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
- Vanpools
- Carpools
- Park and Ride Lots
- Commuter/Express Bus
- 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

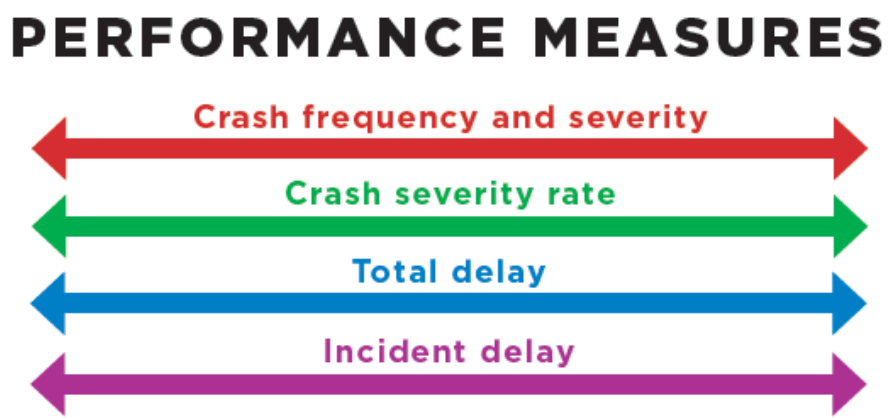
$135 Billion

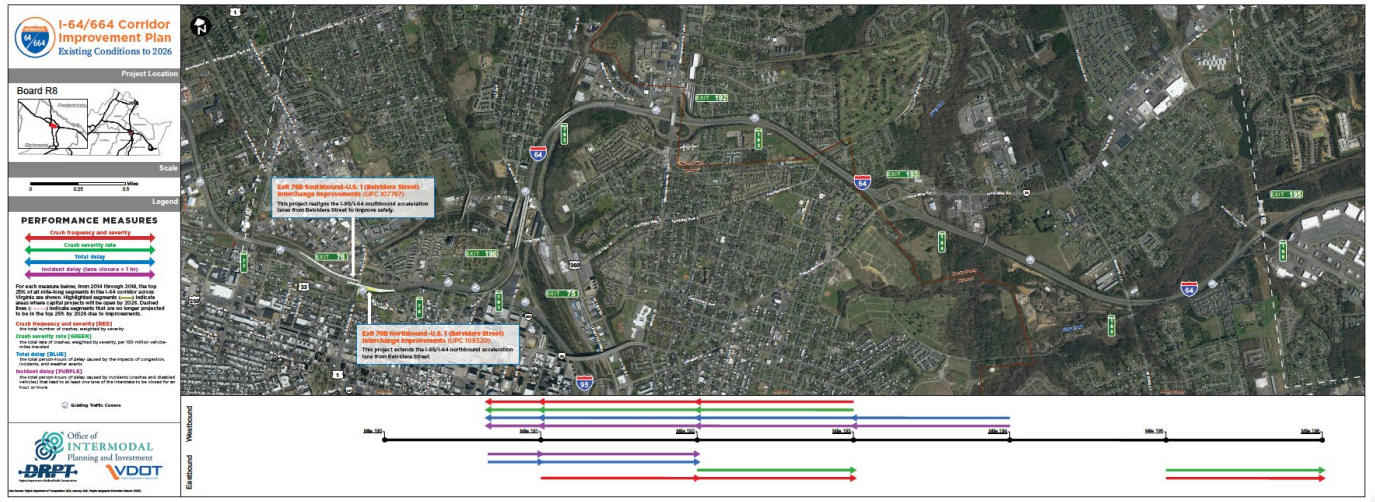
in Goods Moved Per Year

July Public Meetings
Problem Identification

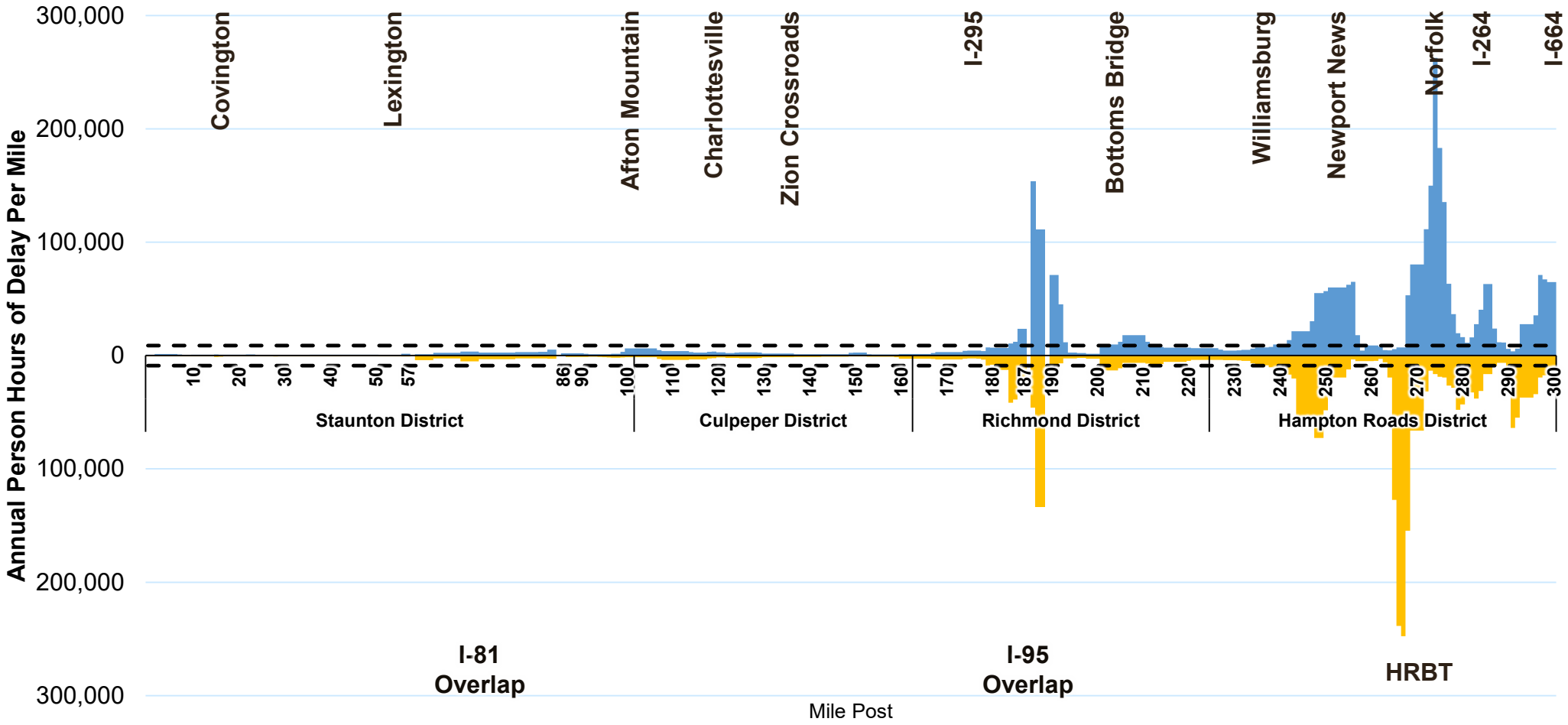
Reviewed entire I-64 and I-664 corridors to identify areas for improvement based on identified problems

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



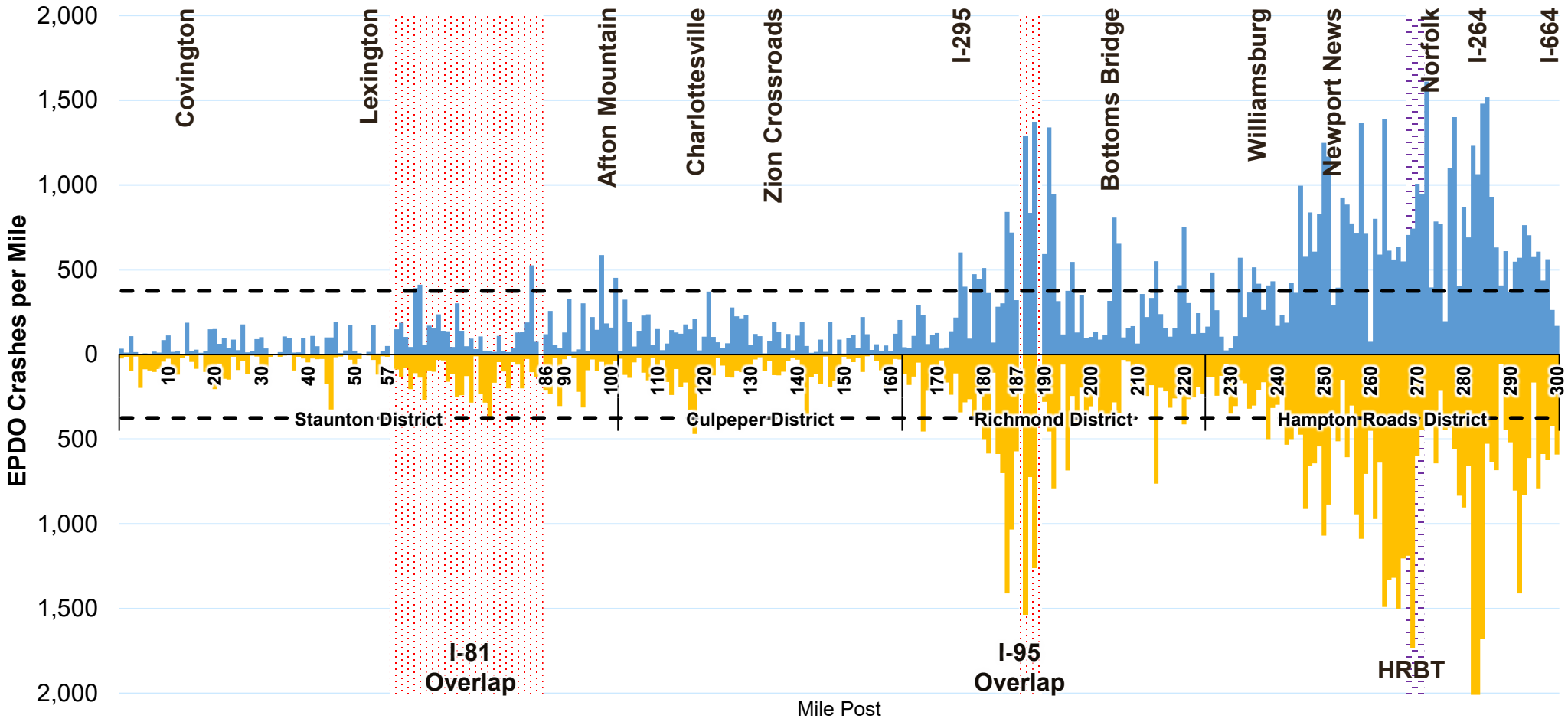


I-64 Annual Person Hours of Delay Per Mile



2014-2018 Data

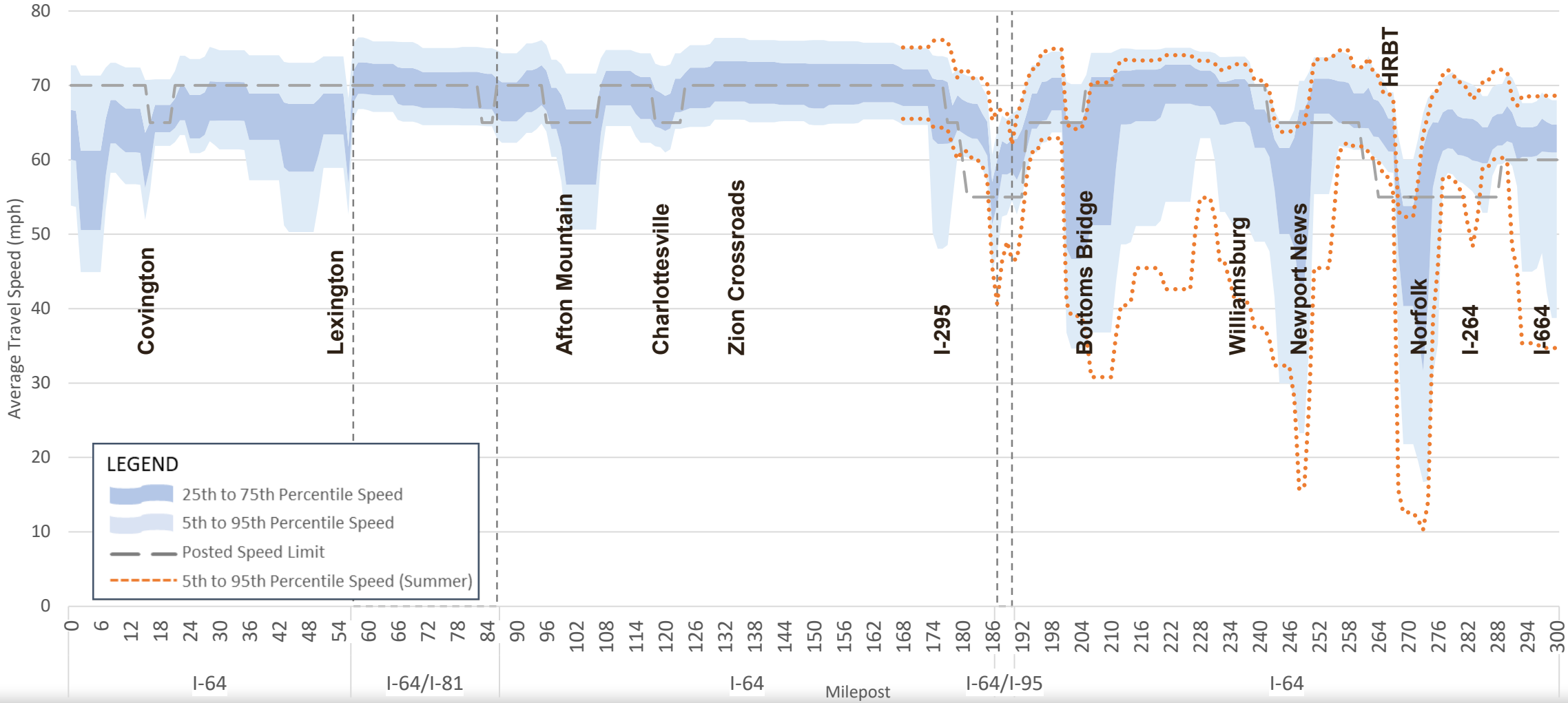
I-64 Equivalent Property Damage Only (EPDO) Crashes Per Mile



