



Commerce Corridor Study Technical Report

RICHMOND REGIONAL TRANSPORTATION PLANNING ORGANIZATION

The Richmond Regional Transportation Planning Organization (RRTPO) is the federal and state designated metropolitan planning organization that serves as the forum for cooperative transportation decision-making in the Richmond region. The Richmond Regional Planning District Commission (RRPDC) is the contracting agent and staff for the RRTPO.

ACKNOWLEDGEMENT

The Commerce Corridor Study was prepared by Michael Baker International in cooperation with CDM Smith and the Economic Development Research Group (EDRG) on behalf of the Virginia Office of Intermodal Planning and Investment of the Secretary of Transportation and the Richmond Regional Transportation Planning Organization. The report was prepared in consultation with RRTPO staff and representatives of the City of Richmond, Chesterfield County, Henrico County, the Virginia Department of Transportation (VDOT), the Virginia Department of Rail and Public Transportation (DRPT), and the Port of Virginia (POV).

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RRTPO AGENDA 10/5/17; ITEM III.D.

COMMERCE CORRIDOR STUDY

Richmond Regional Transportation Planning Organization

On motion of James M. Holland, seconded by Kimberly B. Gray, the Richmond Regional Transportation Planning Organization unanimously approved the following resolution:

RESOLVED, that the Richmond Regional Transportation Planning Organization adopts the Commerce Corridor Study and directs the coordination of project funding applications, planning efforts and initiatives to be advanced through the FY18 and future Unified Planning Work Programs.

This is to certify that the Richmond Regional Transportation Planning Organization approved the above resolution at its meeting held October 5, 2017.

WITNESS:

BY:

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Program Assistant
Richmond Regional Planning
District Commission

Barbara Schoeb Nelson
Secretary
Richmond Regional Transportation
Planning Organization

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1. INTRODUCTION

The *Commerce Corridor: Transportation, Connectivity, Accessibility and Economic Opportunity Study* is a comprehensive multimodal strategy to address existing and future transportation challenges within the Commerce Corridor. This study examines the development opportunities that will occur if the Richmond Marine Terminal (RMT) fulfills its potential and examines the highway and rail transportation needs necessary to maximize connectivity, accessibility, and allow the full economic development potential of the corridor.

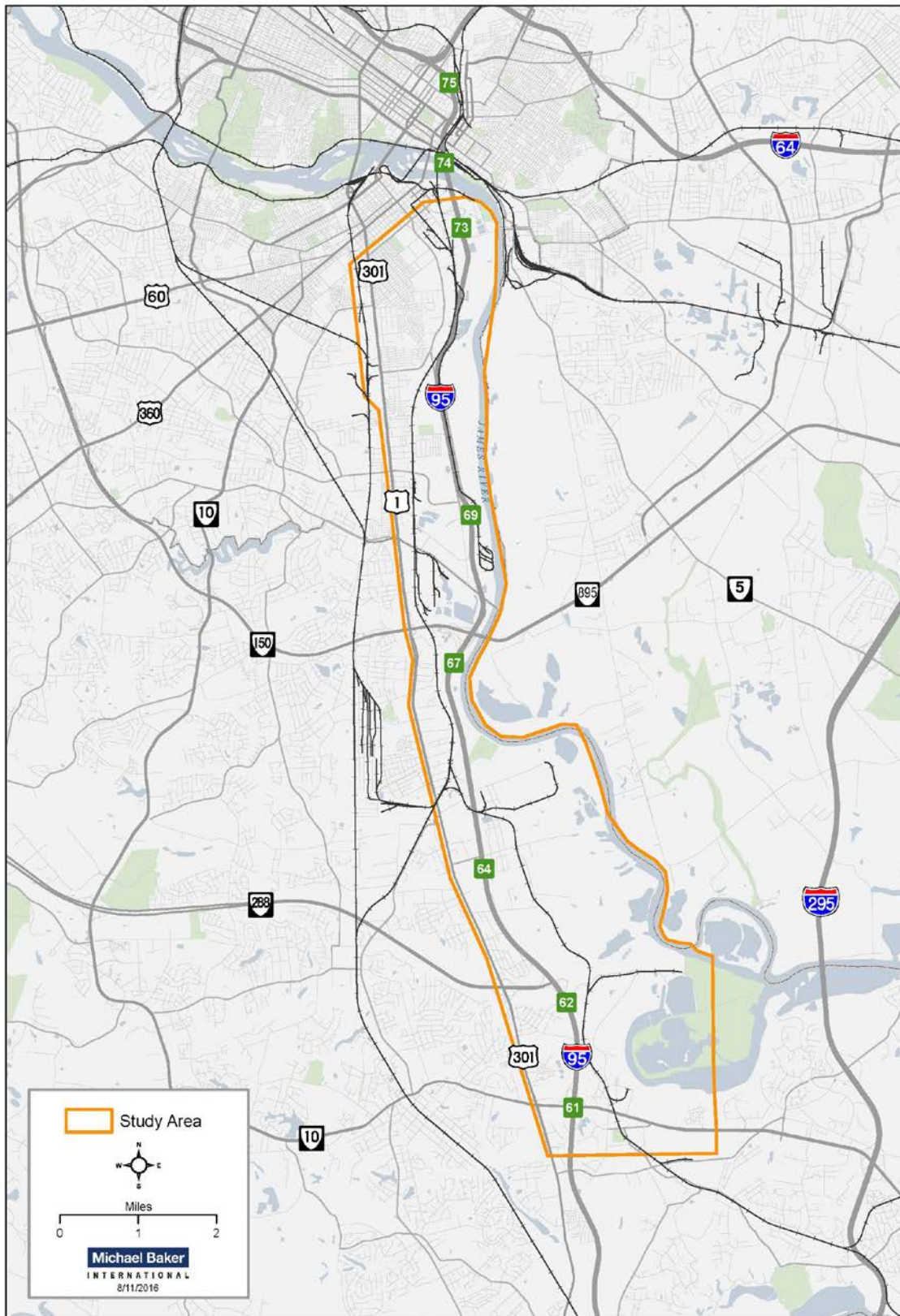
The Port of Virginia's (POV) long-term operation of the RMT signals economic development and job creation potential both inside the port gates, but most significantly on adjacent properties around the RMT and throughout the Richmond Region in the supply chain/logistics, distribution and warehousing sectors. The terms of the POV lease with the City of Richmond for the RMT include an explicit 'Economic Development Partnership' agreement: "In partnership with the City of Richmond, the POV will deploy an economic development strategy for the industrial corridor along Commerce Road and Deepwater Terminal Boulevard for the purpose of establishing an inland logistics hub". This agreement strengthens the economic opportunities for the Commerce Corridor in addition to an interest in revitalizing industrial and commercial activity in the area around the RMT and broader Richmond region shared by local, regional, and state partners. The Commerce Corridor Study was prepared in collaboration with the Richmond Regional Planning District Commission (RRPDC), Richmond Regional Transportation Policy Organization (RRTPO), and local partners including the City of Richmond, Chesterfield County and Henrico County, the Port of Virginia, Virginia Economic Development Partnership (VEDP) and the state transportation agencies, including the Virginia Department of Transportation (VDOT), Virginia Department of Rail and Public Transit (DRPT) and the Office of Intermodal Planning and Investment (OIPI).

