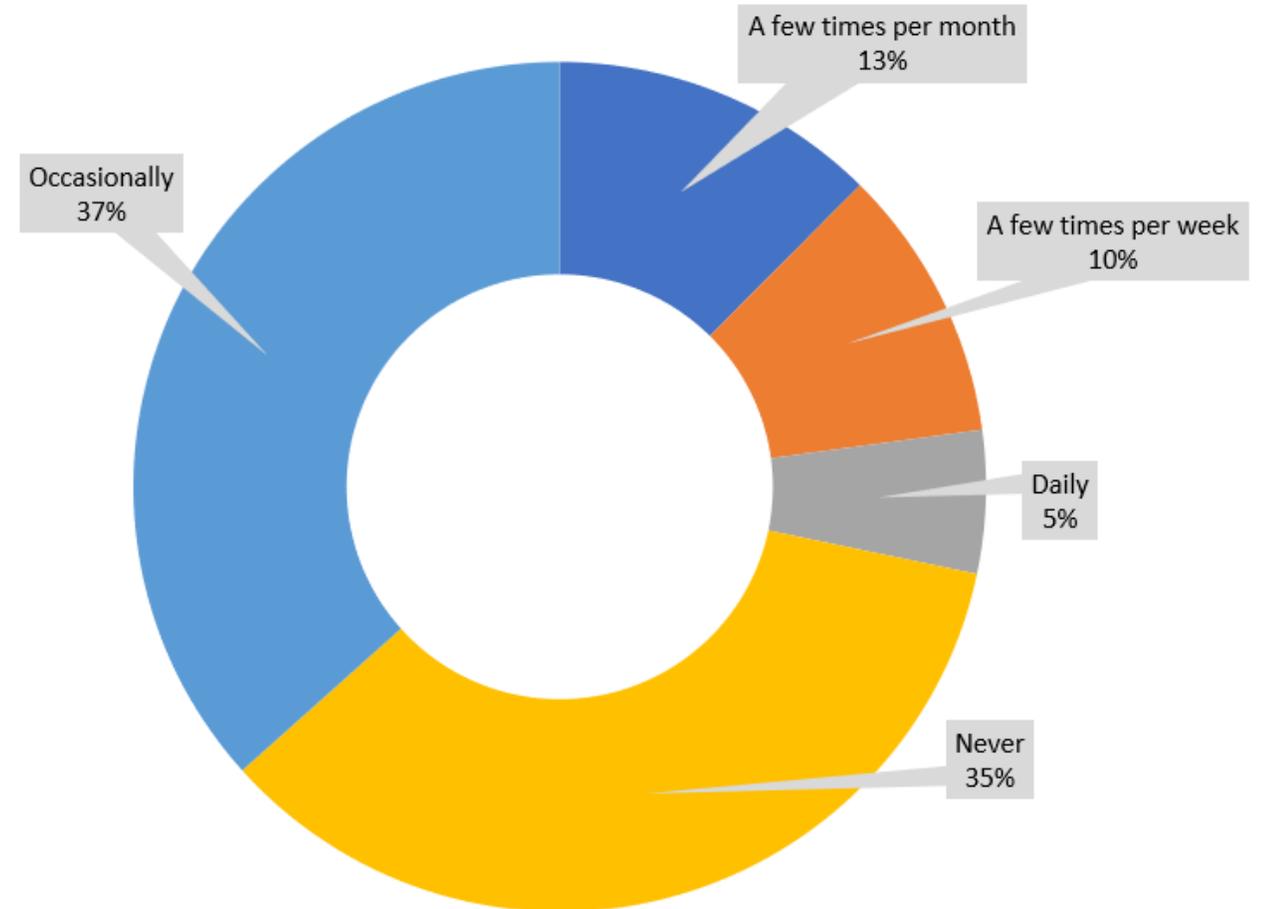
- Respondents appear to be most open to trying improved rail services in the corridor for intercity trips
- Real-time info and financial incentives may be useful for mode shifts in commuter and local travel
- Less interest for carpool/vanpool and Park & Ride lot options



Express Lanes



- Only 15% of respondents reported using the Express Lanes more than once per week
- 36% of participants reported having an E-Zpass and 6% have an E-ZPass Flex



Suite of Improvements



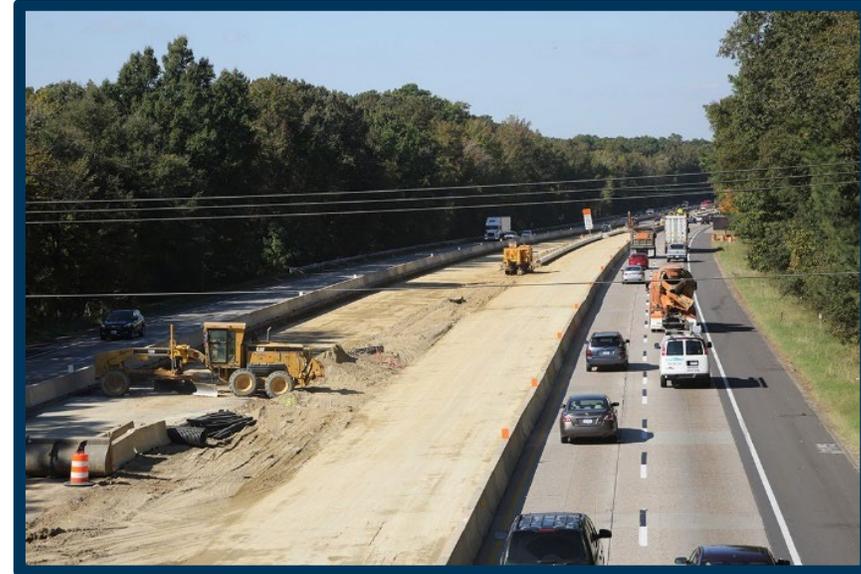
Focus Areas

OPERATIONS ON I-64/664

PARALLEL FACILITIES

CAPITAL PROJECTS

MULTIMODAL IMPROVEMENTS



Data-driven approach incorporating performance measures

GOALS

To provide faster, safer, and more reliable travel along the I-64/664 corridor

Current Investment and Anticipated Benefits



Three major capacity improvement projects in Hampton Roads District open by 2025: investment of over \$5B for these three projects

Legend



Increase <25%
(time period)



Increase 25-50%
(time period)



Increase >50%
(time period)

Project Description	Projected Change in Travel Speed (PM Peak)	
	Eastbound	Westbound
Hampton Roads Bridge Tunnel (Underway)		
Hampton Roads Express Lanes (Financial Plan Under Development)		
High-Rise Bridge (Underway)		

Partial List of Operational Improvements



CCTV Cameras

Detect incidents and provide situational awareness of incidents

Changeable Message Signs

Informs drivers of conditions ahead

Safety Service Patrols

Provide incident scene support and help stranded motorists

Quick Clearance Towing Programs

Activate contract towing services as incidents are detected

Enhanced Reference Location Signs

2/10th mile marker signs for incident location



Operations Return on Investment Analysis

Sample Strategy Benefits



CCTV Cameras

- General: Cameras are used primarily for freeway incident management
- Safety: Reduces secondary crashes by 40% (*FHWA: TIM Brochure*)
- Mobility: Reduces incident delay by 5% (*RITA benefits database*)
- Energy and Environment: Emissions benefits through reduced fuel consumption