2014-2018 Data

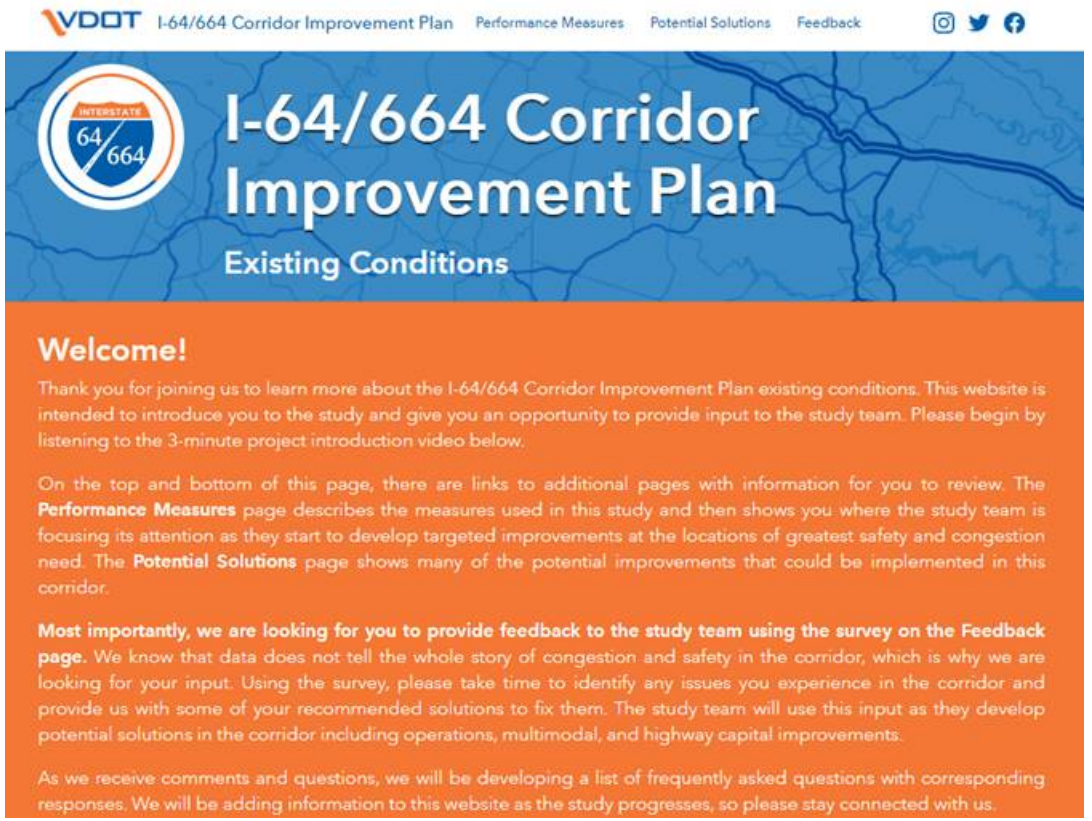
HRBT | I-81 and I-95 Overlaps | Westbound | Eastbound | Top 25%

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



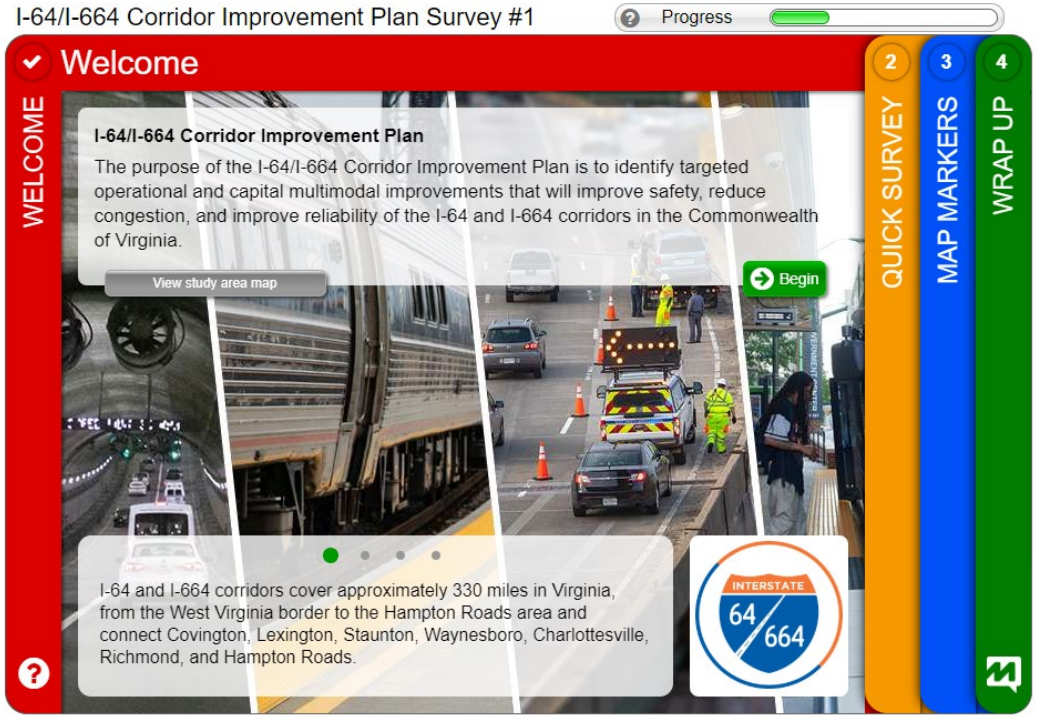
July Public Involvement
Enhanced Project Website

- 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



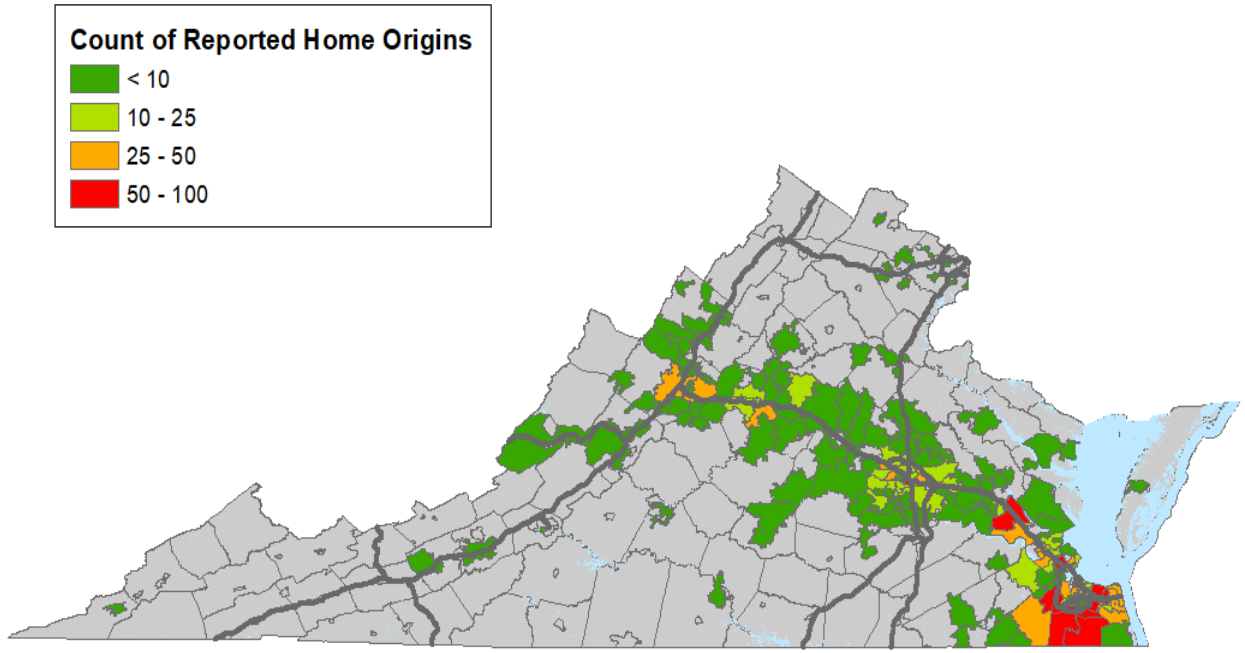
I-64/664 Corridor Improvement Plan Survey