This technical report is organized to take the reader through the process used to conduct the study. Early sections of the report define the existing transportation system and deficiencies. This is followed by documentation of the extensive outreach employed to inform the study process and to frame the vision for the corridor. With the corridor understanding and vision established, the future growth scenarios are introduced along with the resulting travel demand. This information is used to identify prioritized 'needs' that lead to solutions. Solutions are assessed and packaged into short-, medium-, and long-term categories before an implementation plan is presented for stakeholder / decision-maker consideration.

1.1 COMMERCE CORRIDOR STUDY AREA

A study area has been defined and is shown in **Figure 1**. This area, bounded by the color shown in the legend, represents approximately 1,300 acres along I-95, US Route 1 and Commerce Road, among others. Although this represents a definitive boundary, it's necessary for the study team to look beyond this area for the purpose of considering external influences such as regional land use changes and rail / highway demand. At various points in this technical report, reference will be made to locations outside of this study area.

Figure 1: Commerce Corridor Study Area



2. EXISTING CONDITIONS

The primary transportation networks in the study area consist of highway and railroad. Both are a necessity for increased commerce in an area that includes James River access via the Richmond Marine Terminal, as well as many other industrial properties.

2.1 HIGHWAY SYSTEM OVERVIEW

Interstate 95 is a north-south multilane, limited access freeway running the entire length of the study area. US Route 1 is a principal arterial also running north-south throughout the study area, parallel to and approximately 4,000 feet to the west of I-95. The primary east-west highways in the study area include Route 150 and Route 288, which provide access to I-95 from the west; and Route 895 which is a toll facility providing access to the east and includes the only bridge crossing the James River in the study area. Additionally, Route 10 provides east and west access to I-95 and US Route 1 and also serves as an important connector to numerous industrial properties, especially to the east along the James River. Just outside of the defined study area are Interstates 64 and 295 which provide high-capacity travel within and beyond the region.

In the northern half of the study area (north of Route 895), Commerce Road is just west of I-95 and running parallel for a majority of the corridor. Deepwater Terminal Boulevard is a north-south roadway on the east side of I-95 and is the single highway facility providing access to the Richmond Marine Terminal. Both Commerce Road and Deepwater Terminal Boulevard are crucial surface streets that provide access to most of the industrial properties within the northern half of the study area. Vehicles traveling on I-95 have direct access to Commerce Road and semi-direct access to Deepwater Terminal Boulevard via the Bells Road interchange. This is one of the few locations that provides a crossing under I-95 connecting the two surface streets.



In the southern half of the study area (south of Route 895), there are three interchanges with I-95; the Willis Road interchange provides access to the residential properties west of I-95 and the industrial properties east of I-95. Further south, the interchange with Route 288 allows vehicles to travel to the west on a limited access facility. At the southern end of the study area, the interchange with Route 10 provides access to the commercial and industrial properties on both sides of I-95. Route 10 also allows travel eastward to Interstate 295 which is a north-south alternative to I-95 and includes a James River crossing.

2.2 RAILROAD SYSTEM OVERVIEW

The railroad system is quite complex and deserves a simplified explanation for the reader to better understand this transportation system. Freight railroad companies are categorized into three classes based primarily on their annual operating revenues, system size, functionality and rolling stock

(locomotives and rail cars). To simplify the overview and not get into the revenue rules that change annually, larger revenue companies with routes that extend over multiple states are classified as Class I railroads. Smaller systems, making far less revenue than the Class I railroads, are considered Class II (considered regional or an extensive railroad system in one state) or Class III railroads and are called short lines. All Class I and Class II railroads own property that includes track, communication and signaling, rolling stock and facilities. Class III railroads are either stand-alone companies or part of a holding company that owns and maintains track and rolling stock. Some Class III railroads either own or lease property, and/or track, from a Class I railroad. With the ownership of property or lease agreements, and with government regulation and approvals by the Surface Transportation Board (STB), the railroads determine and make agreements with other railroads on using their track for transportation services. The railroad network is very much like a private road where permission to travel on it is required.

Just as the highway system is comprised of Interstates, US Routes, State Routes, County Routes and local roadways, Class I railroads operate in a similar manner. Within the Class I railroads, the system is broken down into Division, Subdivision/District and Industrial Lines. Class I railroads interchange with other Class I railroads, short line railroads, or other transportation modes at facilities or terminals. The Class III short line railroads are the short haul lines that include terminal railroads and switching operations (locals), which provide greater economy for rail transportation. Three locals perform switching services at the yards and short hauls in the Richmond metropolitan area.

There are three railroads that own, operate, and maintain track within the Richmond metropolitan area. CSX Corporation (CSX) and Norfolk Southern Corporation are Class I railroads and the Buckingham Branch Railroad is a Class III. Amtrak, the national passenger transportation service, has trackage rights, or agreements to operate its trains over tracks owned by the railroads. Amtrak has trackage rights to operate on the CSX tracks within the Richmond region and the study area.



CSX has subsidiary firms, three of which have relevance to this study based on their presence in Virginia. The CSX rail network, consisting of 21,000 route miles in twenty-three states, the District of Columbia and two provinces in Canada, is called CSX Transportation (CSXT). CSXT provides service to 70 ports along the Gulf of Mexico, the Great Lakes and the east coast of the United States, including other Class I railroads, shortlines, and a variety of facilities throughout the eastern region. CSXT provides services to their railroad yards and subsidiary-owned facilities that focus on intermodal services of containers and trailers, called CSX Intermodal Terminals (CSXI); and the safe and efficient transfer of more than 300 products that include chemicals, energy resource and food grade products, dry bulk, plastics and more from rail to truck, called TRANSFLO. These subsidiaries would be the entities to engage with in developing or expanding commerce and rail transportation facilities within the study area. In Virginia, there is one CSXI terminal in Portsmouth; TRANSFLO terminals in Fredericksburg, Richmond and Petersburg; and CSXT major rail yards in Richmond, Petersburg, Newport News and Clifton Forge. CSXT is the only existing subsidiary interest within the boundaries of the study area.

A subsidiary which may be of interest that currently does not exist for CSX in Virginia is Total Distribution Services, Inc. (TDSI), which is focused on storage and distribution of vehicles for the automotive industry. The closest TDSI facilities are located in Jessup, MD to the north, and Columbia, SC to the south. In addition, there is no existing inland port serviced by CSX.