Return on Investment Analysis

Sample Methodology – CCTV Cameras



Safety

- Secondary crash reductions
- Fatalities, injury, and PDO

Safety

CCTV Cameras		
		Culpeper
		I-64 MM 100 and 148
Average percent of crashes that are secondary crashes (0-8) =	20%	
Average percent reduction of secondary crashes (0-8) =	40%	
Total number of PDO crashes (5 years) =	60	PDO crashes
Number of people in injury crashes (5 years) =	14	people in injury crashes
Number of people in fatality crashes (5 years) =	-	people in fatality crashes
Average property damage only crash(0-1) =	\$ 9,000	per crash
Average cost of a injury collision per person(0-1) =	\$ 142,667	per person
Average cost of a fatal collision per person (0-1) =	\$ 5,000,000	per person
Annual Safety Benefit =	\$ 40,597	

Mobility

- Incident delay reduction
- Travel time savings

Mobility

CCTV Cameras		
		Culpeper
Yearly Person hours of incident delay (average 2014-2018) =	6,501	
Average percent reduction in incident delay (1-1) =	5%	percent
Person-hours of travel time savings per year (average 2014-2018) =	325	hours
Passenger hourly value of delay time (0-3) =	\$ 17.91	/ person / hour
Commercial hourly value of delay time (0-3) =	\$ 100.49	/ person / hour
Annual Mobility Benefit (Passenger + Commercial) =	\$ 8,506	

Energy & Environment

- Fuel consumption and cost reduction
- Emissions benefits

Energy and Environment

CCTV Cameras		
		Culpeper
Person-hours of travel time savings per year (average 2014-2018) =	325	veh-hours
Average vehicle occupancy (0-2) =	1.67	persons / vehicle
Average fuel consumption per hour of idle time (0-4)** =	0.16	gal / hr
Average fuel consumption reduction per year =	31	gallons
Average cost of fuel in Virginia (0-5) =	\$ 2.31	\$/ gallon
Annual Fuel Reduction Benefit =	\$ 100	
Average CO2 emitted per gallon of gasoline burned (0-6) =	0.00889	metric tons / gal
Average CO2 emission reduction due to travel time savings =	0	metric tons
Average cost per metric ton of CO2 (0-7) =	\$ 20.00	\$/ metric ton
Annual CO2 Benefit =	\$ 10	

Return on Investment Analysis

Freeway Operations

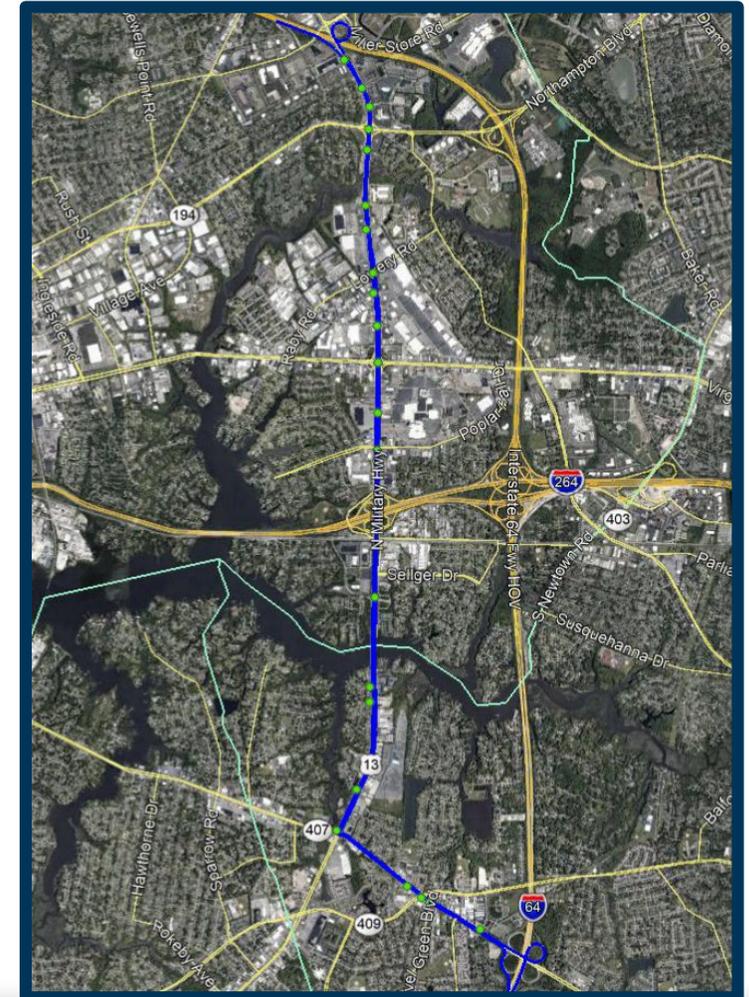


Proposed Operational Improvement	Implementation Cost	O&M Cost (10 Years)	Benefit (10 Years)	ROI
CCTV Cameras	\$2.6M - \$2.9M	\$720K	\$6.7M	2.0
Changeable Message Signs	\$1.5M - \$1.7M	\$729K	\$22.6M	10.1
Safety Service Patrol	\$3.8M - \$4.2M	\$17.8M	\$95.1M	4.4
Towing Program	\$280K - \$308K	\$2.6M	\$25.6M	8.8
Advanced Work Zone Technology	\$855K - \$941K	\$3.9M	\$30.5M	6.4
Intermediate Reference Location Signs	\$455K - \$501K	\$700K	\$12.9M	5.8
SSP Automated Hazard Alerts	\$75K - \$83K			
Public Safety Answer Point Integrations	\$800K - \$880K			
Program Evaluation	\$200K - \$220K			
TOTAL	\$10.7M - \$12.1M	\$20.6M		

Parallel Facilities



- **Priority Route Identification**
 - Top 25% performance measures on I-64/664
 - Adjacent detour routes
 - More performance measures = higher priority score
- **Traffic Signal Suite of Improvements**
 - Communications
 - Automated Traffic Signal Performance Measures (ATSPM)
 - Traffic signal controller and cabinet upgrades
 - CCTV monitoring
 - Traffic signal retiming
- **Development of Cooperative Agreements**



Return on Investment Analysis

Parallel Arterial Operations



Proposed Operational Improvement	Implementation Cost	O&M Cost (10 Years)	Benefit (10 Years)	ROI
Traffic Signal Upgrades	\$8.0M - \$9.5M	\$1.3M	\$266.0M	27.2
<i>ATSPM</i>	<i>\$2.4M - \$2.8M</i>	<i>\$300K</i>		
<i>Communications</i>	<i>\$1.3M - \$1.5M</i>	<i>\$825K</i>		
<i>ATC Controller Upgrade</i>	<i>\$3.8M - \$4.2M</i>	<i>\$100K</i>		
<i>Traffic Signal Timing</i>	<i>\$0.5M - \$1.0M</i>	<i>\$50K</i>		
CCTV Cameras – Arterials	\$0.3M - \$0.5M	\$1.0M	\$4.2M	9.6
Total	\$8.3M - \$10.0M	\$2.3M		

Multimodal Improvements



Improvements Considered

- Intercity passenger rail
- Commuter bus
- Local bus
- Park and ride lots
- Commuter assistance programs
 - *Carpool*
 - *Vanpool*
 - *Commute!VA / Telework!VA*
 - *Outreach and support to large employers*