- 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



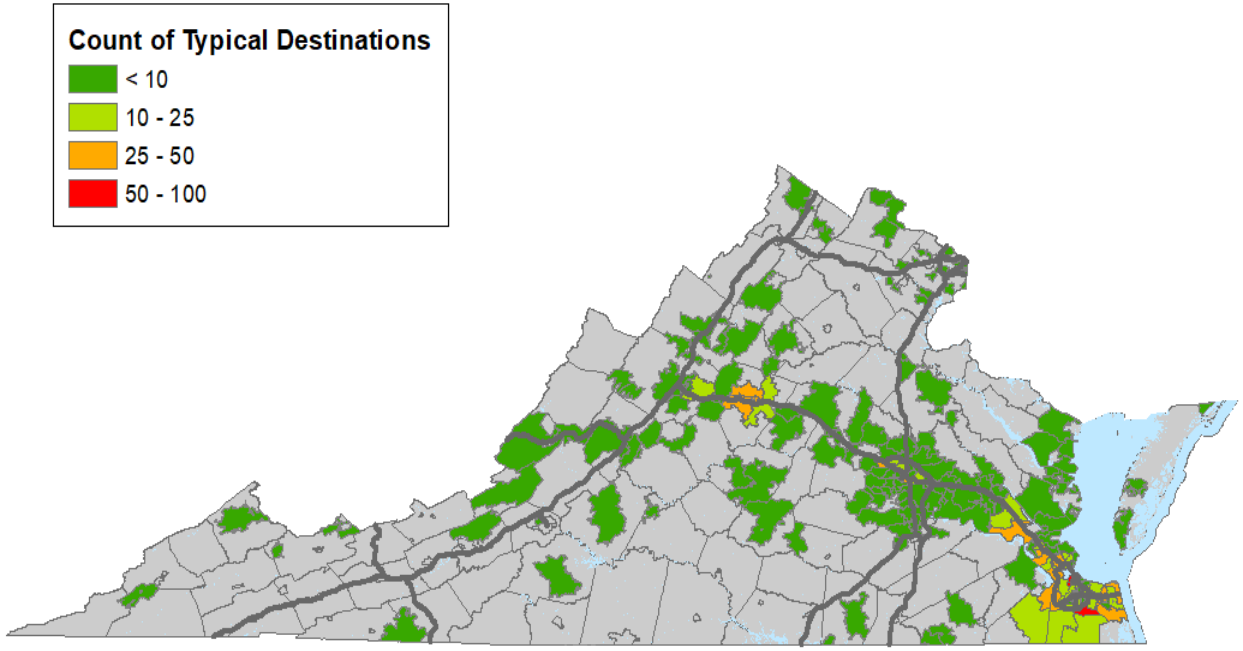
Origins of Participants

- 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



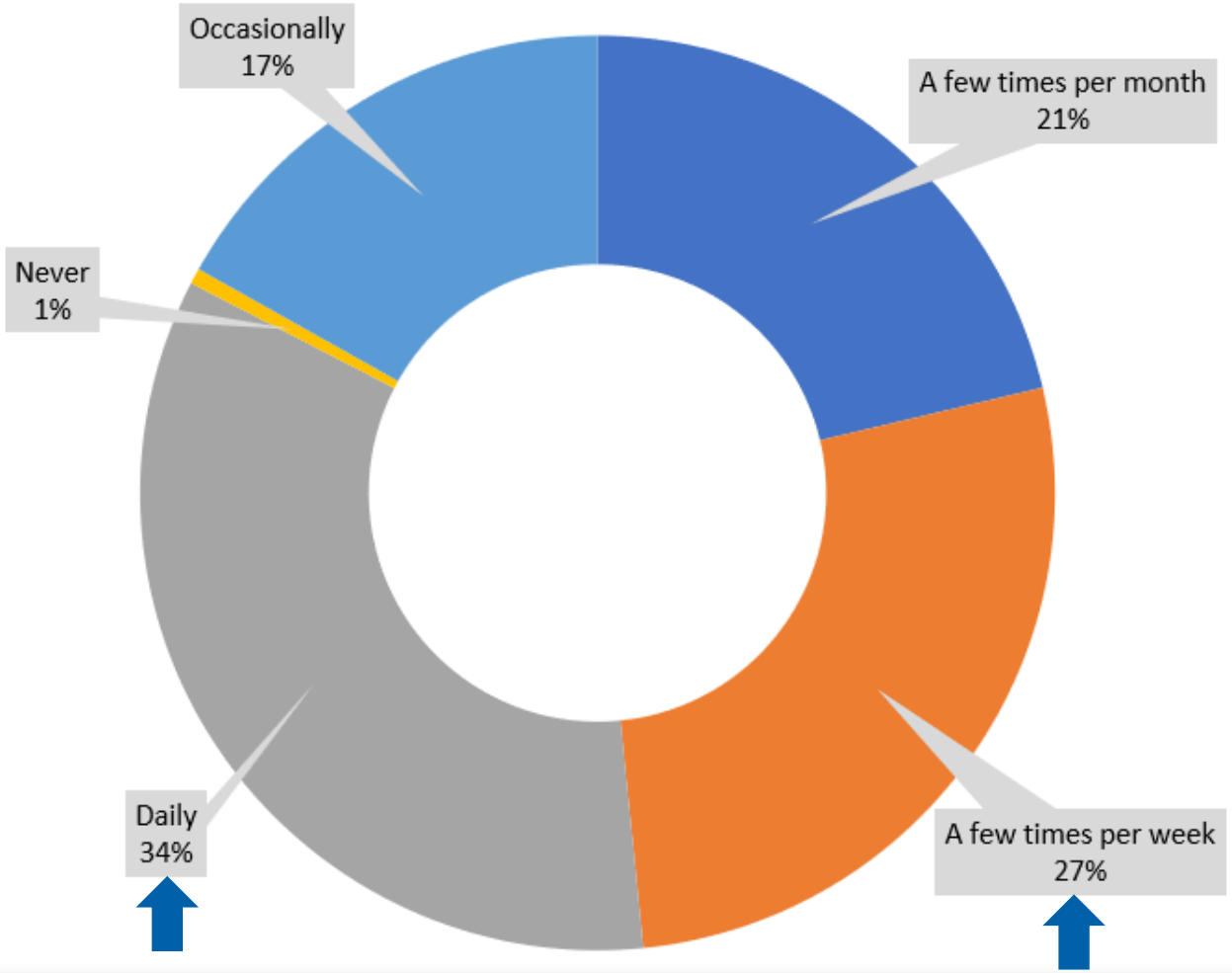
Typical Destinations of Participants

- 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



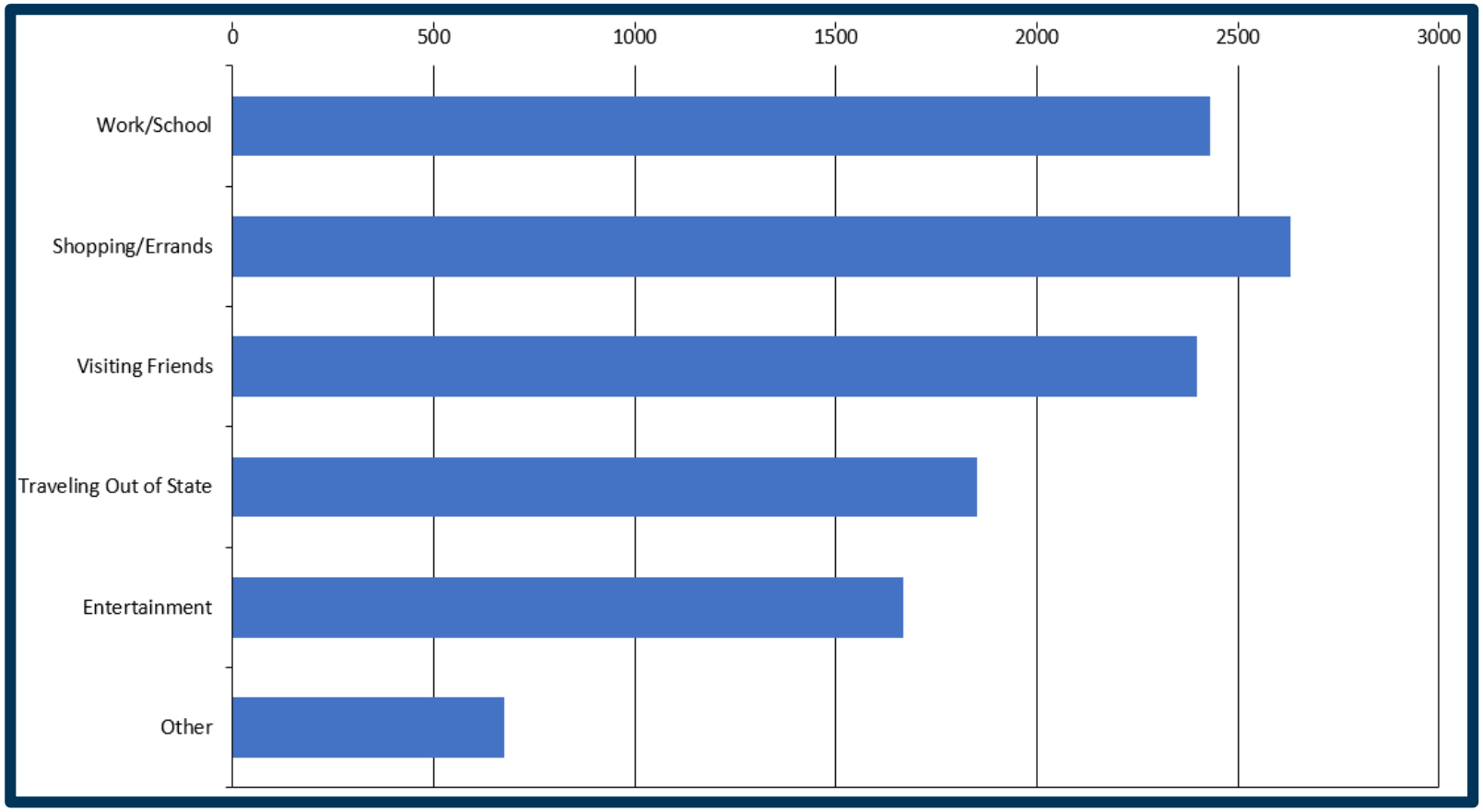
Frequency and Purpose

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



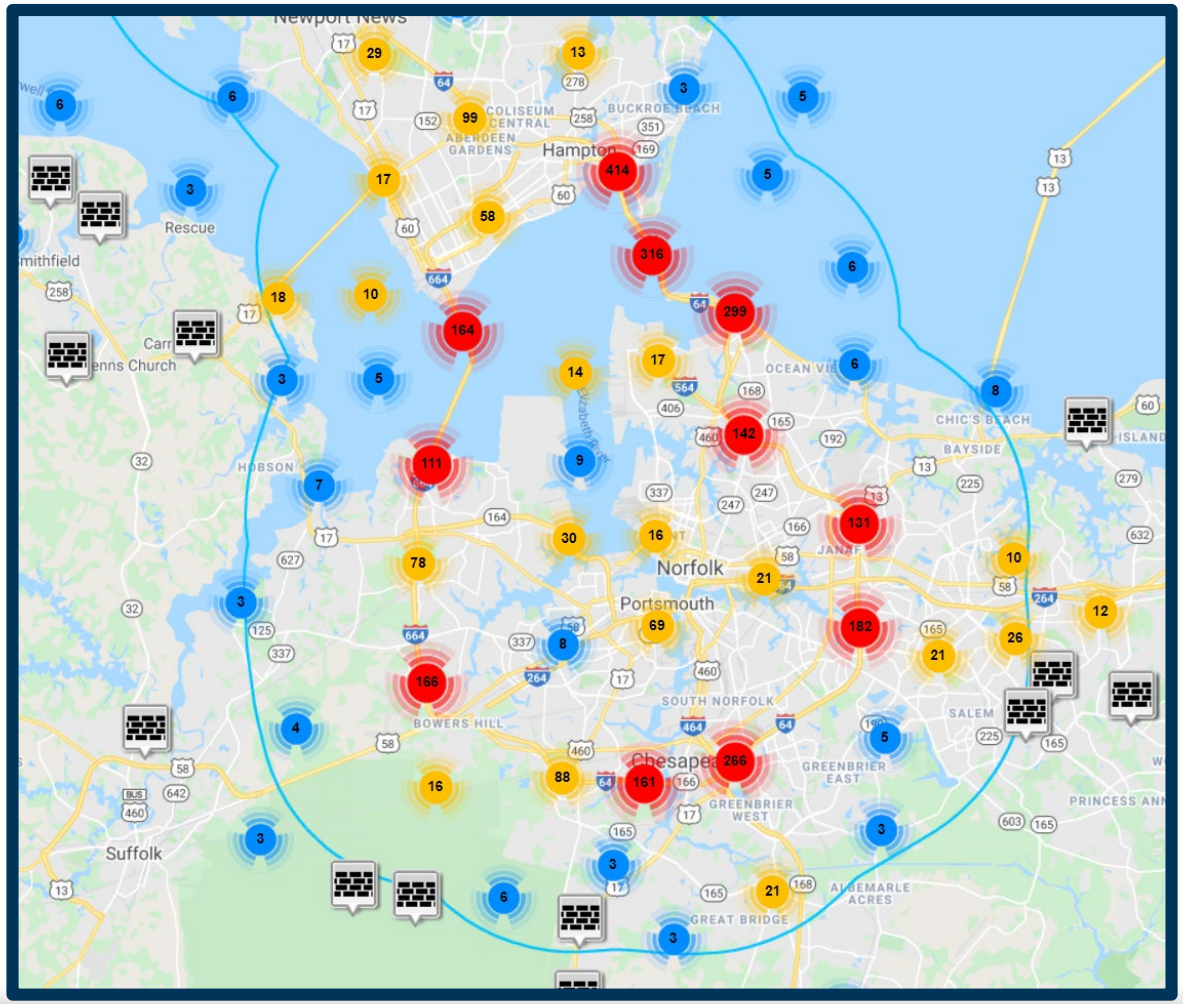
Frequency and Purpose

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



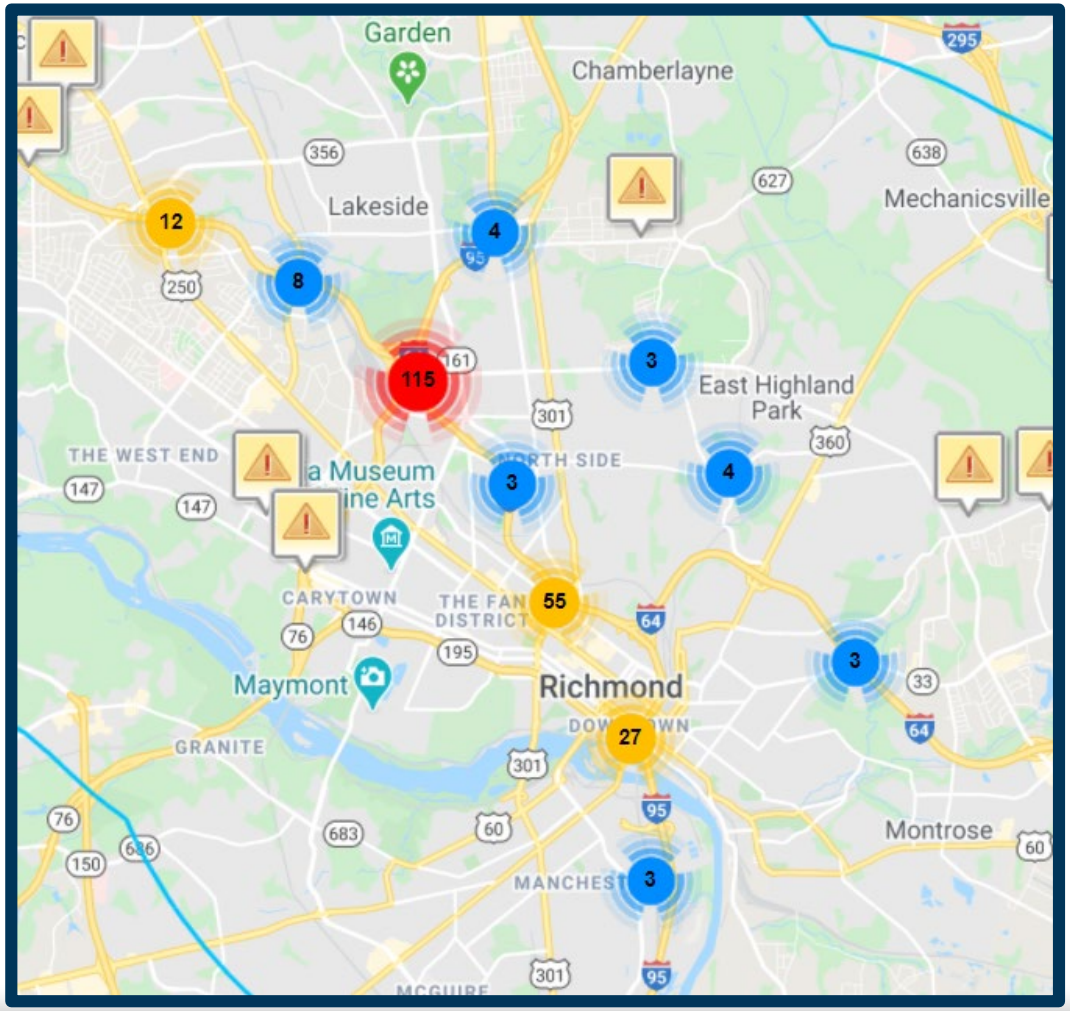
Congestion Map Markers

- Hampton Roads largest clusters
  - Tunnels
  - Interchanges (I-264, I-464, I-564)
- Richmond largest clusters
  - I-95/I-64 overlap
  - Interchanges (I-64/I-95/I-195, US 250 in Short Pump (Exit 178))
- West of Richmond largest clusters
  - US 29 interchange (Exit 118) in Charlottesville