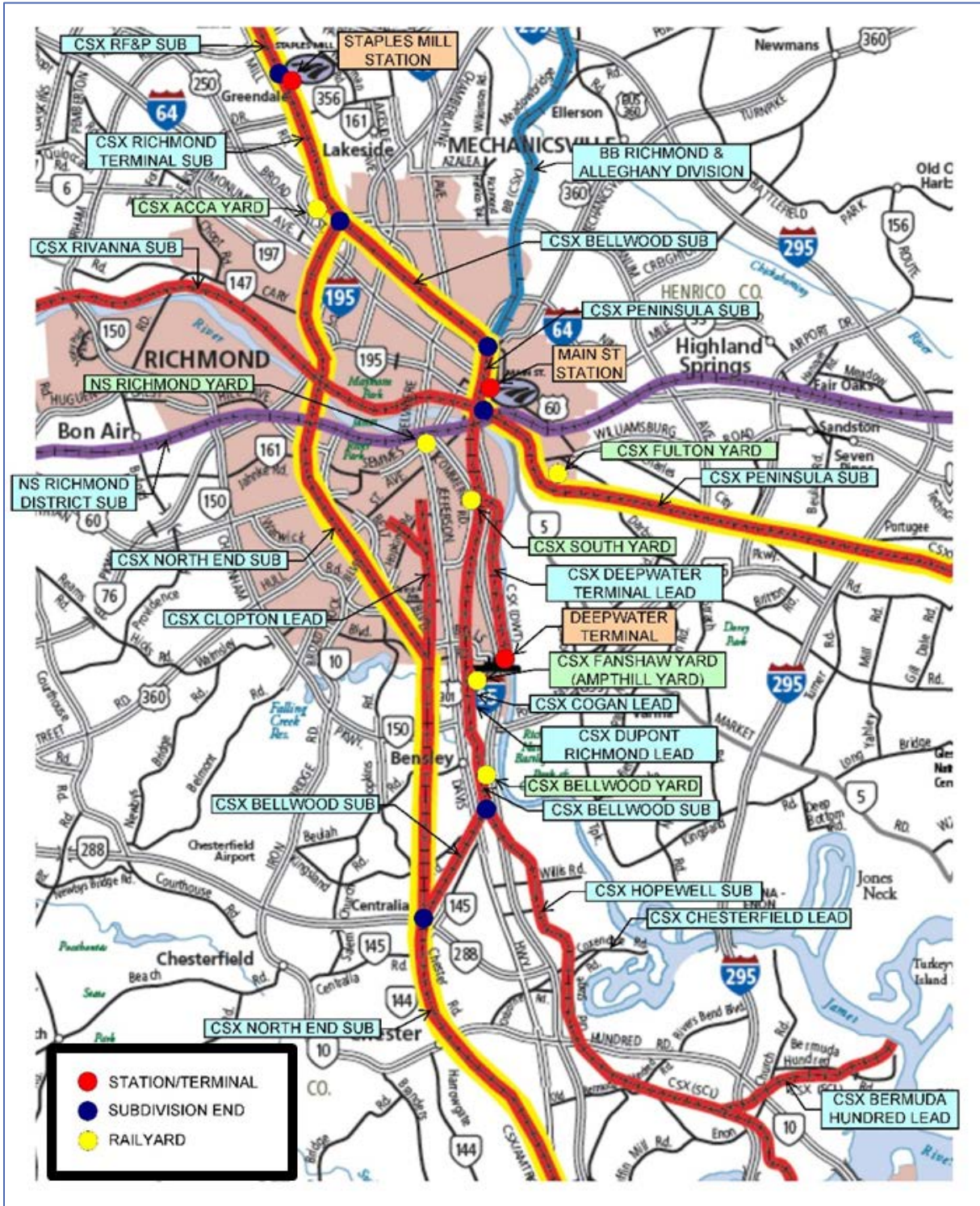
The CSXT system has nine operating divisions, three of which meet or go through Richmond. This is a result of predecessor railroads that found great importance in passing through the Capital of the Commonwealth. The Baltimore, Huntington and Florence Divisions extend into Pennsylvania, New Jersey, Delaware, Maryland, West Virginia, Ohio, Kentucky, Tennessee, the Carolinas and Georgia (see inset photo to the right).



Figure 2 shows the rail system in the Richmond Metropolitan Area. On the Baltimore Division is the Richmond, Fredericksburg & Potomac (RF&P) Subdivision (Sub), a north-south route which extends from the Potomac River at the Virginia-Washington, D.C. border to the Florence Division, Richmond Terminal Sub in the west end of Richmond. The Huntington Division provides rail transportation west of Richmond on the Rivanna Sub along the north side of the James River. The Rivanna connects with the Peninsula Sub just east of I-95. The Peninsula Sub proceeds to the east towards Hampton Roads. The southerly routes of the Florence Division include the Richmond Terminal Sub, which extends through ACCA Yard in the west end of Richmond and connects with the Bellwood Sub and the North End Sub. Both of these subdivisions cross the James, with the North End Sub west of the Bellwood Sub proceeding south of the Richmond Metropolitan Area before connecting with each at Centralia. North of Walmsley Boulevard, along the North End Sub, is the Clopton Lead. The North End Sub proceeds south towards the Virginia-North Carolina border. Prior to the Bellwood Sub connection with the North End Sub, the Bellwood Sub connects to the Hopewell Sub. The Hopewell Sub proceeds to the James River and the Hopewell Yard. Amtrak has trackage rights on the RF&P and Richmond Terminal Subs, the northern portion of the Bellwood Sub, and the Peninsula Sub. As such, Amtrak goes through ACCA Yard and Fulton Yard when passing through Richmond.



Figure 2: Railroad system in Richmond Metro Area



Source: Department of Rail and Public Transportation

The Bellwood Sub is the major CSX line within the study area, hauling purely freight from the vicinity of Main Street Station to the North End Sub, south of the study area. The Bellwood Sub is located on the west side of I-95. The Deepwater Terminal Lead comes off the Bellwood Sub and passes under I-95 before proceeding south to the Richmond Marine Terminal, situated on the east side of I-95. Access off the Bellwood to Deepwater is currently protected with a derail located on the lead track. In addition to the Deepwater Lead, there is the Cogen Yard Lead and the DuPont Richmond Yard Lead, which are located on the west side of I-95. There are numerous spur tracks with at-grade crossings providing rail access opportunities to several businesses along Deepwater Terminal Boulevard. The Bellwood accesses South Yard, Fanshaw Yard (Amphill Lead), which is adjacent to Philip Morris, and Bellwood Yard, all within the study area. The northern portion of the Hopewell Sub has the Chesterfield Lead and the Bermuda Hundred Lead to industrial businesses within the southern portion of the study area. At the north end of the study area is a very small portion of the Norfolk Southern (NS) Richmond District Sub and the NS Richmond Yard. Near this location is where NS interchanges with CSXT on the Bellwood.