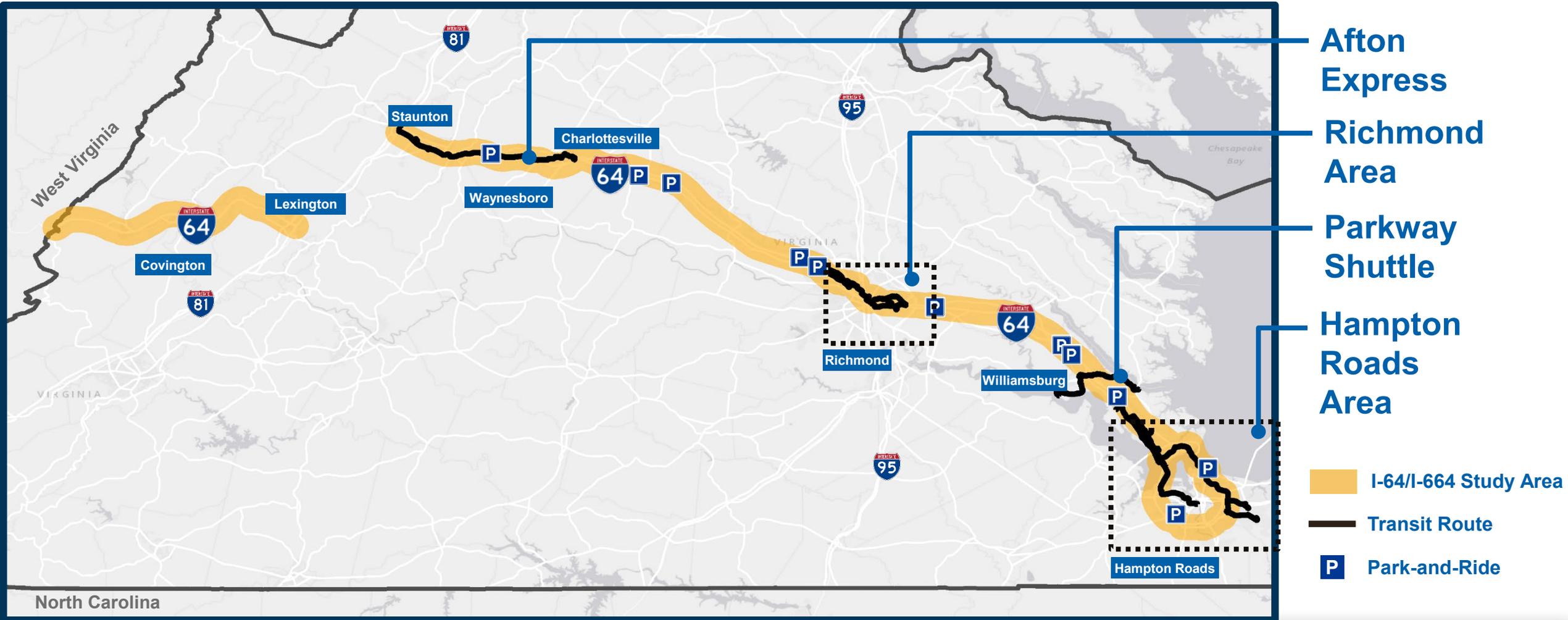


Commute!VA



Multimodal Improvements

Corridor Overview

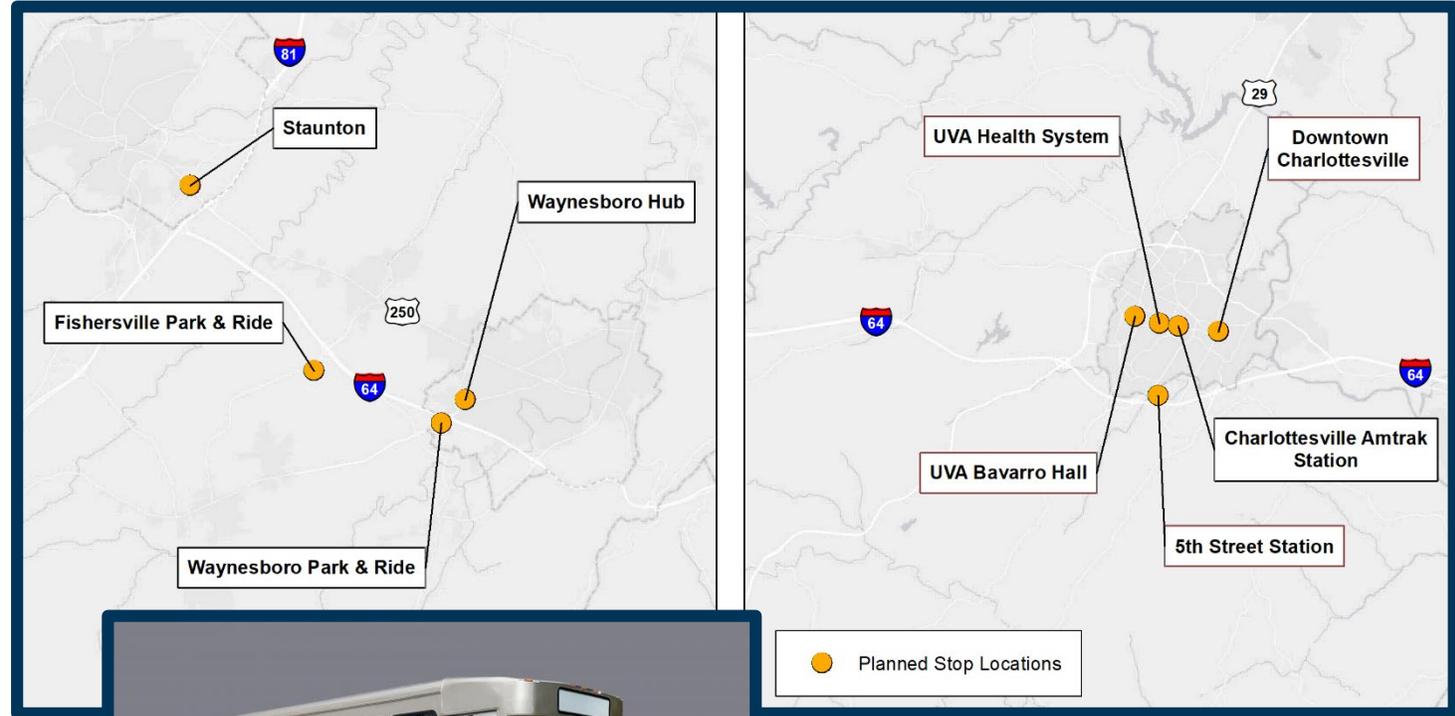


Multimodal Improvements



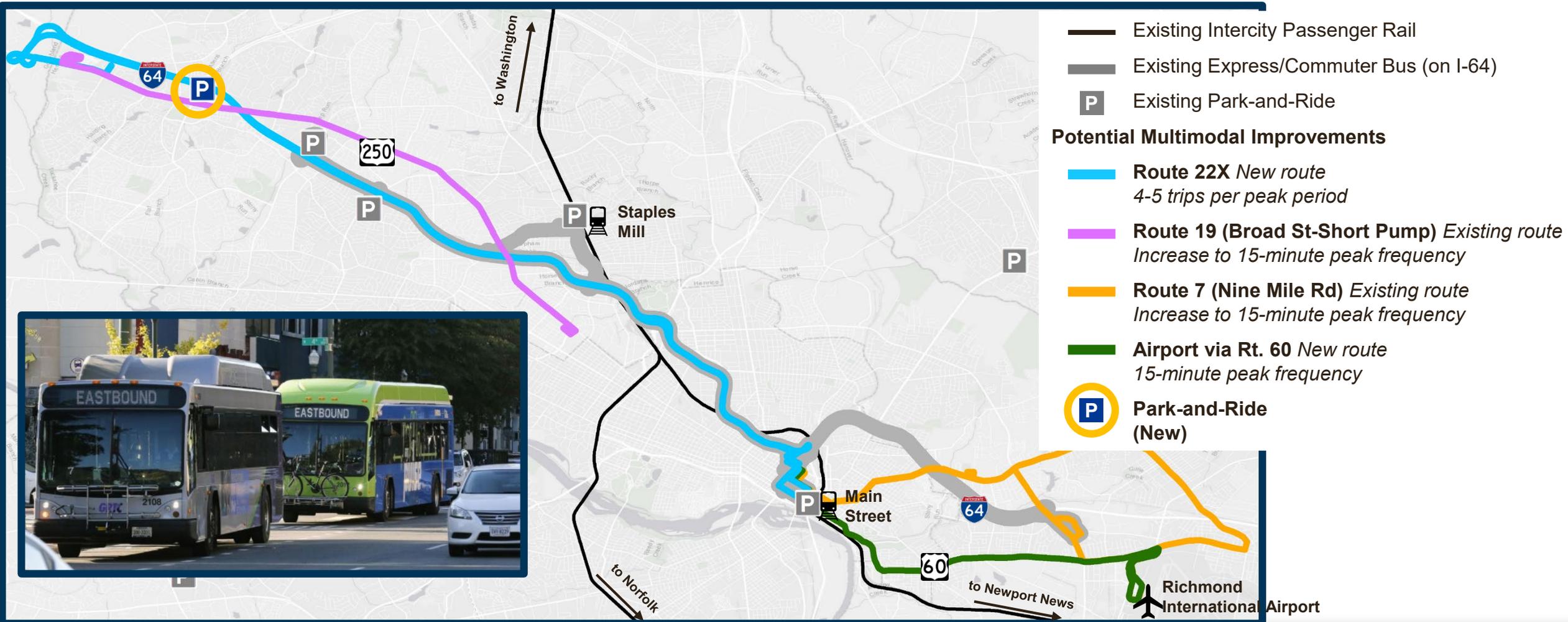
Afton Express: Example potential multimodal improvement

- Intercity bus service connecting Staunton, Waynesboro, and Charlottesville via I-64