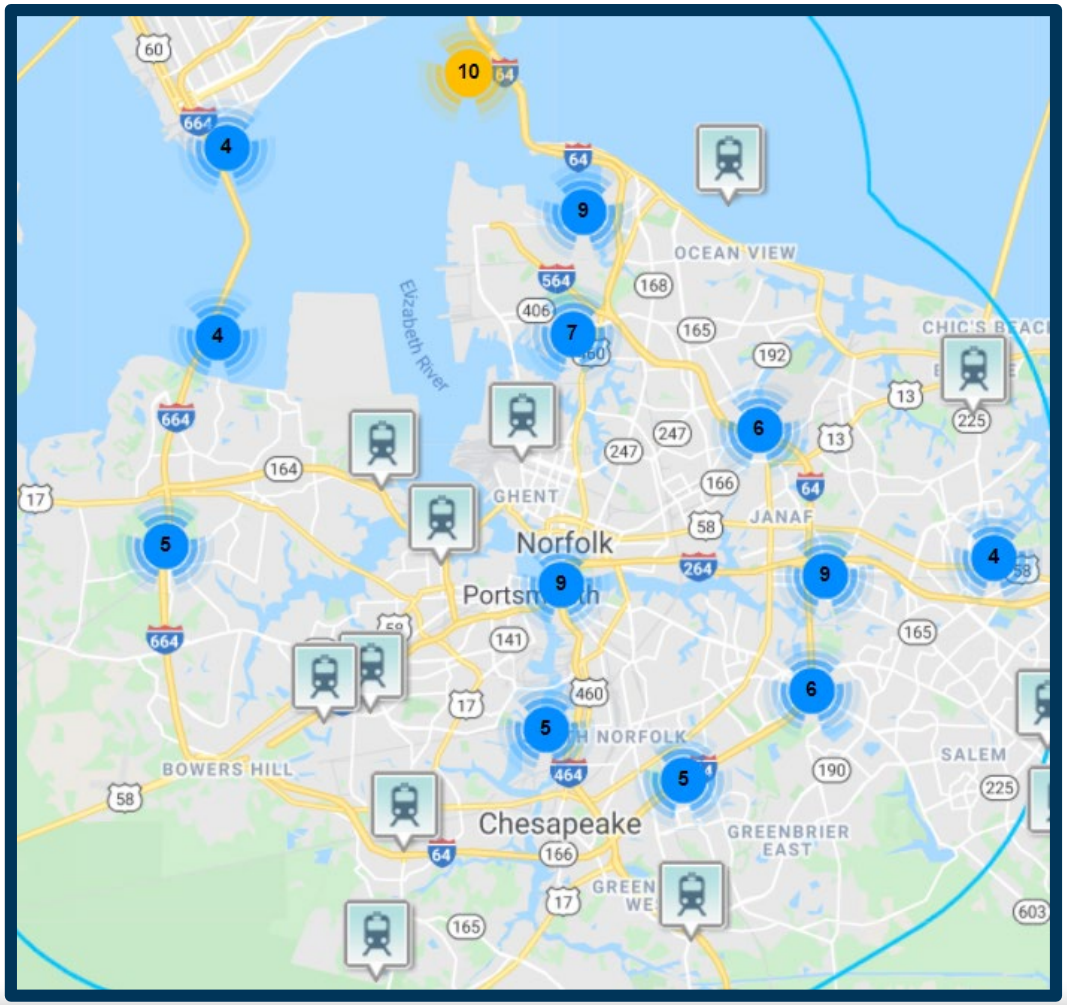
Safety Map Markers

- 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



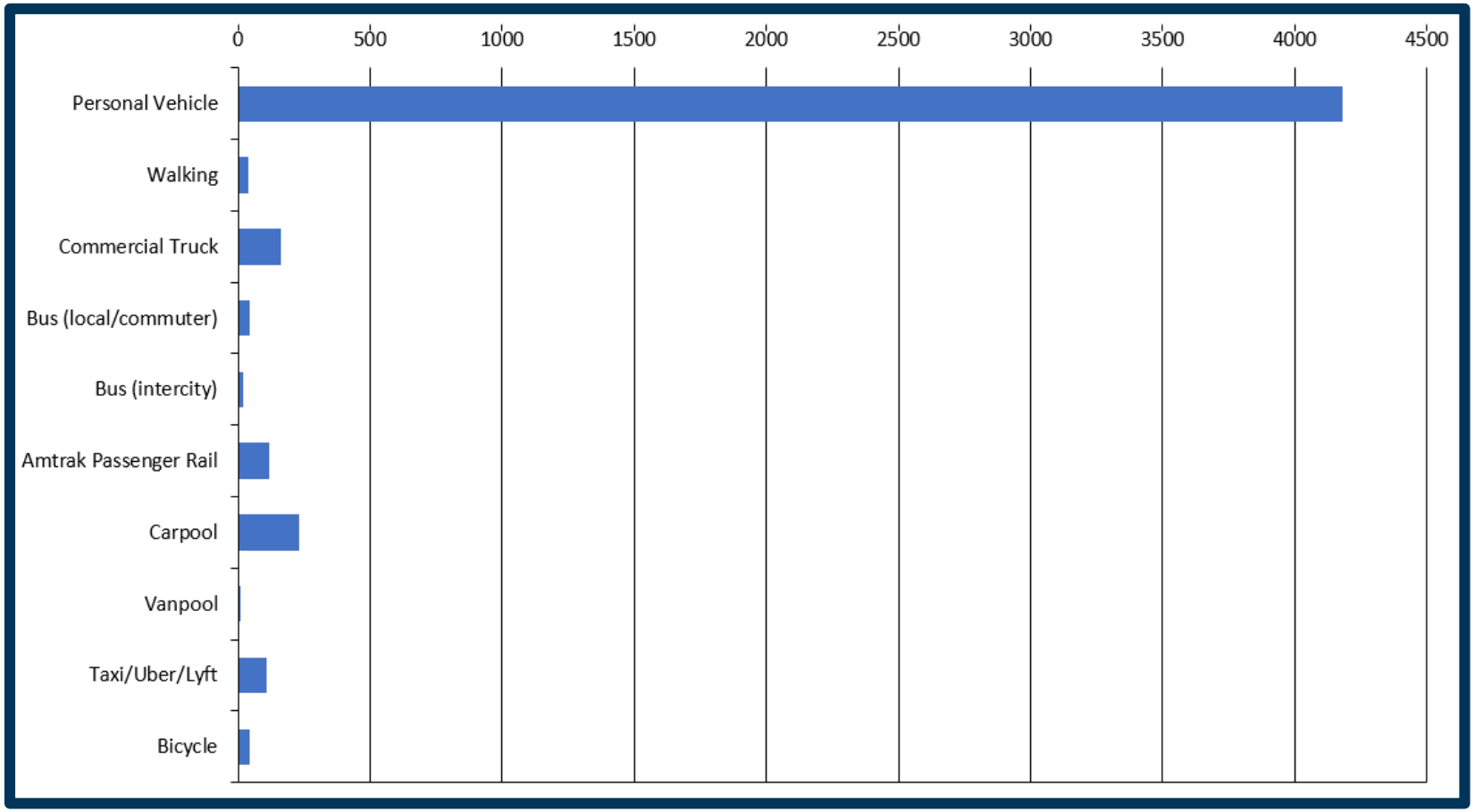
Multimodal Map Markers

- 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



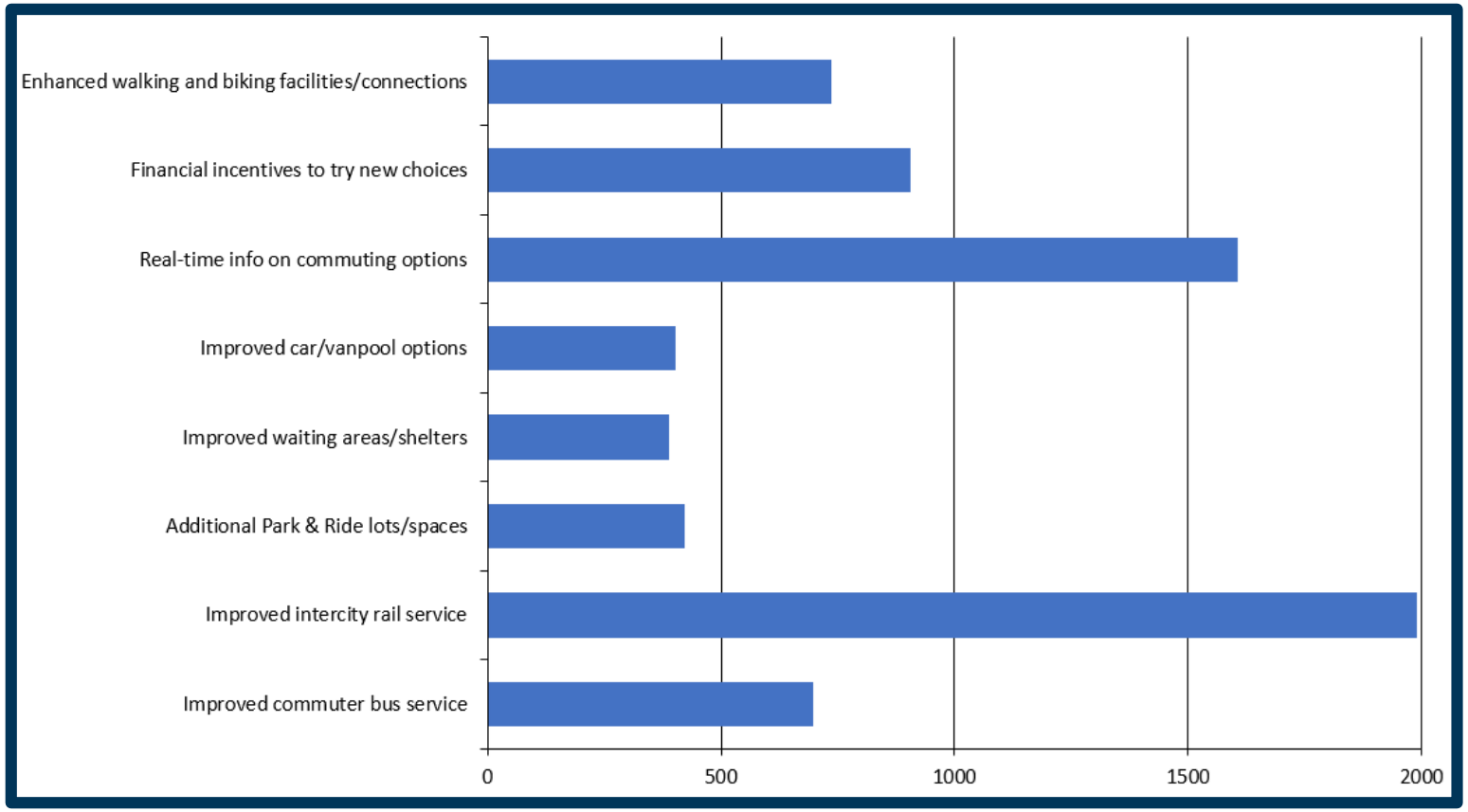
Multimodal Trips

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



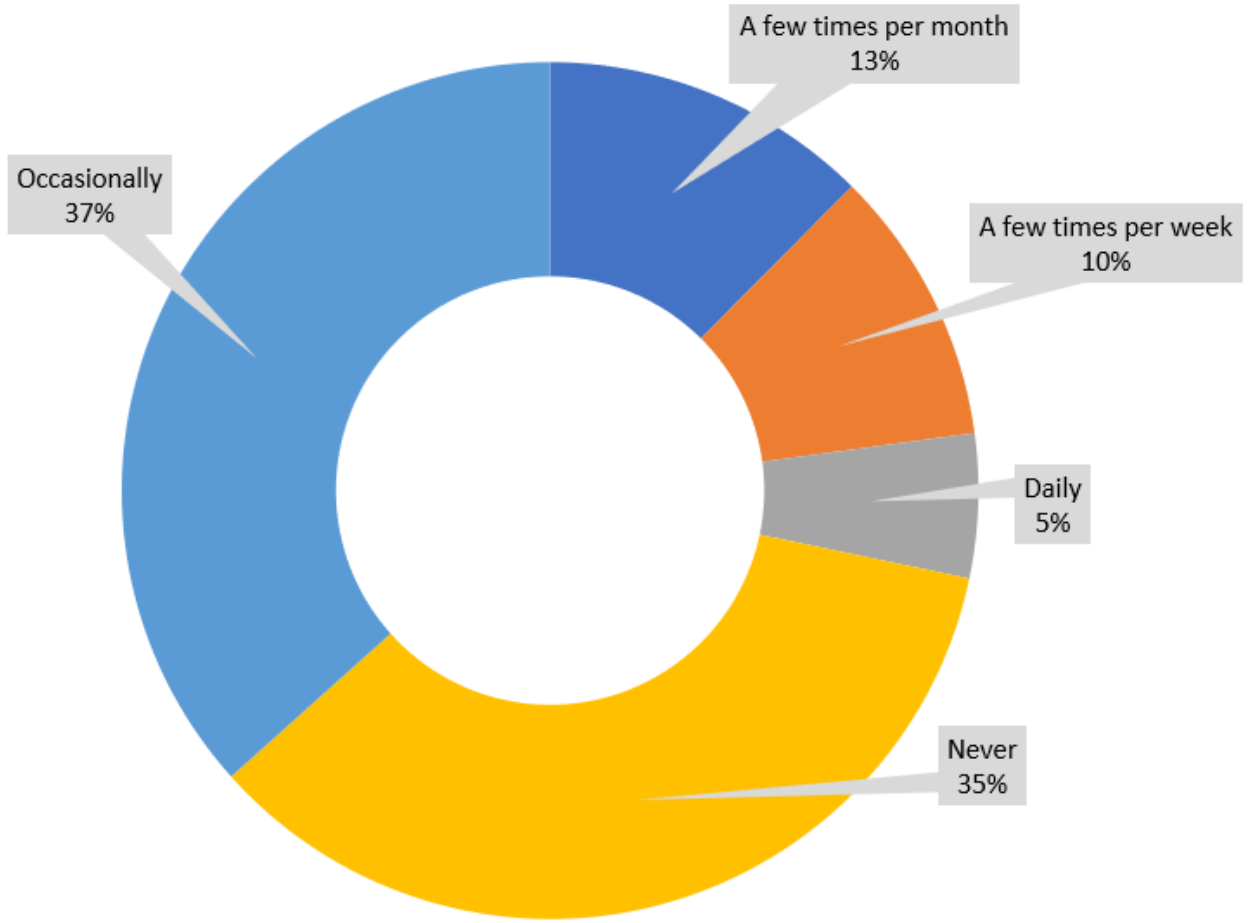
Opportunities for More Multimodal Trips

- 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

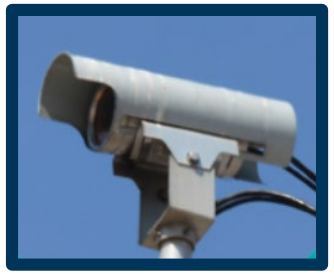
Provide incident scene support and help stranded motorists