The CSXT South Yard has three tracks. One track is used for interchanging with Norfolk Southern Railway Company. The other two tracks are for breaking up trains, or storing cars and tankers. The Yard is currently operating at capacity and is in need of lengthening and expansion, which would relieve congestion at the ACCA Yard.

Due to the decline of coal and other products transported to the area, the existing CSXT network serving the Richmond Metropolitan Area has a surplus of capacity. Fulton Yard has capacity to handle more switching and storage. It can accommodate anywhere from a 50 to 100 percent increase in growth but would demand scheduling details, more crews, and coordination of more local switching operation support. Fulton Yard, as well as the ACCA Yard, are “crew change” locations for CSXT in Richmond. Trains must stop at these locations when crews must board or de-board the train due to working time regulations for operation of trains.

Norfolk Southern Corporation or the Norfolk Southern Railway Company (NS), is a Class I railroad operating throughout Virginia. NS corporate headquarters is located in Norfolk. NS offers Virginia intermodal facilities, an inland port, an auto distribution facility, bulk transfer facilities, and major rail yards. NS services Richmond on the Richmond District (unlike other railroads, NS uses District versus Subdivision) of the Virginia Division. The Richmond District is a south-north route beginning in Burkeville, VA and terminating in West Point, VA. Within Richmond, the route is on the south side along the James River, before it crosses over the James west of the 14th Street Bridge, where it runs under the CSXT Rivanna Sub and then under the Bellwood Sub at the Triple Crossing. The Richmond District then crosses over the canal at Great Ship Lock Park and proceeds to West Point. A portion of the line extends east along the James from the South Richmond Yard off the mainline that crosses the river. This line, which is within the study area, interchanges with CSXT on the Bellwood Sub and terminates on the east side of the South Richmond Wastewater Treatment and Collection Plant, which is located east of I-95.

Buckingham Branch Railroad (BBRR) is a family-owned, Class III railroad. It currently has three Divisions, which are not inter-connected. The Division of significance to this study is the east-west route known as the Richmond & Alleghany Division that extends from Clifton Forge to Richmond. The Richmond &

Alleghany Division is a former CSX line that is comprised of the Piedmont Subdivision, the Washington Subdivision, and the North Mountain Subdivision. The Piedmont Sub begins at the CSXT Peninsula Sub in Richmond, north of Main Street Station at the junction of the CSXT Bellwood and Peninsula Subdivisions, which proceeds west to Gordonsville and connects to the Washington Sub. The Washington Sub proceeds north to Orange, VA. Along the Washington Sub is where the North Mountain Sub connects and proceeds westward to Clifton Forge. Along the Richmond & Alleghany Division there are multiple transload facilities, CSXT and NS interchanges, spur tracks and sidings to service major facilities, and multiple tunnels. The BBRR is a railroad that offers customers, CSXT and NS connection alternatives and benefits related to rates and freight schedules. CSXT has trackage rights to operate on the BBRR and mostly interchanges with the BBRR in Doswell, VA. Amtrak has trackage rights on the Richmond & Alleghany Division from Orange to Clifton Forge.

National Railroad Passenger Corporation (Amtrak) has trackage rights on all three Railroads that have been discussed. However, Amtrak does not have trackage rights to operate on the Bellwood Sub south of the junction of the Bellwood Crossover, BBRR, and the CSXT Peninsula Sub. Amtrak is a passenger railroad that has capabilities to transport automobiles. It owns property or track throughout the United States. In the Northeast, Amtrak operates higher speed passenger trains on a section of tracks over multiple states called the Northeast East Corridor (NEC), which extends from Boston, MA to Washington, D.C. Much of the NEC is shared track, so Amtrak trains use tilt technology to compensate for the lack of track superelevation to operate at the higher speeds along the corridor's horizontal curves. The tilt provides riding comfort for the passengers and permits trains to operate at the higher speeds along the NEC. These train sets are called Acela cars. The locomotives are powered by electricity through an overhead catenary system. Since the power source is different off-line of the NEC, passengers change trains in Washington, D.C. to board trains that are powered by diesel locomotives.

The North End Subdivision is also known as the "A-Line" since it was once owned by the Atlantic Coast Line Railroad (ACL), one of many predecessor railroads owned by CSX. The rival railroad of the ACL was the Seaboard Air Line Railroad (SAL), which is otherwise referred to as the "S-Line." The Bellwood Sub was owned by the SAL. The two companies merged in 1967 to create the Seaboard Coast Line Railroad (SCL). The SCL is a predecessor railroad of CSX, but many of the A- and S-Lines from the ACL and SAL days are still referenced from Virginia to Florida. In 1987, the CSX Transportation abandoned the S-line from South Collier, VA to Norlina, NC, and kept the A-Line or North End Sub in revenue service.

2.3 PORT OVERVIEW

The Richmond Marine Terminal (RMT) is located within the Commerce Corridor study area along the west bank of the James River. Formerly known as "The Port of Richmond", the RMT is located on approximately 121 acres, with 80 of those acres within the secure terminal. The facility is owned by the City of Richmond and leased by the Port of Virginia (POV), under an agreement that began in late 2010.

The RMT has 300,105 square feet of warehouse space and a 1,570-foot long wharf available for berthing. It has the capability to handle containers, temperature-controlled containers, break-bulk, bulk, and neo-

bulk cargo. The facility is a U.S. Customs-designated port of entry, and the full range of customs functions is available to customers.

James River Barge Service, a weekly container-on-barge service, operates three days a week between the RMT and the POV terminal of Hampton Roads. This barge service provides a maritime alternative to I-64 by transporting goods on the James River via barges, removing container traffic from local roads and highways.

In October 2015, the Port of Virginia (POV) and the City of Richmond entered into a 40-year lease, allowing the POV an opportunity to take a long-term perspective to redefining the future purpose and vision of the RMT facility as a self-sustainable transportation node and valuable asset to the POV, City of Richmond, and Virginia. The 40-year lease also included a non-binding memorandum of agreement (MOA) regarding expectations concerning economic development opportunities for the Commerce Corridor.



Despite the great assets of the James River and the renewed RMT, there is unrealized potential that would benefit the industrial redevelopment within the Commerce Corridor and the greater Richmond Region.

2.4 WORKFORCE

A skilled, educated workforce is an essential component of a strong and growing local economy. A key requirement for businesses to choose to establish, relocate, or expand in an area is workforce availability and quality. According to the Richmond Regional Comprehensive Economic Development Strategy (CEDS), the Richmond Region has more of an issue with the suitability of the qualifications of the workforce to meet employers' needs than the availability of workforce. For the Commerce Corridor, which is primarily comprised of industrial businesses, an additional issue is the ability for the workforce to access the Commerce Corridor.