- Serves existing and planned park and ride lot locations and major employment destinations
- Provides a transit option in an area experiencing congestion and safety issues (Afton Mountain)
- Partnerships across Commonwealth, regional, and local levels



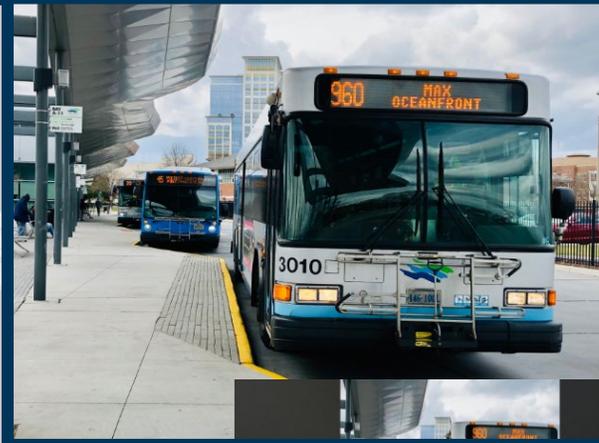
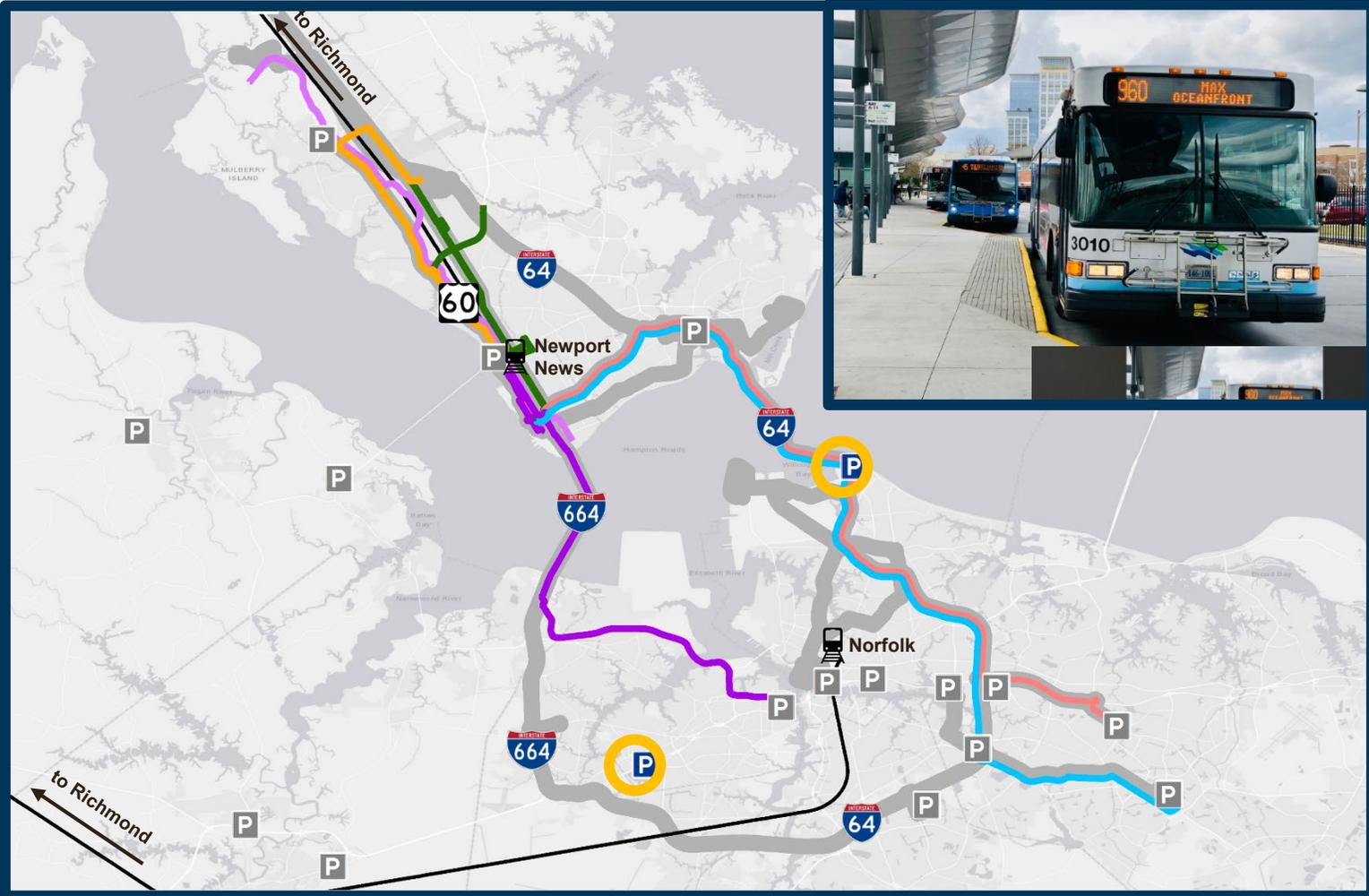
Multimodal Improvements