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
- **Mobility**
  - Incident delay reduction
  - Travel time savings
- **Energy & Environment**
  - Fuel consumption and cost reduction
  - Emissions benefits

CCTV Cameras

Safety

	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

	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 and Environment

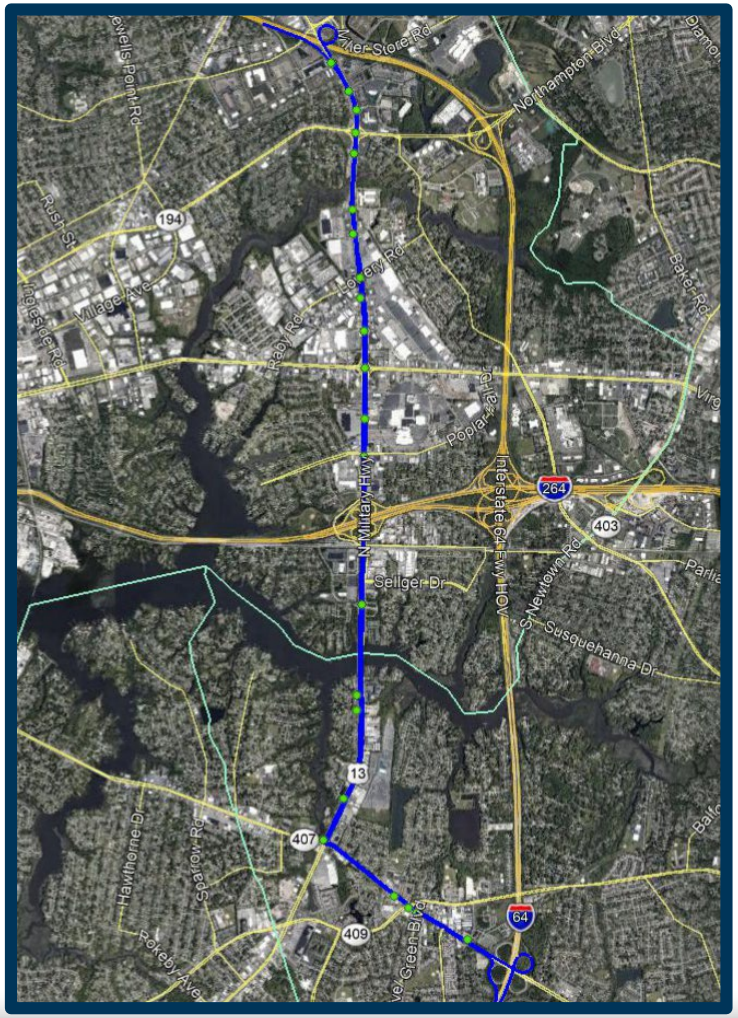
	Culpeper	
Person-hours of travel time savings per year (average 2014-2018) =	325	veh-hours
Average vehicle occupancy (0-2)=	1.67	persons / vehicle
Average fuel consumption per hour of idle time (0-4)** =	0.16	gal / hr
Average fuel consumption reduction per year =	31	gallons
Average cost of fuel in Virginia (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



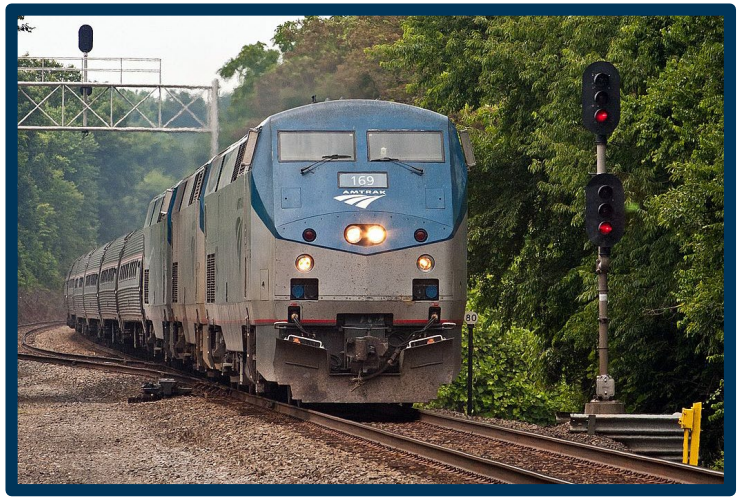
Return on Investment Analysis
Parallel Arterial Operations

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**
ATSPM	*$2.4M - $2.8M*	*$300K*		
Communications	*$1.3M - $1.5M*	*$825K*		
ATC Controller Upgrade	*$3.8M - $4.2M*	*$100K*		
Traffic Signal Timing	*$0.5M - $1.0M*	*$50K*		
CCTV Cameras – *Arterials*	$0.3M - $0.5M	$1.0M	$4.2M	**9.6**
Total	**$8.3M - $10.0M**	**$2.3M**		

Multimodal Improvements

Improvements Considered

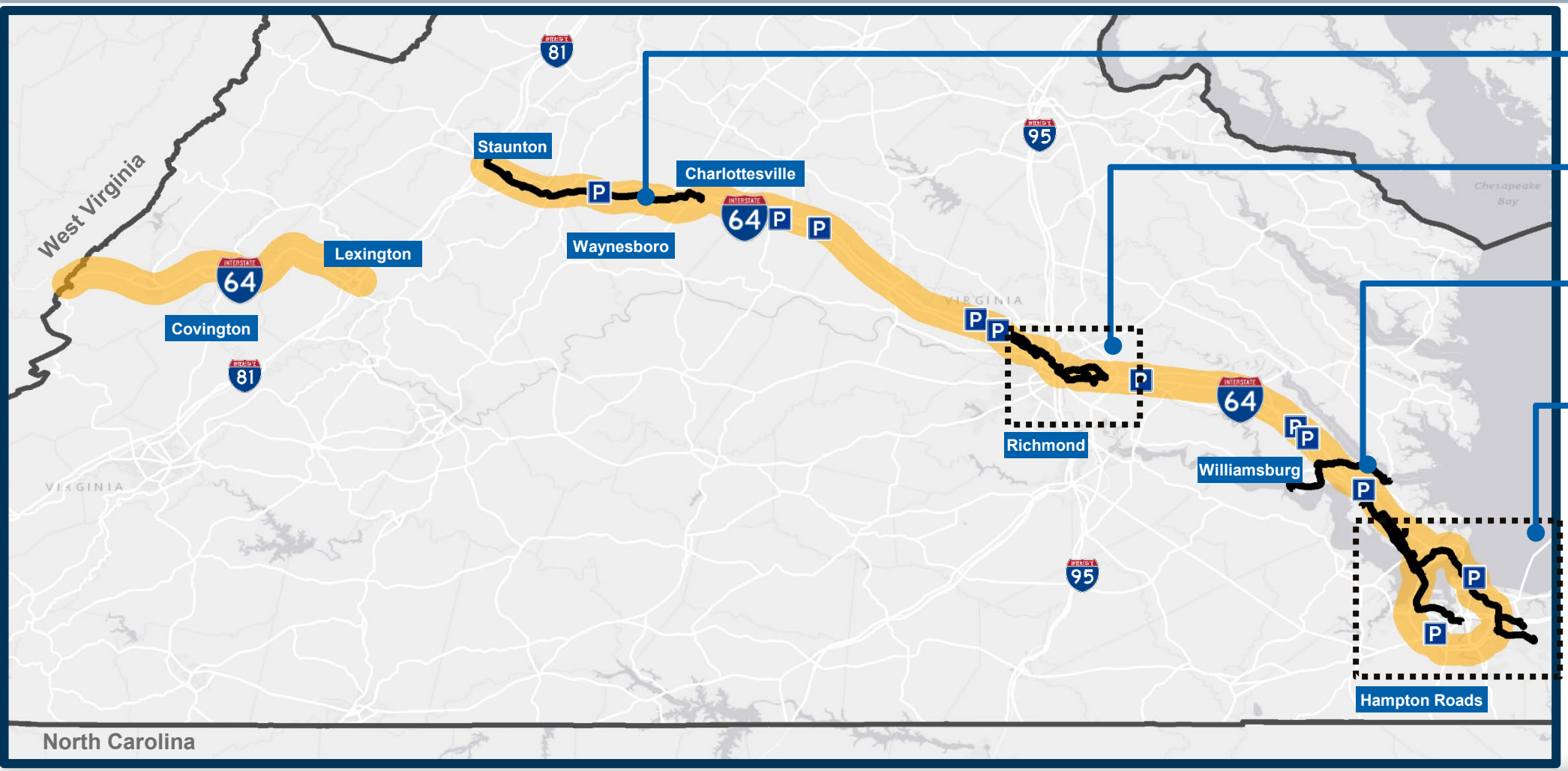
- Intercity passenger rail
- Commuter bus
- Local bus
- Park and ride lots
- Commuter assistance programs
  - *Carpool*
  - *Vanpool*
  - *Commute!VA / Telework!VA*
  - *Outreach and support to large employers*