WORKFORCE EDUCATION

According to the Richmond Regional CEDS from 2014, there are pockets of the region where income and education are real concerns. The Bellemeade neighborhood located within the Commerce Corridor study area was characterized as one of the most distressed neighborhoods in the region (See **Figure 3**). It is classified as *extremely low income* (30 percent of median household income). Adjacent neighborhoods within the corridor are classified as *low income* (80 percent of median household income) or *very low income* (50 percent of median household income). **Tables 1, 2, and 3** provide more details on employment, educational attainment, and labor force for the most distressed neighborhoods. Almost half of the workers in the Bellemeade neighborhood make between \$1,251 and \$3,333 a month, which translates to between \$15,012 and \$39,996 a year. If these workers are single income earners supporting

children, these wages represent an even lower standard of living. About a third of the workers make minimum wage or less (**Table 1**).

Tables 2 and 3 show the direct relationship between educational attainment and labor force. In terms of educational attainment, about 62 percent of the Bellemeade neighborhood population has a high school education or less. The labor force participation rate is low at 52 percent compared to 64 percent for the Richmond Region as a whole. The rate of employment is 28 percent. With less access to education, training, and jobs, the population in this isolated area is most likely to live substantially below the poverty line.

Figure 3: Most Distressed Neighborhoods in Richmond Region, 2014

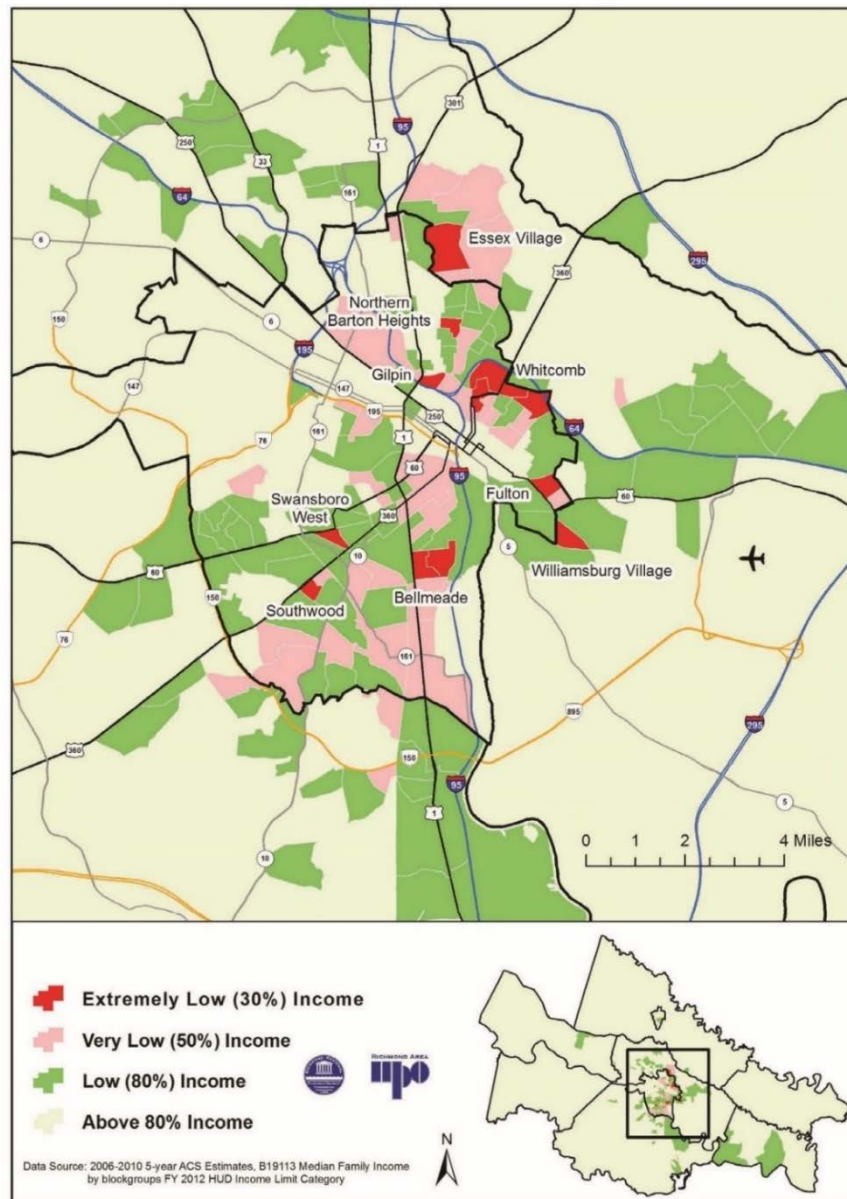


Table 1: Employment in the Most Distressed Neighborhoods in Richmond Region, 2014

Neighborhoods	Total Workers 29 & Younger	Total Workers 30-54	Total Workers 55 & Older	Minimum Wage* or Less	\$1251-\$3333 per month	Greater than \$3333 per month
Northern Barton Heights	22%	56%	22%	32%	47%	20%
Whitcomb	30%	55%	16%	37%	50%	13%
Gilpin	39%	48%	13%	45%	45%	10%
Fulton	35%	50%	16%	32%	47%	21%
Swansboro West	19%	61%	20%	31%	50%	19%
Southwood	28%	51%	21%	29%	53%	18%
Bellmeade	31%	49%	21%	34%	49%	17%
Essex Village	31%	51%	18%	32%	50%	18%
Williamsburg Village	23%	62%	15%	20%	45%	35%

Source: U.S. Census Bureau, 2013, OnTheMap Application, Longitudinal-Employer Household Dynamics Program, Primary Jobs, 2010, analyzed on where workers live ("Home").

*This category is listed as \$1,250/month. Assuming a 40 hour work week this equates to \$7.81/hour just above the current minimum wage of \$7.25.

Source: Richmond Regional CEDS, 2014

Table 2: Education Attainment in Most Distressed Neighborhoods in Richmond Region, 2014

Neighborhoods	Less than High School	High School, No College	Some College	Bachelor's Degree or Higher
Northern Barton Heights	32%	38%	17%	13%
Whitcomb	45%	30%	22%	3%
Gilpin	45%	40%	14%	1%
Fulton	17%	48%	18%	17%
Swansboro West	32%	47%	18%	3%
Southwood	76%	17%	3%	4%
Bellmeade	28%	34%	30%	8%
Essex Village	36%	24%	32%	8%
Williamsburg Village	41%	41%	18%	0%
Total ¹	42%	32%	21%	4%

Source: U.S. Census Bureau, 2007-2011 5-Year American Community Survey Estimates, Table B15002.