Richmond Area | Potential



Multimodal Improvements

Hampton Roads Area | Potential



-  Existing Intercity Passenger Rail
-  Existing Express/Commuter Bus (on/parallel to I-64)
-  Existing Park-and-Ride

Potential Multimodal Improvements

-  **Route 106** Existing route
Increase to 30-minute peak frequency
-  **Route 107** Existing route
Increase to 30-minute peak frequency
-  **Route 112** Existing route
Increase to 15-minute peak frequency
-  **Route 966** Existing route
Increase to 3 trips per peak period
-  **Route 970** New route
4 trips per peak period
-  **Route 972** Existing route
Increase to 2 trips per peak period

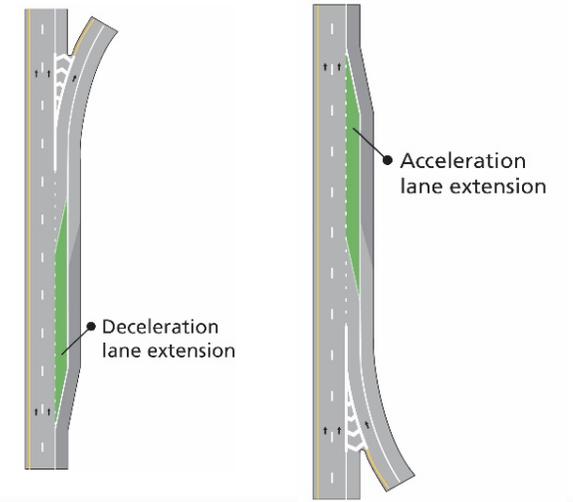
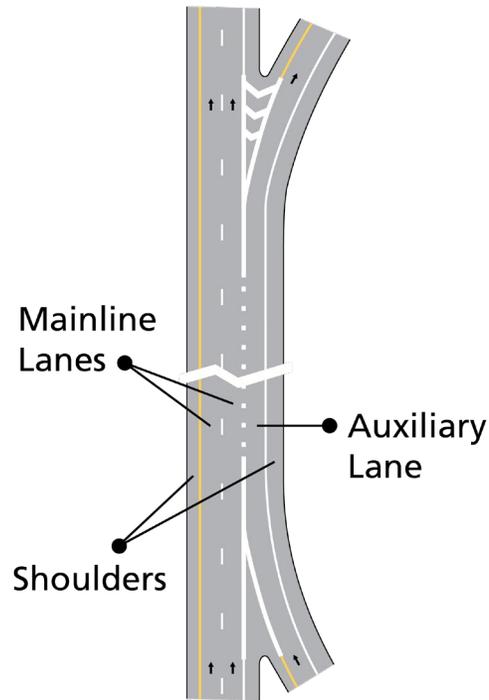


Capital Highway Improvements



Improvements Considered

- Interchange modification and/or reconfiguration
- Acceleration/deceleration lane extensions
- Hard shoulder running lanes
- Auxiliary lanes
- Additional general purpose lanes
- Express lanes
- Ramp widening
- Shoulder widening
- Curve improvements
- Drainage improvements

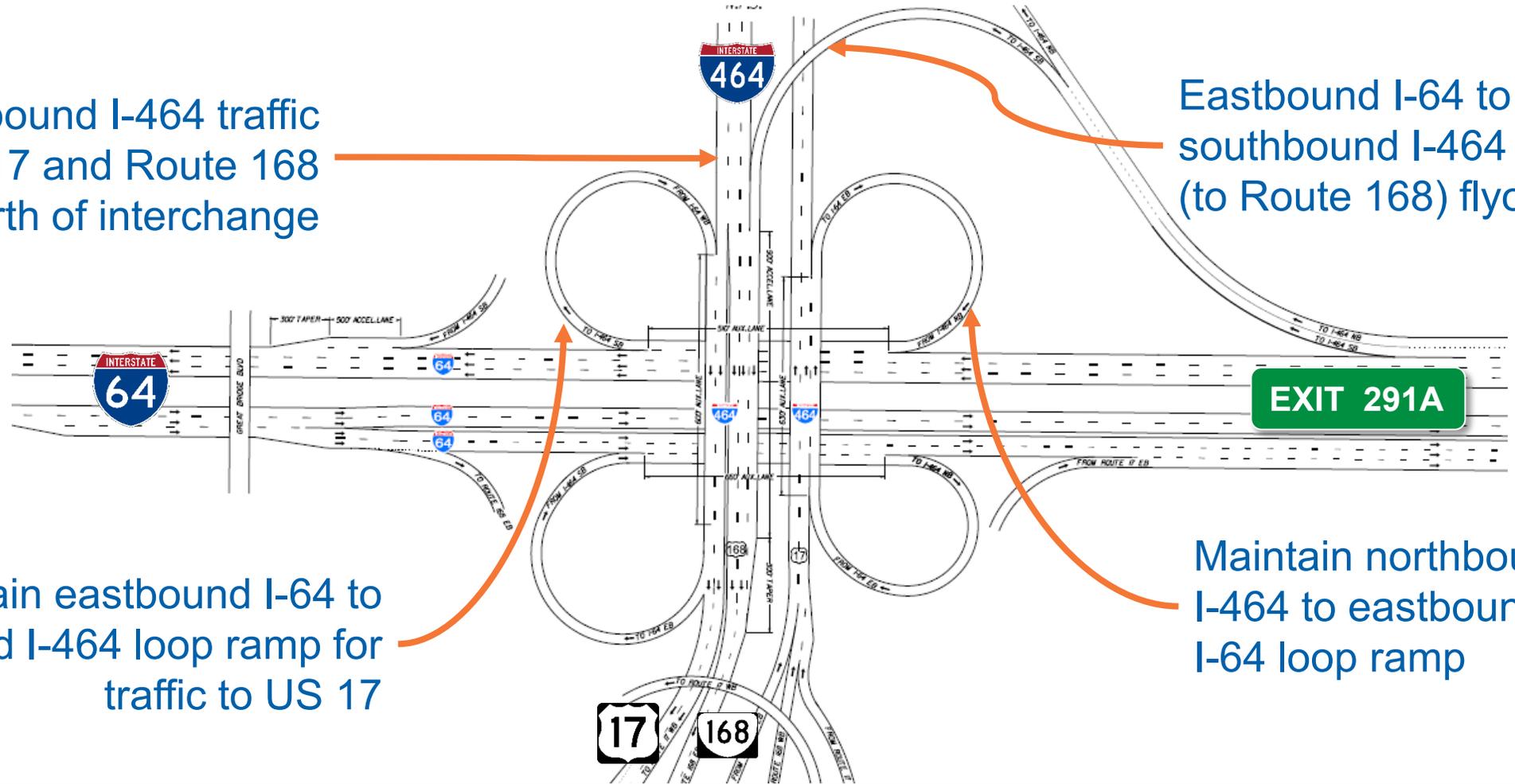


Improvement Highlights – Hampton Roads District



Separate southbound I-464 traffic destined for US 17 and Route 168 north of interchange