Commute!VA

Multimodal Improvements

Corridor Overview



Afton Express

Richmond Area

Parkway Shuttle

Hampton Roads Area

I-64/I-664 Study Area

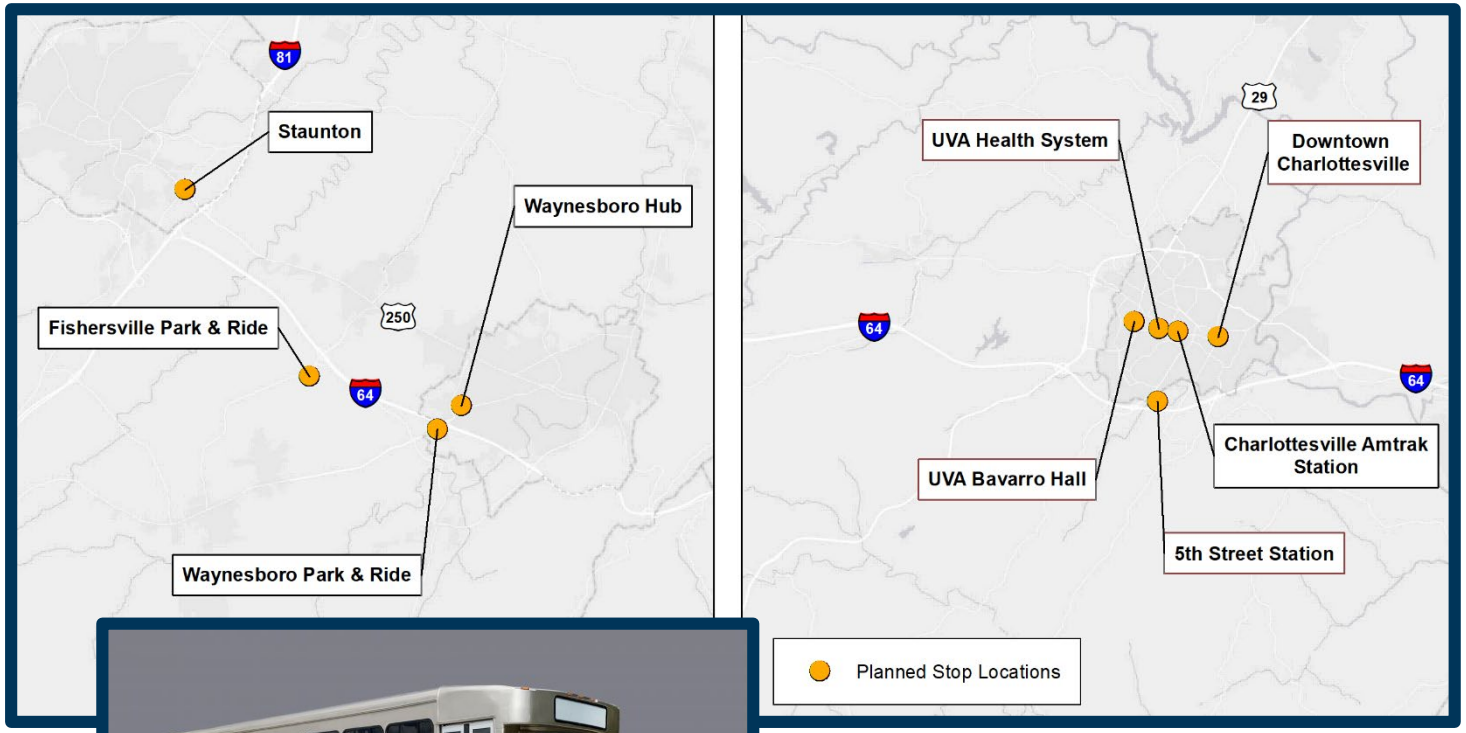
Transit Route

P Park-and-Ride

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

to Washington

Staples Mill

Main Street

to Norfolk

to Newport News

Richmond International Airport

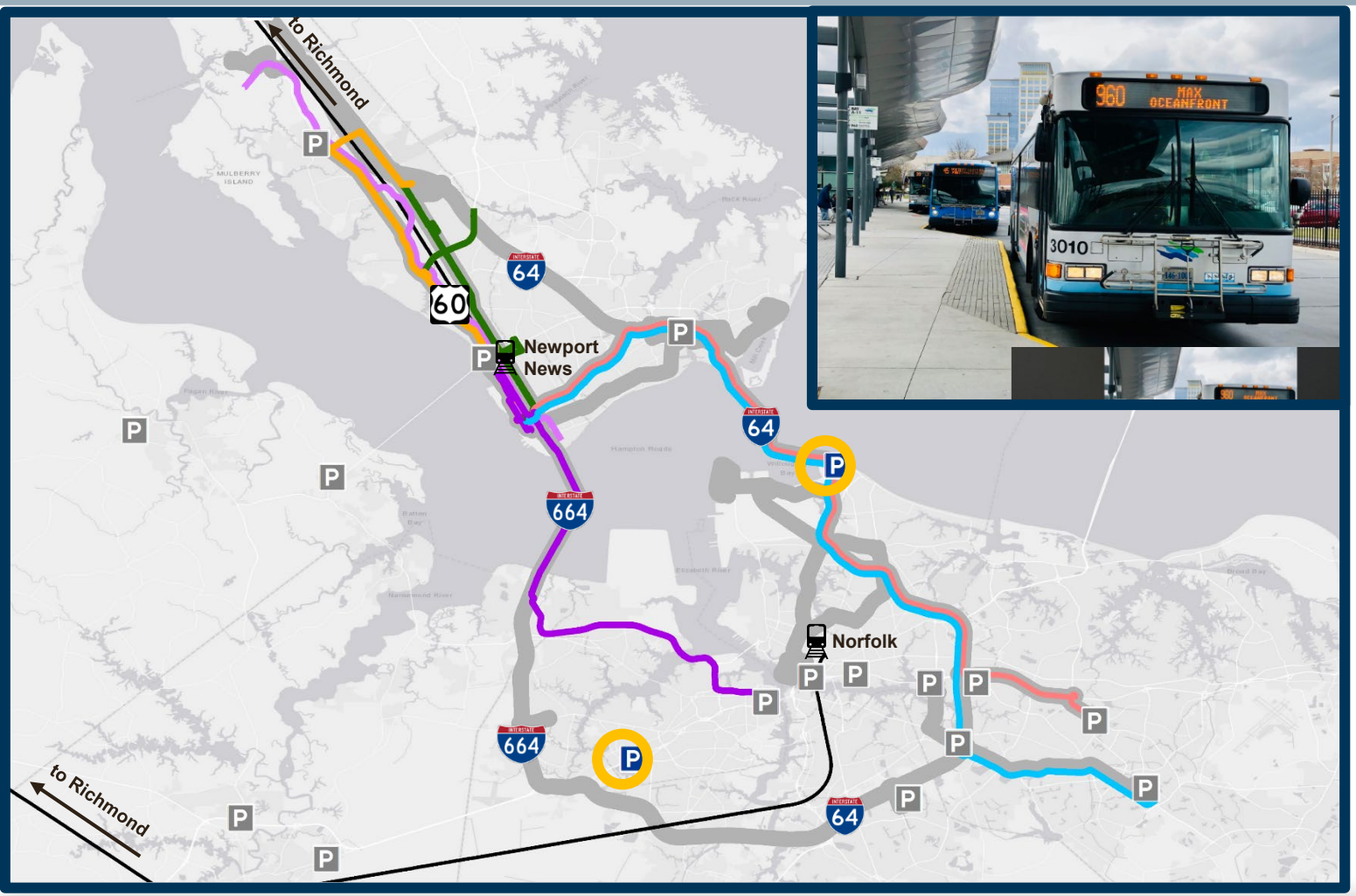
- Existing Intercity Passenger Rail
- Existing Express/Commuter Bus (on I-64)
- Existing Park-and-Ride

Potential Multimodal Improvements

- **Route 22X** *New route*
  4-5 trips per peak period
- **Route 19 (Broad St-Short Pump)** *Existing route*
  Increase to 15-minute peak frequency
- **Route 7 (Nine Mile Rd)** *Existing route*
  Increase to 15-minute peak frequency
- **Airport via Rt. 60** *New route*
  15-minute peak frequency
- **Park-and-Ride (New)**

Multimodal Improvements

Hampton Roads Area | Potential



Existing Intercity Passenger Rail

Existing Express/Commuter Bus (on/parallel to I-64)

P 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

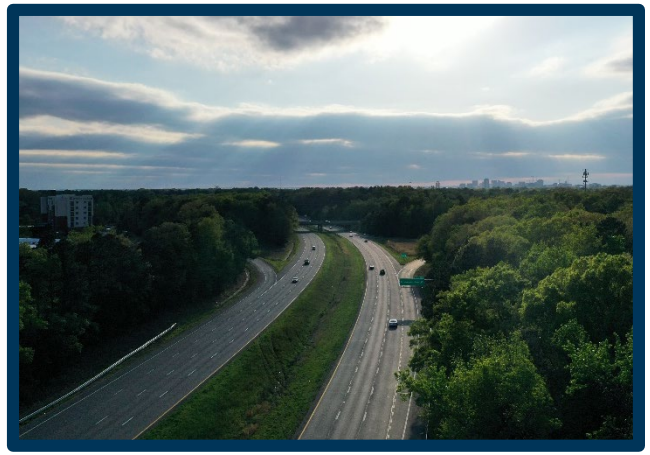
Route 972 *Existing route*
Increase to 2 trips per peak period