¹ Represent compiled ACS data from all nine neighborhoods

Source: Richmond Regional CEDS, 2014

Table 3: Labor Force in Most Distressed Neighborhoods in Richmond Region, 2014

Neighborhoods	Civilian Labor Force	Labor Force Participation Rate ¹	Unemployment Rate
Northern Barton Heights	273	63%	27%
Whitcomb	2,336	39%	26%
Gilpin	443	45%	51%
Fulton	310	54%	16%
Swansboro West	716	62%	37%
Southwood	1,150	87%	18%
Bellmeade	947	52%	28%
Essex Village	876	66%	26%
Williamsburg Village	334	48%	31%
Total ²	7,398	51%	27%

Source: U.S. Census Bureau, 2007-2011 American Community Survey 5-year Estimates, Table B23025.

¹ Percentage of the civilian labor force compared to the total population over the age of 16.

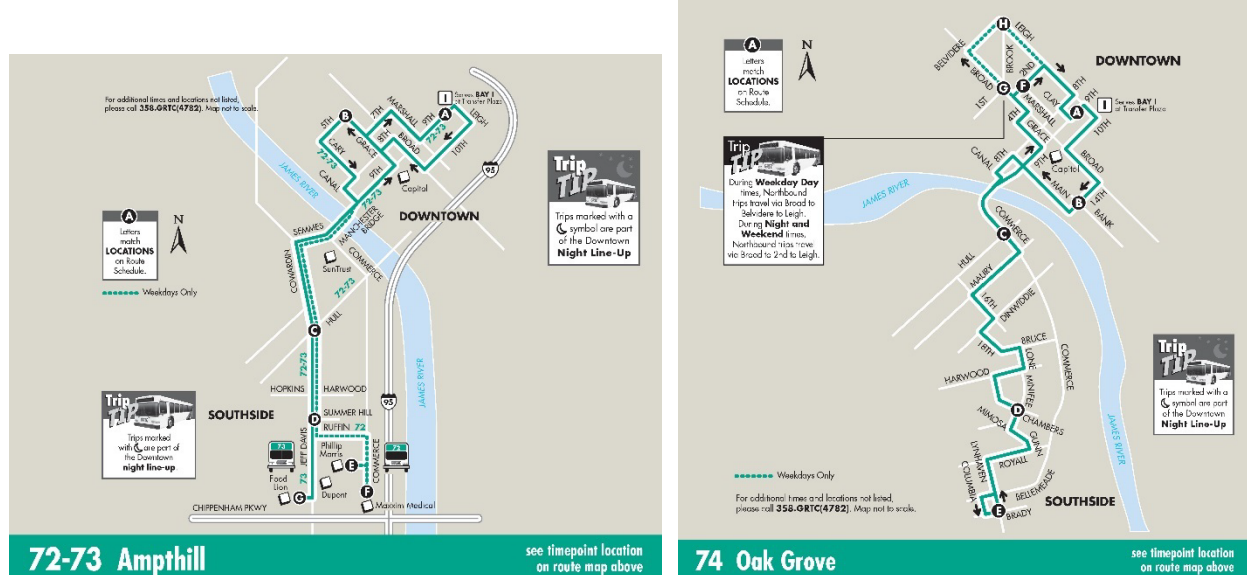
² Represents compiled ACS data from all nine neighborhoods.

Source: Richmond Regional CEDS, 2014

ACCESS TO JOBS

According to an online public survey for the Commerce Corridor Study, a majority of respondents (92 percent) said it is *difficult* or *very difficult* to walk, bike, or take transit to businesses within the corridor. Bicycling and walking in the study area is difficult due to poor pavement condition and the lack of sidewalks, pedestrian signals, and bike lanes. Existing transit service in the study area is provided by GRTC Transit System via the 72-73 Amphill route and the 74 Oak Grove route. These routes provide service at 30 minute frequencies but only reach the upper portion of the Commerce Corridor Study Area (See **Figure 4**).

Figure 4: GRTC Bus Transit Service in the Commerce Corridor Study Area



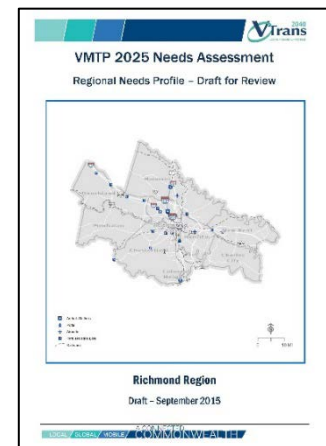
Source: GRTC Transit System, www.ridegrtc.com.

The Greater RVA Transit Vision Study, completed in November 2016, recommends the nearby Jefferson Davis Highway Corridor as an Enhanced Local Service Route. This route would provide service every 15 or 20 minutes all day and relatively infrequent stops at main activity centers. The route extends from the planned Pulse Bus Rapid Transit (BRT) (and connecting with Route 1 North service) south to Chester along Jefferson Davis Highway (US 1), with a possible express link to Petersburg. The local GRTC service within the Commerce Corridor study area will continue.

For the Commerce Corridor to achieve its vision, improved access for walking, bicycling, and transit will be an important component for recruiting the necessary workforce for future business growth. Two recent studies documented the lack of transportation options for some areas of the region outside the City of Richmond, including the Commerce Corridor study area.

VTrans2040 Richmond Regional Network VMTP 2025 Needs Assessment, 2015

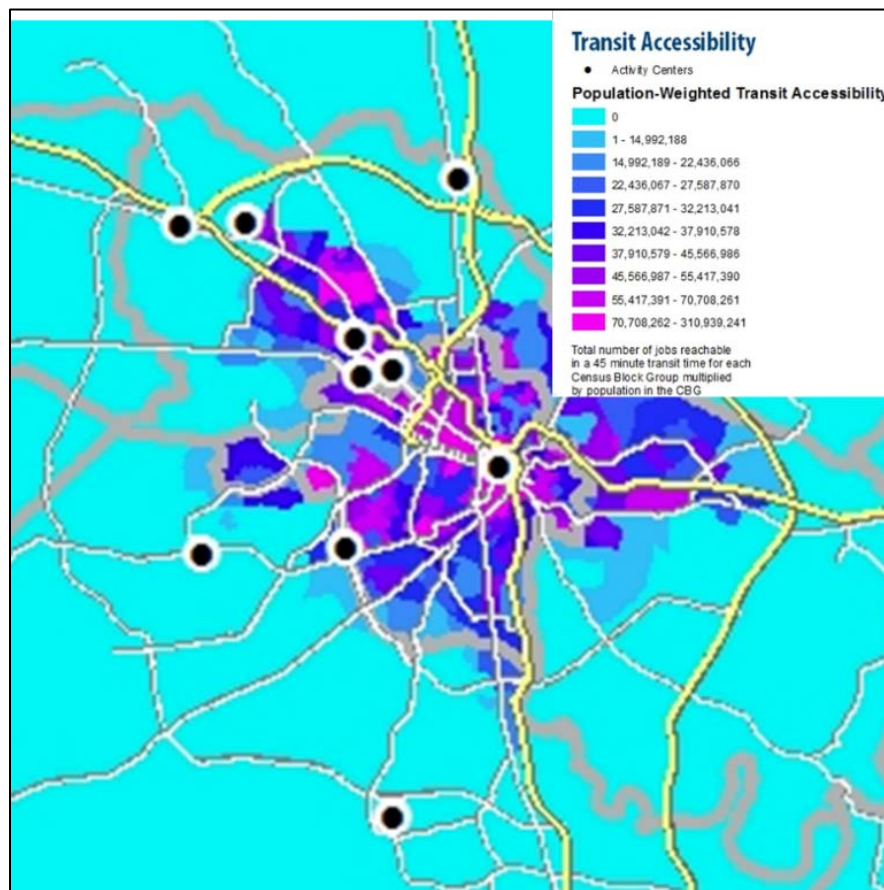
In 2015, a regional needs assessment was conducted for the Richmond Region as part of the update to Virginia's statewide multimodal transportation plan called VTrans2040. The Richmond Region is defined as the City of Richmond and the counties of Chesterfield, Henrico, Charles City, Powhatan, Goochland, Hanover, and New Kent for the needs analysis. As part of the conditions assessment, the accessibility to employment by transit and walking were analyzed to assess the workforce at the general regional scale. The accessibility to employment measure was calculated using an accessibility model developed by the consultant team that measures the number of jobs reachable in a given travel time, using actual travel times on a network, whether highway, transit or pedestrian. The total number of jobs accessible