Eastbound I-64 to southbound I-464 (to Route 168) flyover



Maintain eastbound I-64 to southbound I-464 loop ramp for traffic to US 17

Maintain northbound I-464 to eastbound I-64 loop ramp

Improvement Highlights – Richmond District US Route 250 (Exit 179B) Interchange

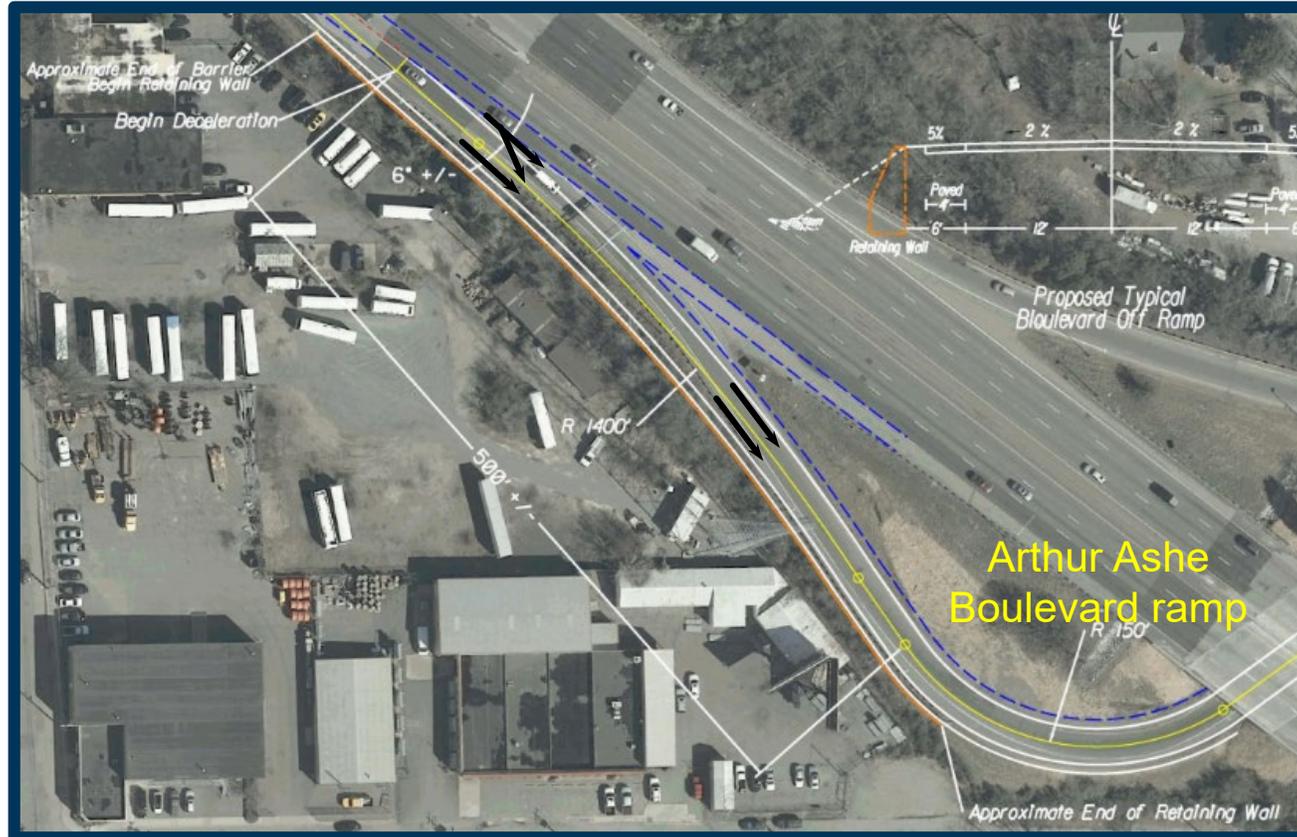


- Widen US Route 250 to eastbound I-64 ramp to two lanes
- Ramp lanes merge to create an auxiliary lane to Gaskins Road exit
- Replace Cox Road bridge overpass



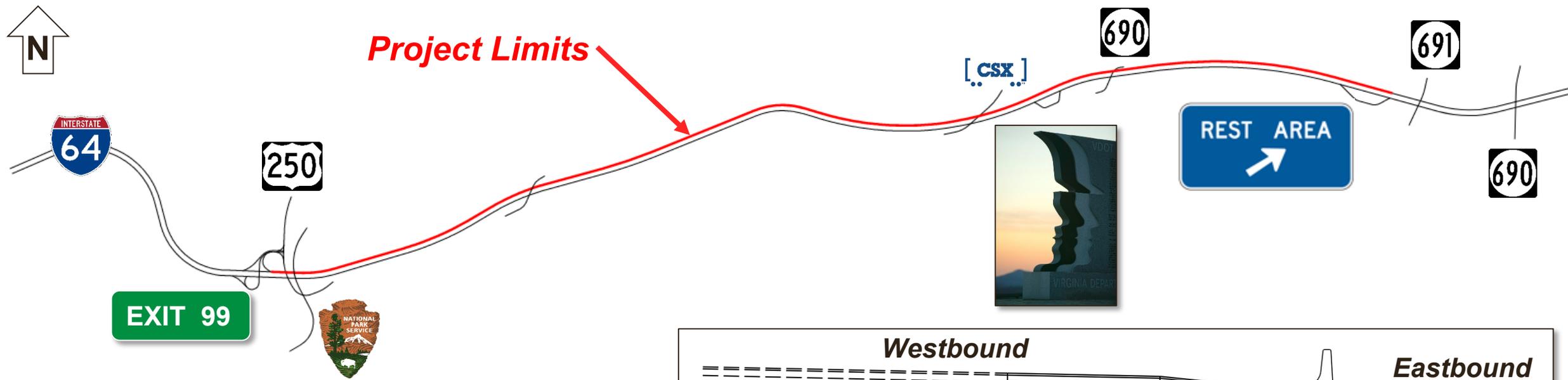
Improvement Highlights – Richmond District

I-95/I-64 Overlap

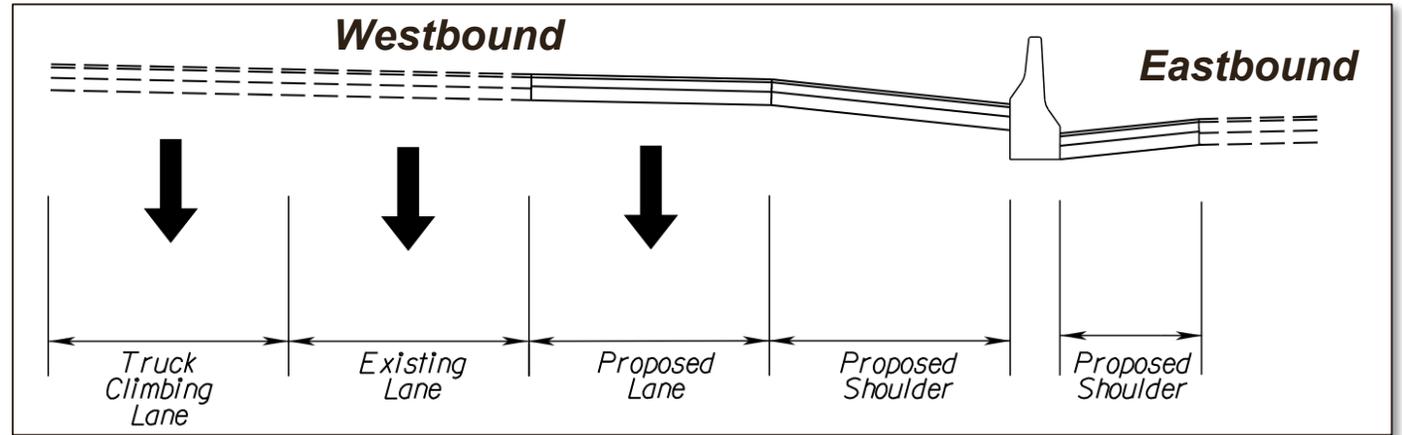


- Dual-lane exit from southbound I-95 onto Arthur Ashe Boulevard ramp (Exit 78)
- Southbound I-95 reduced from 3 to 2 lanes between Exit 79 and I-64/I-195 on-ramp
- Expected to decrease rear-end crashes