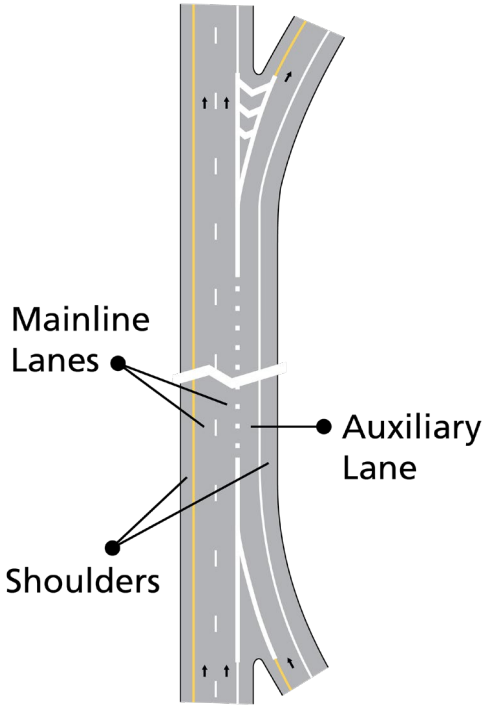
P **Park-and-Ride (New)**

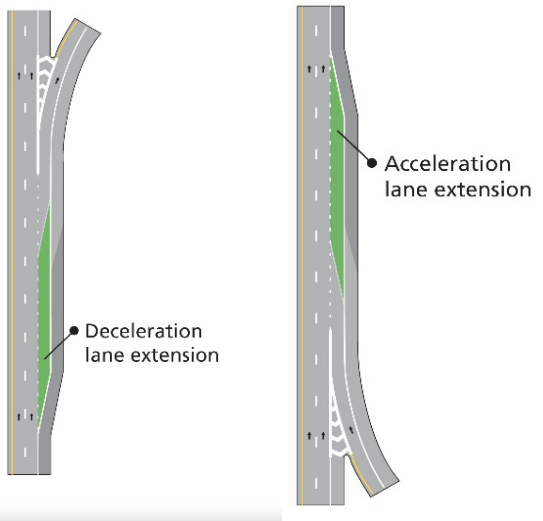
Capital Highway Improvements

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



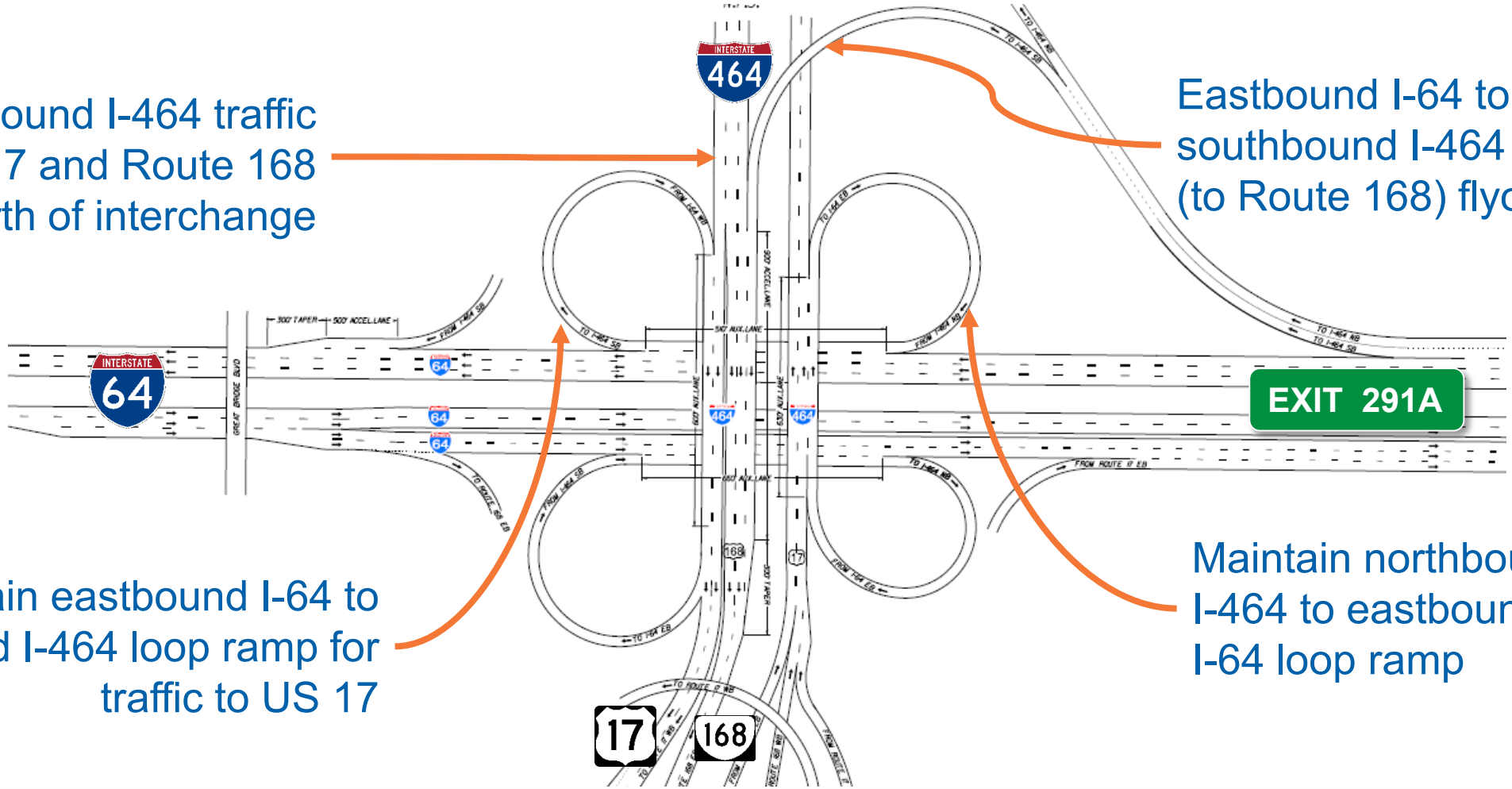




Improvement Highlights – Hampton Roads District

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

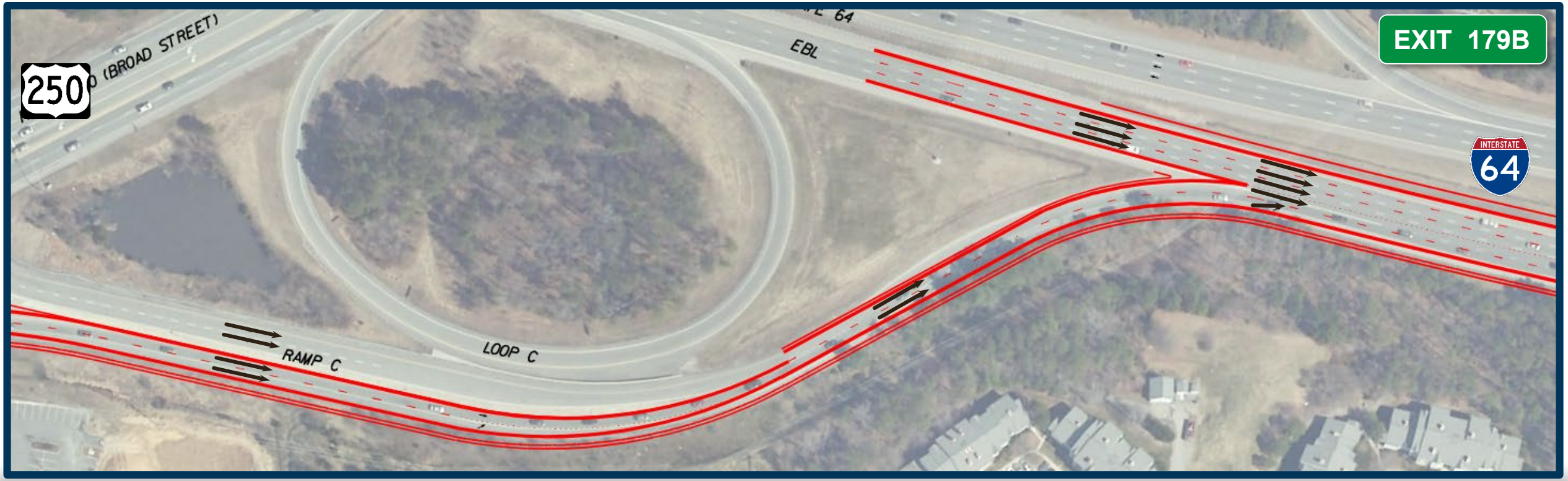


Maintain eastbound I-64 to southbound I-464 loop ramp for traffic to US 17

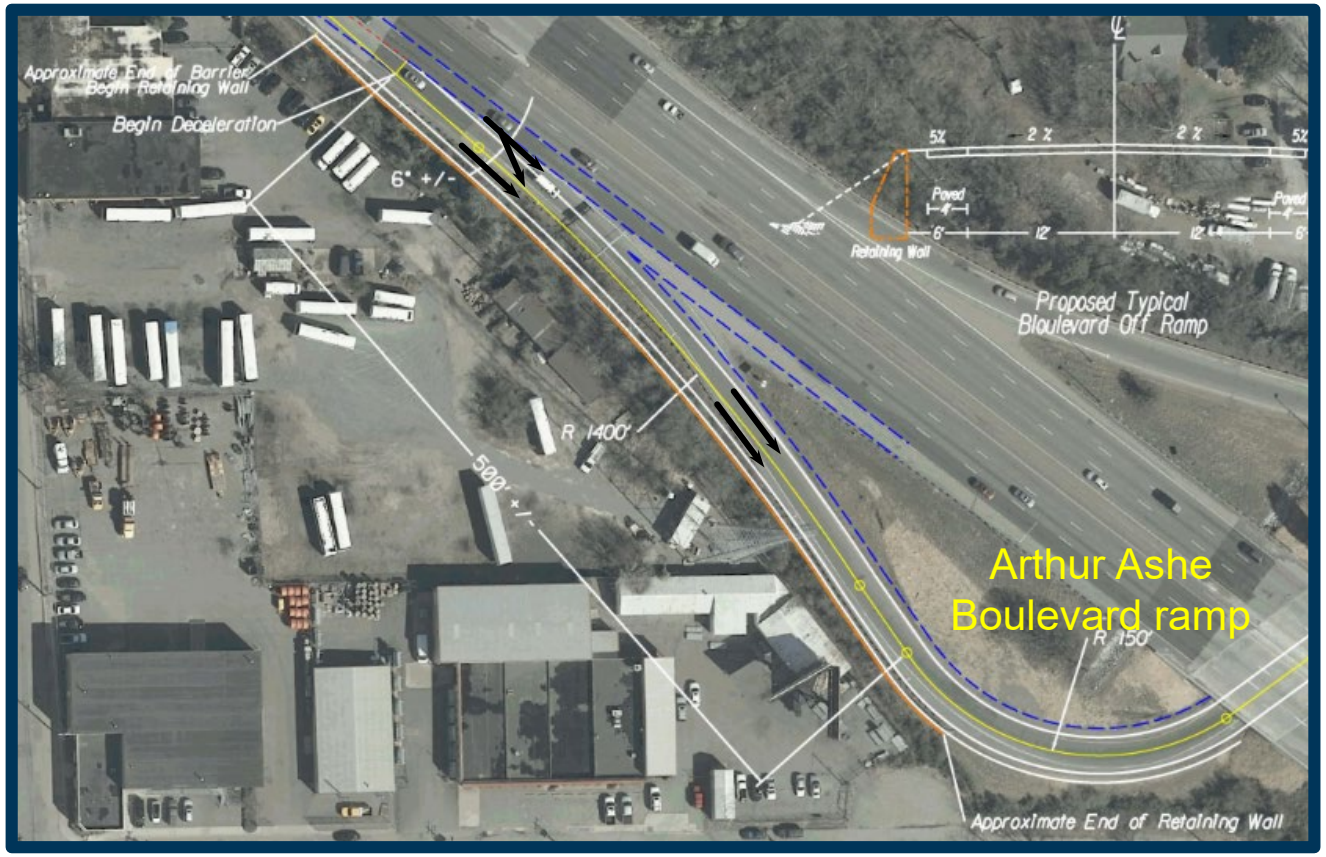
Maintain northbound I-464 to eastbound I-64 loop ramp

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

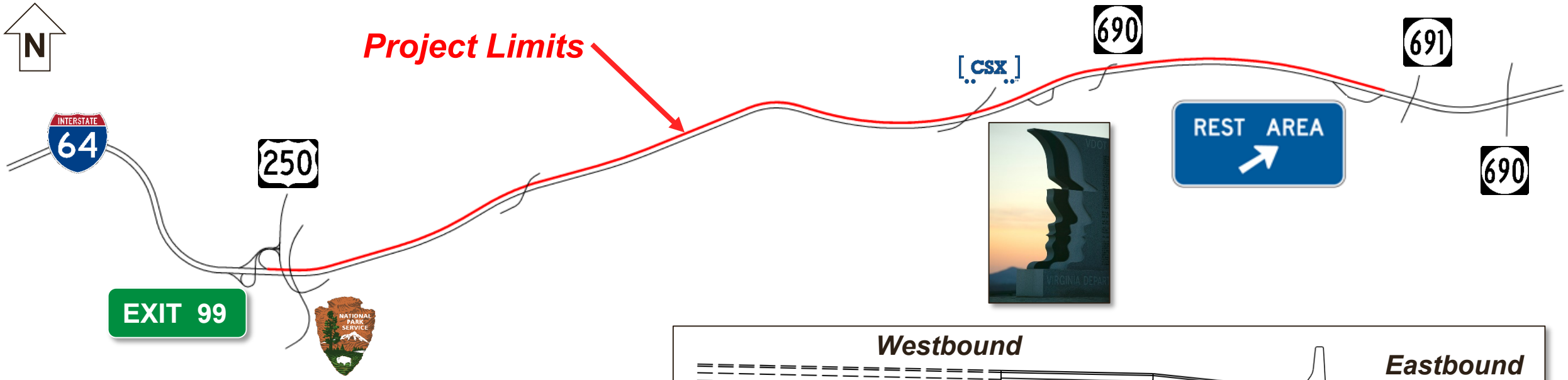


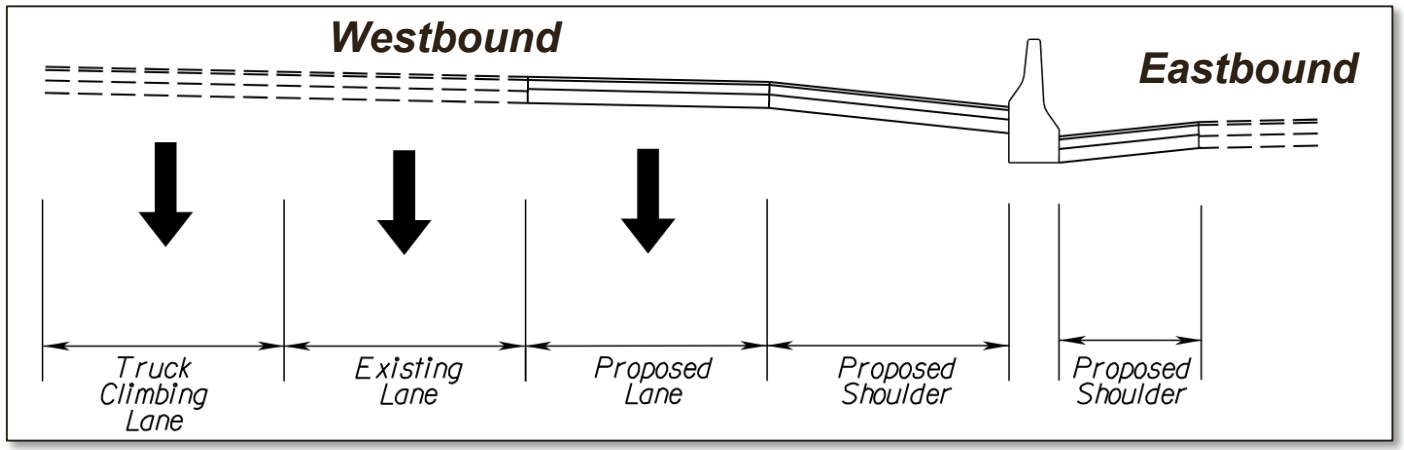
Improvement Highlights – Richmond District
I-95/I-64 Overlap



- 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

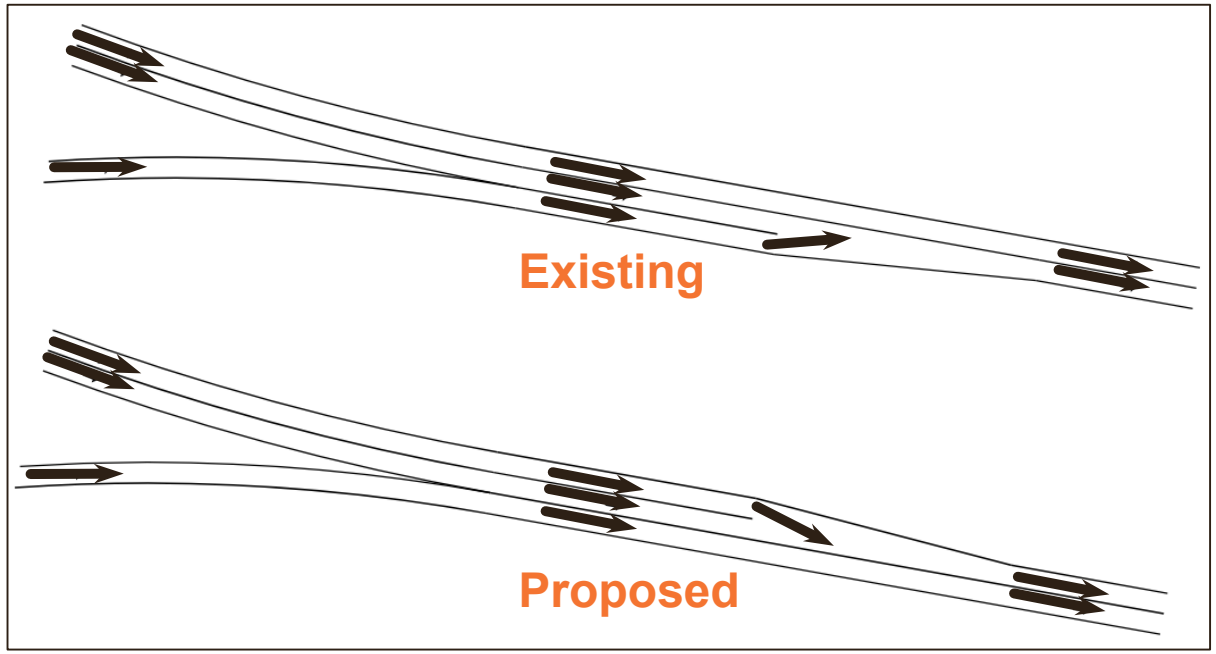




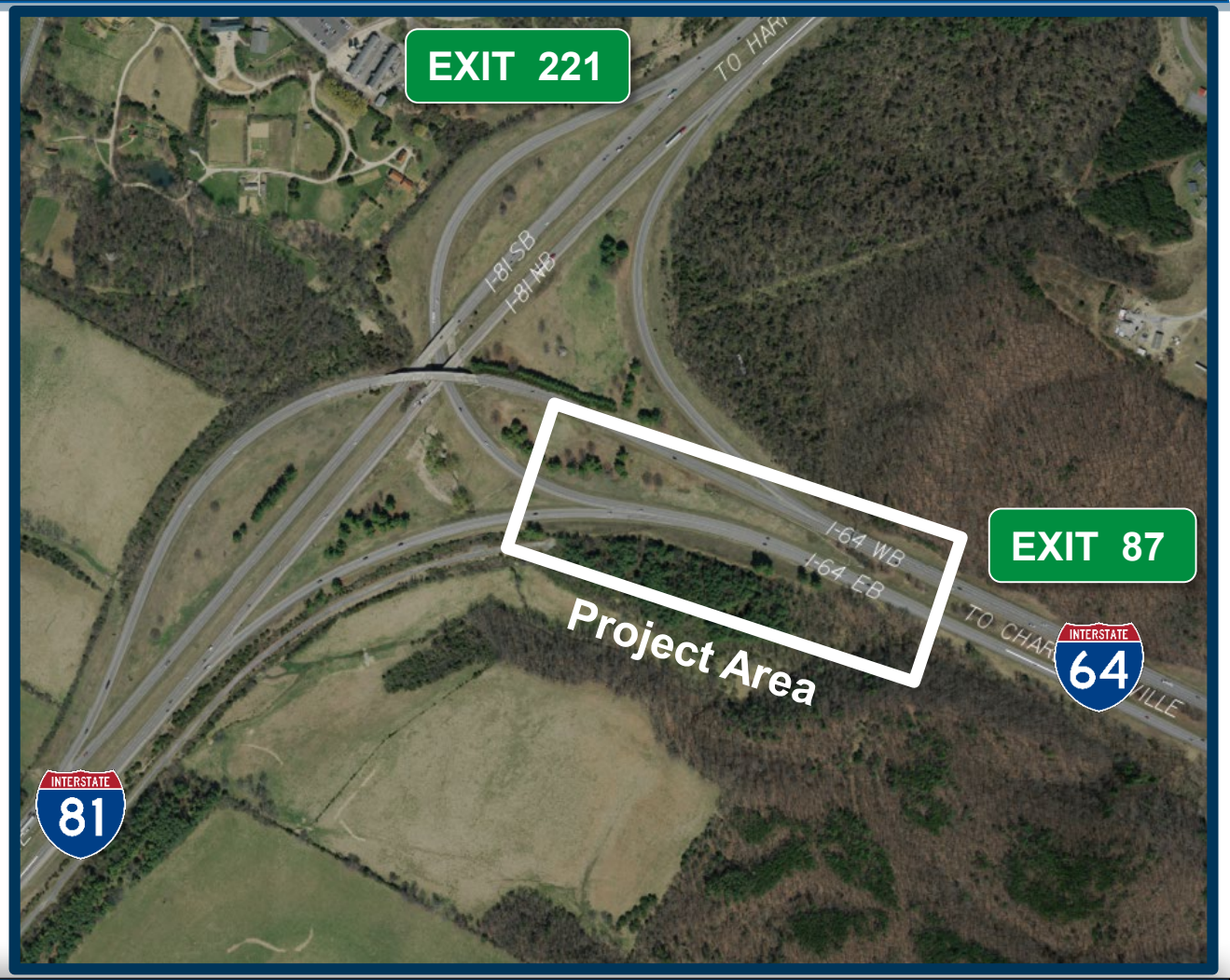
Construct a third westbound lane in the median over Afton Mountain