was also “distance decay,” that is the value of each job was decayed by a factor based on how long it took to travel to it. The distance decay factors were developed from traveler surveys that reflect actual preferences for travel to employment based on the length of the trip.

Transit Accessibility: Outside of the City of Richmond, there are few fixed-route transit options in the region as shown in **Figure 5**. This is reflected not only in the low (fixed route) transit accessibility scores for large parts of the region, but also the low number of jobs accessible from the high scoring areas. Only a few select areas outside the City of Richmond are served by transit, namely northern Chesterfield County and western and northeastern portions of Henrico County. A number of the activity centers have little or no transit accessibility.

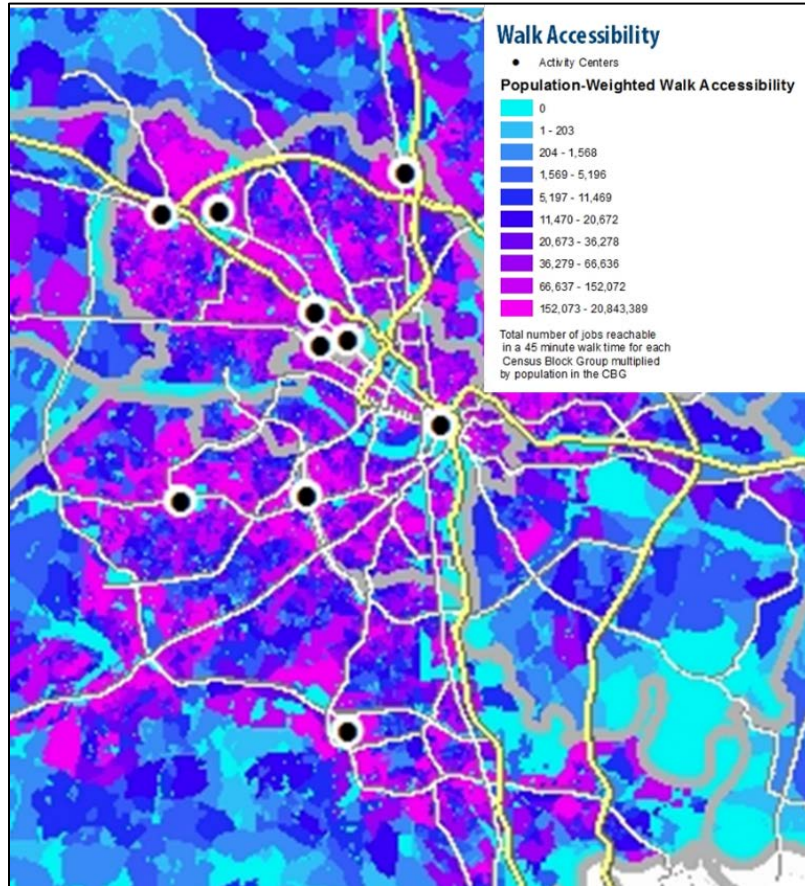
Figure 5: Transit Accessibility in the Richmond Region



Source: Office of Intermodal Planning and Investment, VTrans2040 Richmond Regional Network Needs Assessment, 2015

Walk Accessibility: Walk accessibility in the area is largely determined by the mix of land use and density of development surrounding the origin of each trip. The City of Richmond and areas of the counties adjacent to the city scored the highest, as expected. The high variability within even the highest scoring areas reflects the significance of land use and job density in determining walk accessibility. (Refer to **Figure 6**).

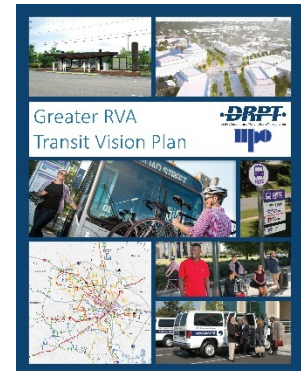
Figure 6: Walk Accessibility in the Richmond Region



Source: Office of Intermodal Planning and Investment, VTrans2040 Richmond Regional Network Needs Assessment, 2015

Greater RVA Transit Vision Plan, November 2016

The Greater RVA Transit Vision Plan was completed in November 2016. The Transit Vision Plan is a long term strategy for transit that can shape regional growth and transit investments in the Richmond Region. The Vision Plan reported that in 2011, the Brookings Institute conducted an analysis of over 350 transit providers in the nation's largest metropolitan areas including the Richmond Region (*Missed Opportunity: Transit and Jobs in Metropolitan America, May 2011*). The study found that in the Richmond Region (as defined by the full Metropolitan Statistical Area including the RRTPO and Tri-Cities metropolitan regions), only 27 percent of jobs were reachable via transit in 90 minutes. Also, only 31 percent of working age residents had access to at least one transit stop within $\frac{3}{4}$ of a mile of their residences. While the Richmond region ranked 44th in size (population) among the metro areas, it ranked 92nd in transit access. Two propensity measures analyzed in the Transit Vision Plan help illustrate the challenge of transit access to the Commerce Corridor study area and the opportunity of employment in the Commerce Corridor study area.