Improvement Highlights – Culpeper District



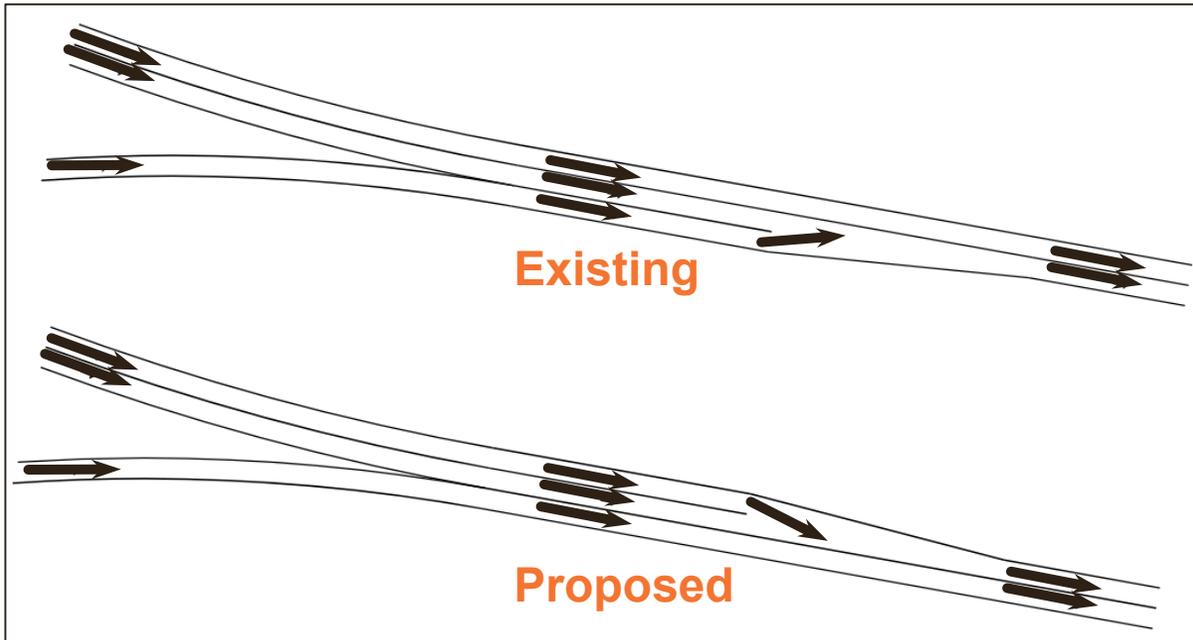
Construct a third westbound lane in the median over Afton Mountain



Improvement Highlights – Staunton District



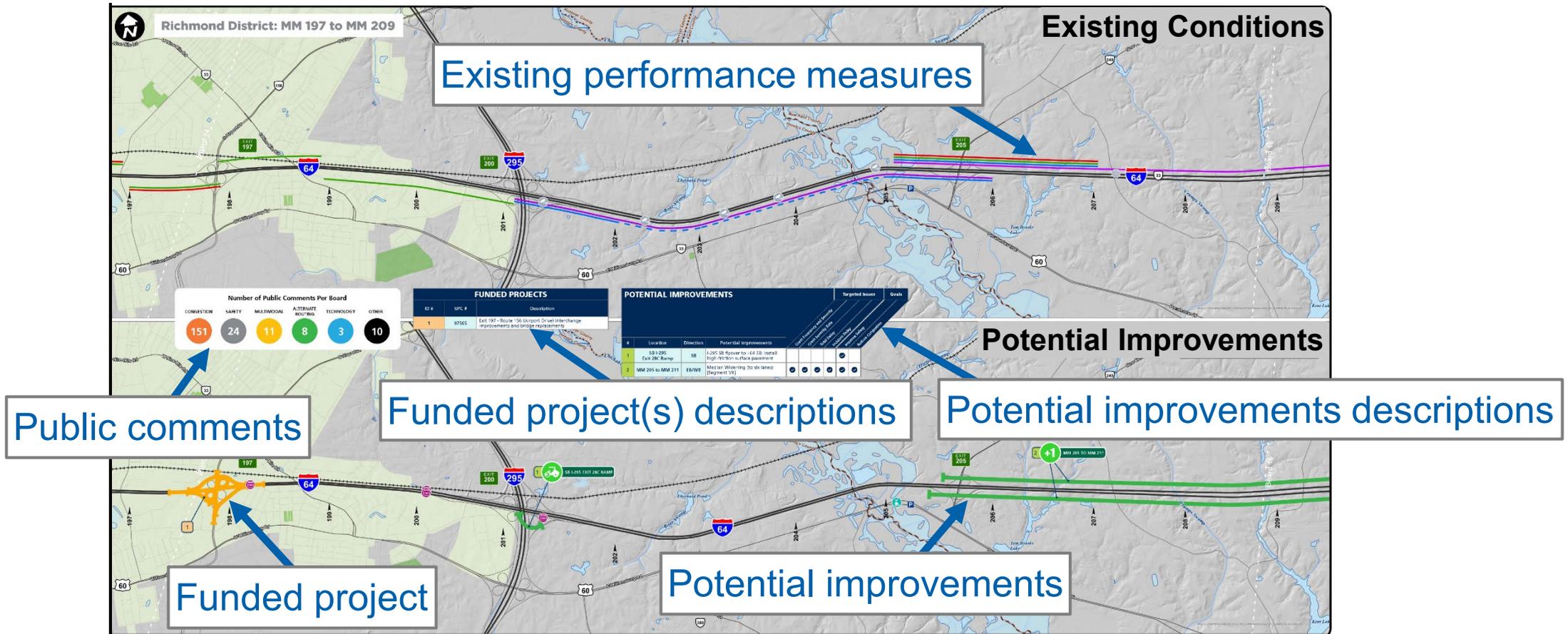
Fix merging issues at I-81 and eastbound I-64 near Staunton