Improvement Highlights – Staunton District

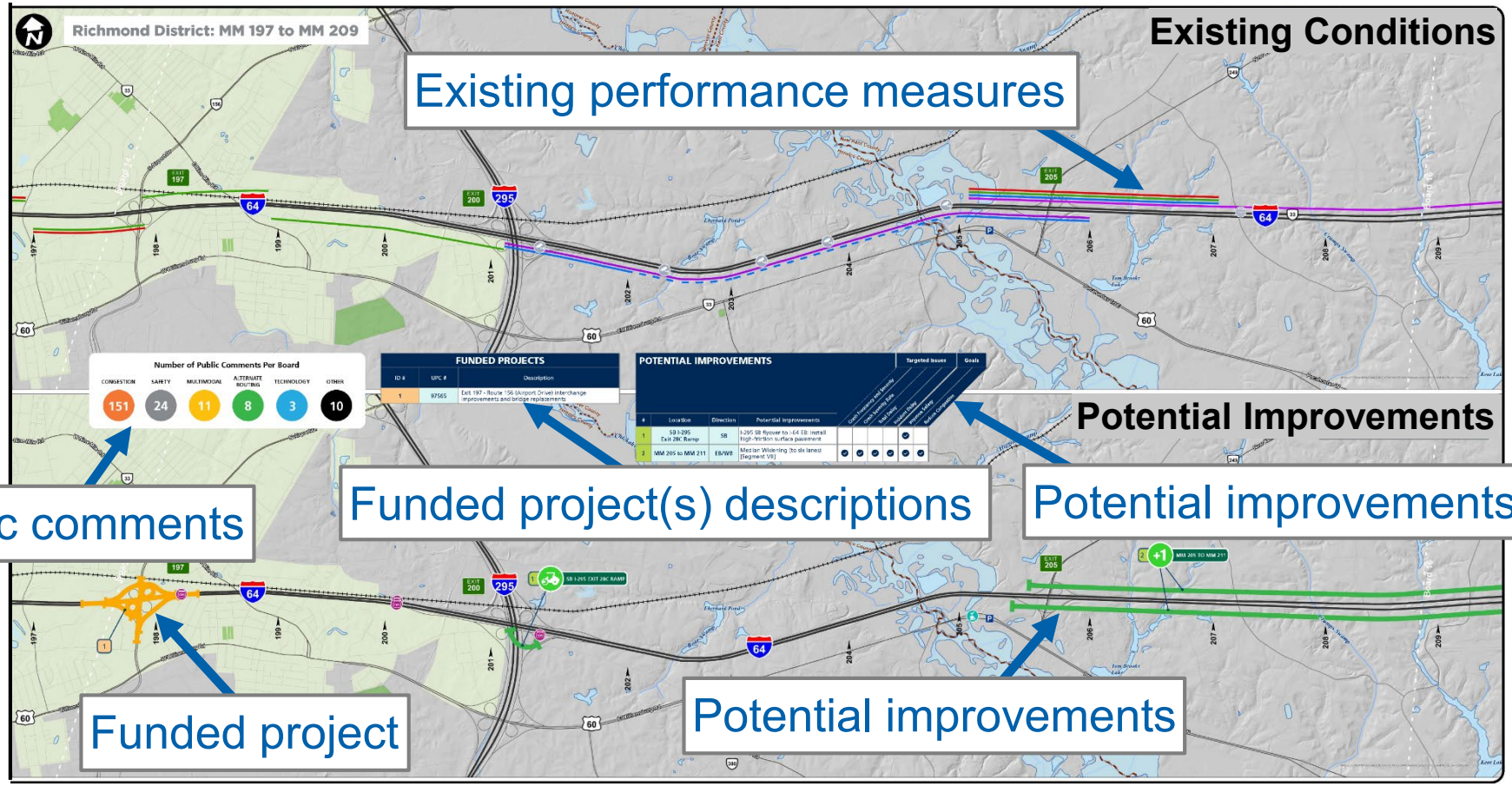
Fix merging issues at I-81 and eastbound I-64 near Staunton



One through lane in each direction



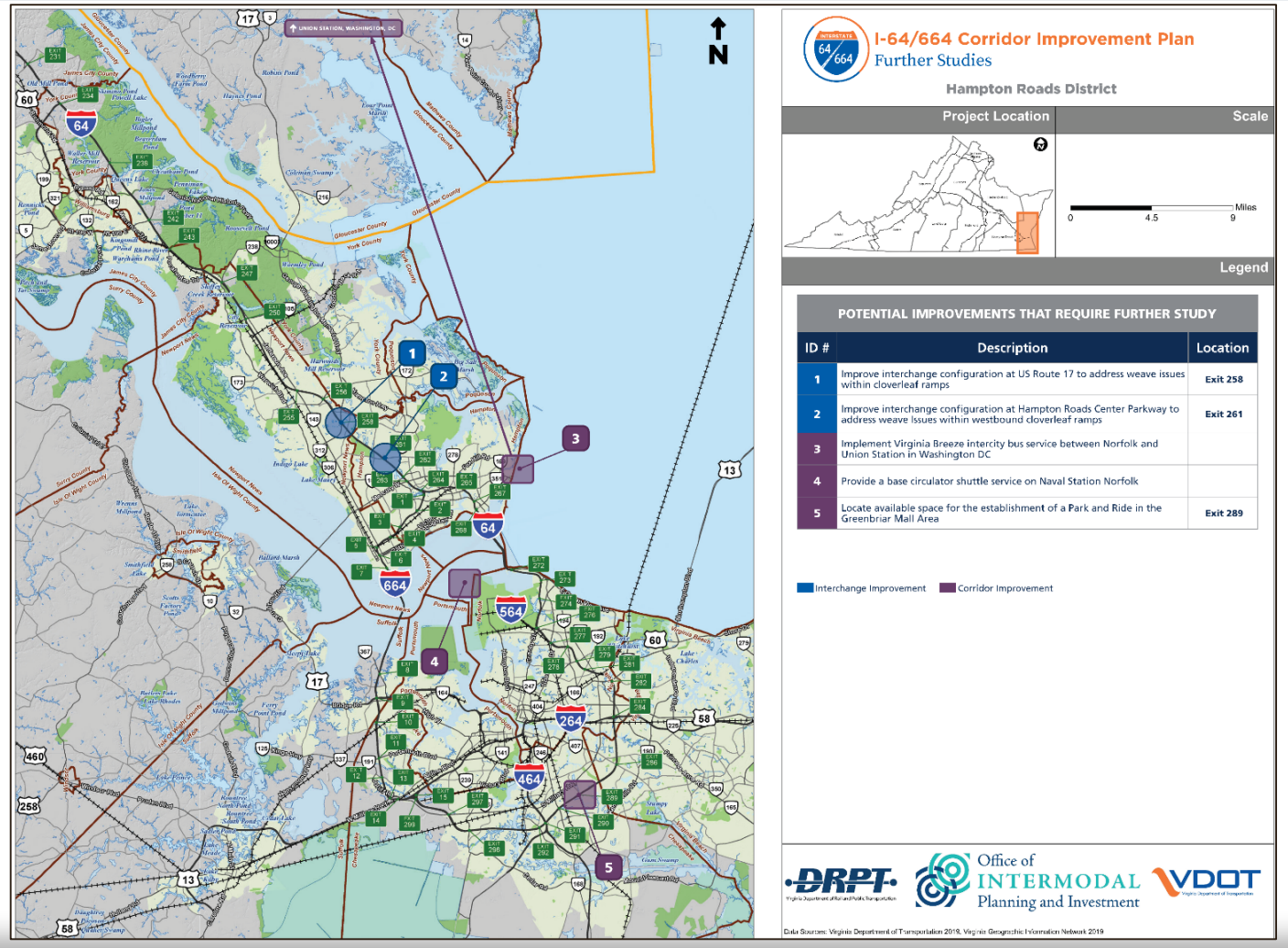
Potential Improvements Boards



Potential Improvements that Require Further Study

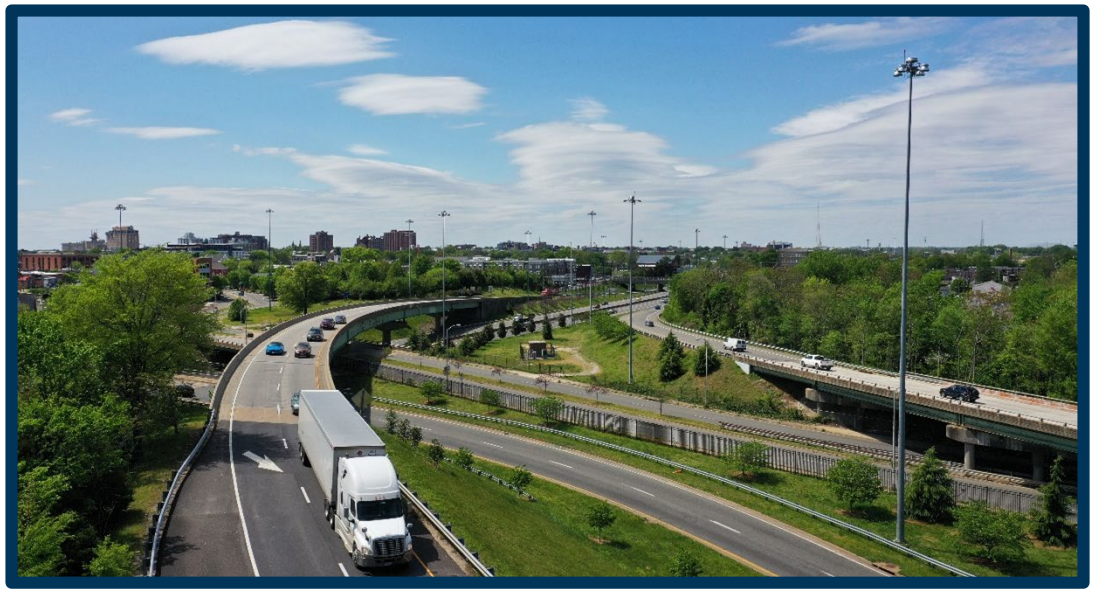
Project types

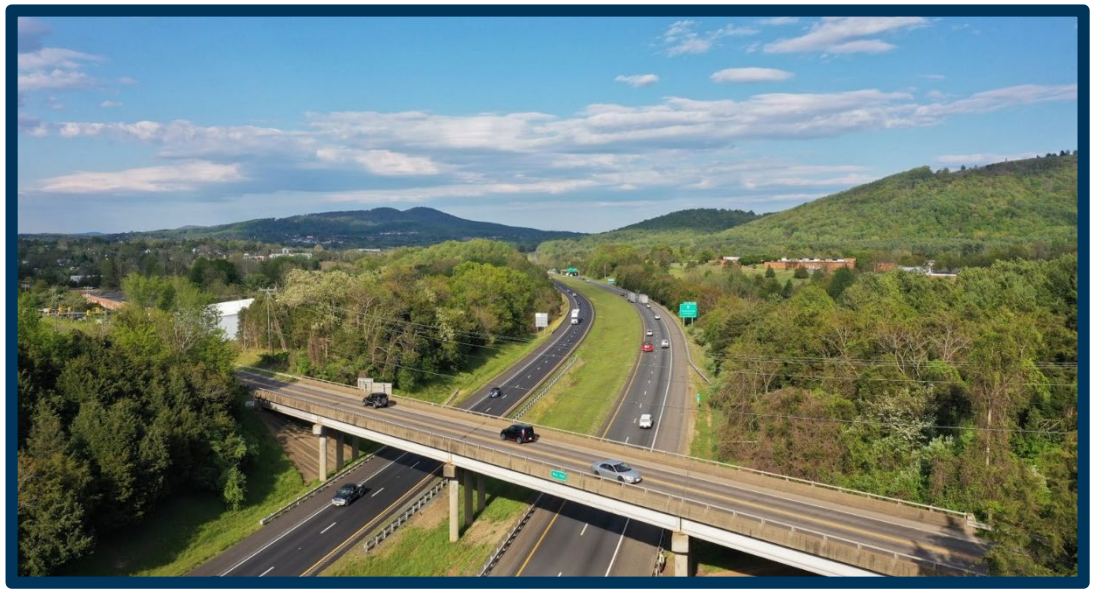
- Interchange improvements without sufficient operational and safety analyses
- Park and ride lots requiring a location study



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}



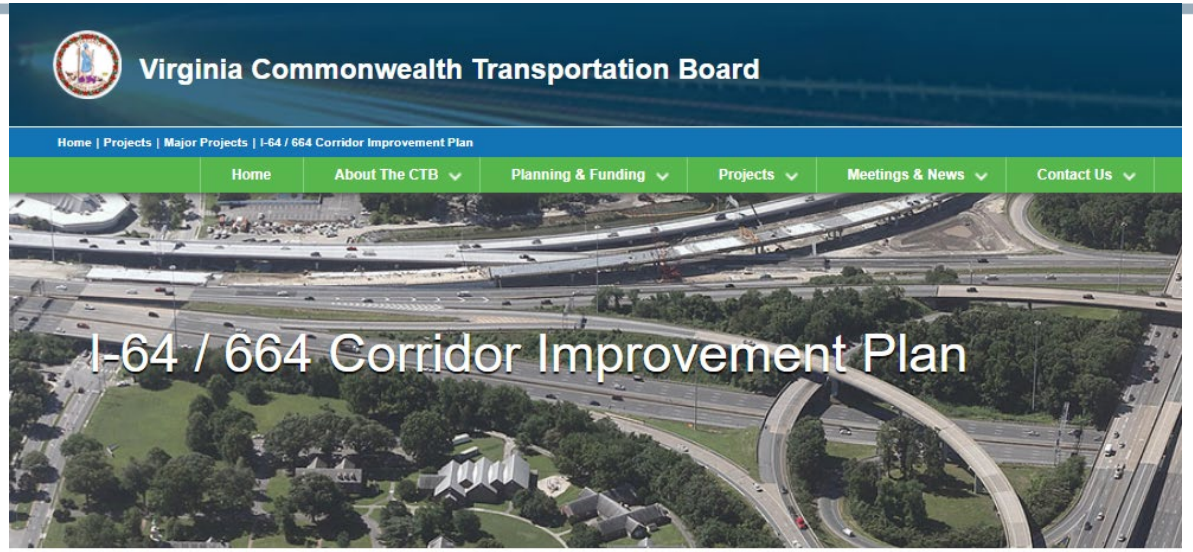


Next Steps

- 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



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

Public Meetings Website

I-64-664PublicInfo.com