One through lane in each direction



Potential Improvements Boards

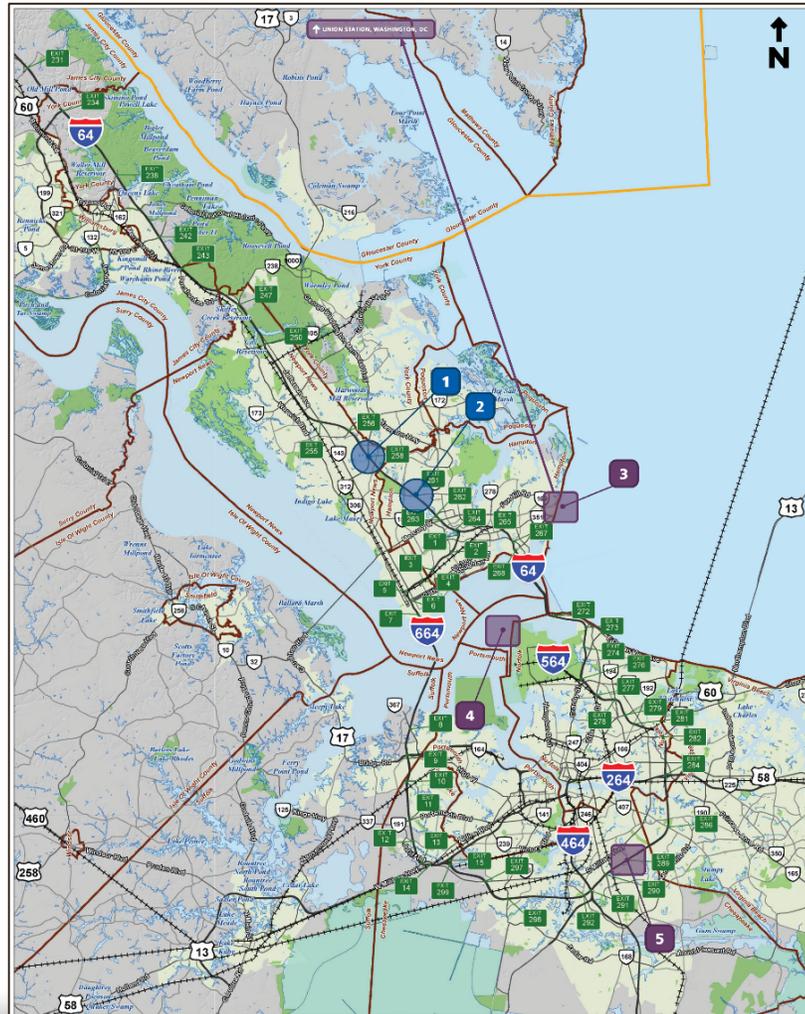


Potential Improvements that Require Further Study



Project types

- Interchange improvements without sufficient operational and safety analyses
- Park and ride lots requiring a location study



I-64/664 Corridor Improvement Plan
Further Studies

Hampton Roads District

Project Location

Scale

Miles

0 4.5 9

Legend

POTENTIAL IMPROVEMENTS THAT REQUIRE FURTHER STUDY

ID #	Description	Location
1	Improve interchange configuration at US Route 17 to address weave issues within cloverleaf ramps	Exit 258
2	Improve interchange configuration at Hampton Roads Center Parkway to address weave issues within westbound cloverleaf ramps	Exit 261
3	Implement Virginia Breeze intercity bus service between Norfolk and Union Station in Washington DC	
4	Provide a base circulator shuttle service on Naval Station Norfolk	
5	Locate available space for the establishment of a Park and Ride in the Greenbriar Mall Area	Exit 289

Interchange Improvement

Corridor Improvement

Office of
INTERMODAL
Planning and Investment

Data Sources: Virginia Department of Transportation 2018; Virginia Geographic Information Network 2019

Other Major Improvement Recommendations Requiring Further Study



- I-64/I-95 at Belvidere Street Interchange {Exit 76} – study underway
- I-64 at Route 20 (Scottsville Road) {Exit 121}



Next Steps



- **October 2020**
 - CTB briefing
 - Virtual public meeting (review potential improvements)
- **January 2021**
 - CTB briefing
- **March 2021**
 - CTB briefing
 - Virtual public meeting (draft plan recommendations)
- **April 2021**
 - CTB briefing
 - Complete final corridor improvement plan document

Study Website

VA64Corridor.org

Public Meetings Website

I-64-664PublicInfo.com



What's Happening

The Commonwealth Transportation Board (CTB), supported by the Office of Intermodal Planning and Investment (OIPI), the Virginia Department of Transportation (VDOT) and the Department of Rail and Public Transportation (DRPT), will study Interstate 64 and I-664 from the West Virginia state line to the Hampton Roads Region to initiate a data-driven analysis for the development of the 64 / 664 Corridor Improvement Plan, which will:

- Identify key problem areas along the corridor, and
- Identify potential solutions and areas for additional review and study

As directed by the CTB, the study team will identify targeted improvements and incident management strategies for the corridor.

Public Briefings

The CTB will receive briefings throughout the study.

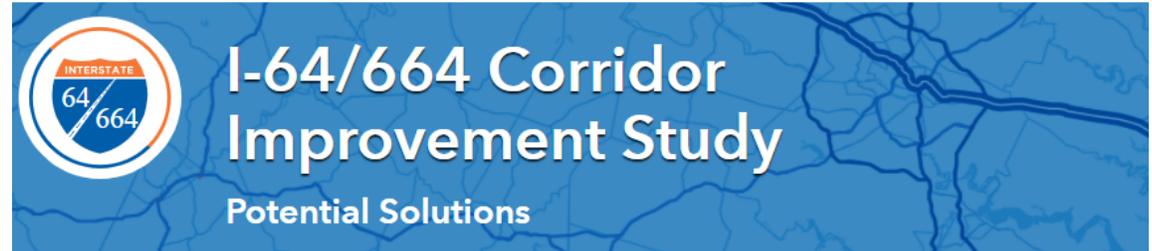
Study Duration: February–November, 2020

Localities: Counties of Alleghany, Rockbridge, Augusta, Albemarle, Fluvanna, Louisa, Goochland, Henrico, New Kent and James City, and cities of Covington, Staunton, Waynesboro, Charlottesville, Richmond, Williamsburg, Newport News, Hampton, Norfolk, Virginia Beach and Chesapeake

Districts: Staunton, Culpeper, Richmond, Hampton Roads

Contact: Ben Mannell, project manager

VDOT I-64/664 Corridor Improvement Plan Existing Conditions Performance Measures Feedback More



Welcome!

Thank you to those of you who provided feedback on the existing conditions in the I-64 and I-664 corridors. For those of you who are new to this project, thank you for joining us to learn more about the potential solutions under consideration in the I-64/664 Corridor Improvement Plan. This website is intended to introduce you to the study, provide you information on the various types of potential solutions, and give you an opportunity to provide input to the study team. Included below are many of the potential improvements that could be implemented along the corridor. These strategies are compiled into four categories: operations, multimodal, roadway capital, and roadway safety.

On the top and bottom of this page, there are links to additional pages with information for you to review. On the **Existing Conditions** page, there is a 3-minute project introductory video, an interactive map of the performance measures, and boards showing the existing conditions in the corridor. The **Performance Measures** page describes the four performance measures used in this study and then shows you where the study team focused its attention to develop potential solutions with the greatest impact on safety and congestion.

Most importantly, we are looking for you to provide feedback to the study team on the recommended potential solutions using the survey on the Feedback page. The study team digested and summarized the feedback you provided on the existing conditions MetroQuest survey. Using the new MetroQuest survey, please provide feedback on the recommended solutions. The study team will use this input as they refine potential solutions over the next two months.

As we receive comments and questions, we will add to the growing list of frequently asked questions with corresponding responses. We will be adding information to this website as the study progresses, so please stay connected with us.