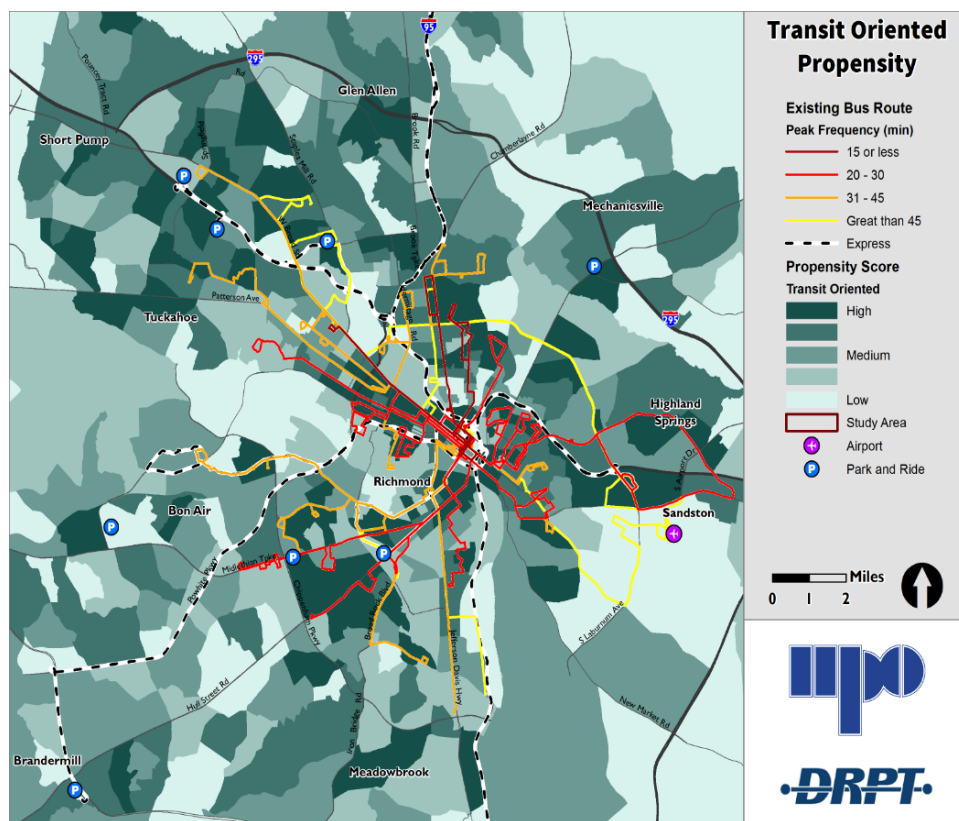


Transit-Oriented Propensity

The transit-oriented population propensity is used to identify where high densities of population can be found, as well as focusing on where transit dependent populations live. The population and household census categories highlight where higher densities of population can be found to support transit, while the age, income, vehicle ownership and persons with disabilities census categories identify transit dependent populations.

In addition to the core of Richmond, the analysis found areas of high transit-oriented populations in many of the medium density suburban areas of greater Richmond including Short Pump, Glen Allen, Mechanicsville, Meadowbrook, Chester, Brandermill, and Midlothian (See **Figure 7**). These areas have very little existing transit service. Within the City of Richmond, the analysis found sections of high transit-oriented populations in a wide variety of areas including to the southwest along Midlothian Turnpike and Hull Street, to the south along Jefferson Davis Highway, to the east towards the airport, and westward between Broad Street and the river.

Figure 7: Richmond Region Transit-Oriented Propensity (Regional Core)



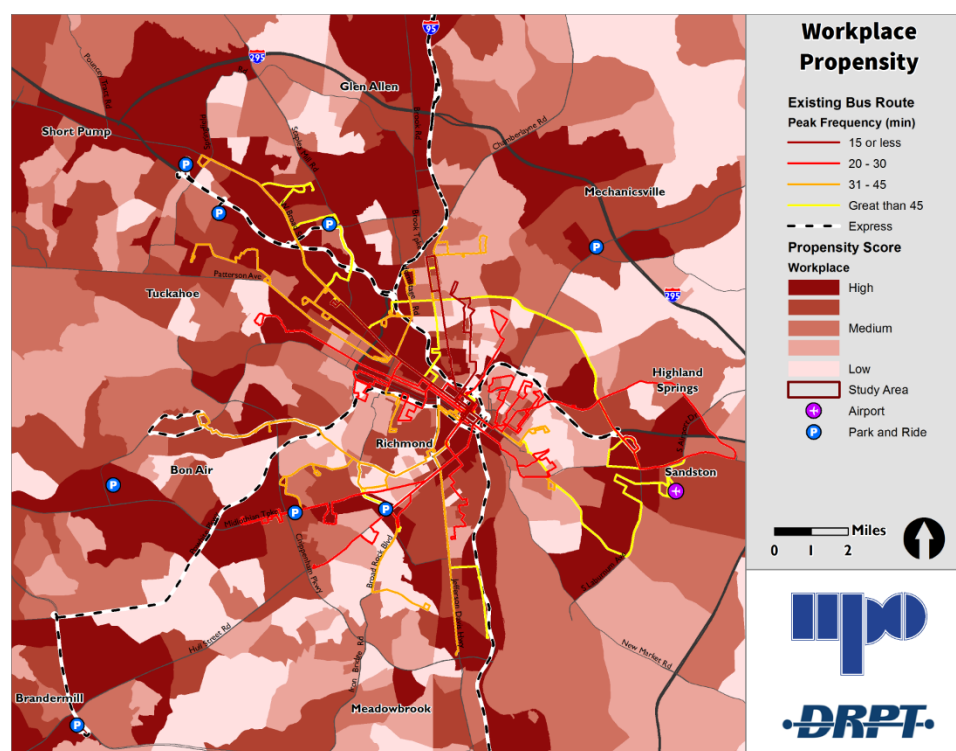
Source: Foursquare Integrated Transportation Planning, Greater RVA Transit Vision Plan, 2016

Work Propensity

Work propensity is used to identify areas where employment centers are located. This category factors in the number of employees and density of employees by location. Work propensity identified high

concentrations of destinations in the suburban areas of greater Richmond (See **Figure 8**). These areas have very little existing transit service with only a few express routes reaching out beyond the core and into these areas. Within the City of Richmond, the analysis found a wide range of areas with high work propensity, with the highest continuous concentration northwestward along Broad Street and between Broad Street and Patterson Avenue. Other concentrations exist along major arterial corridors and in the area around the airport. These areas have relatively good transit service, though the frequency of service does not always meet the needs represented by this analysis. The Commerce Corridor study area has a high work propensity score, however there is limited transit service.

Figure 8: Richmond Region Workplace Propensity (Regional Core)



Source: Foursquare Integrated Transportation Planning, Greater RVA Transit Vision Plan, 2016

2.5 HIGHWAY TRANSPORTATION NETWORK DEFICIENCIES

The highway transportation network within the study area was examined to develop a base year needs assessment. This assessment will be used to determine the scale of improvements needed to respond to the impacts of the growth scenarios described later in the report. The VDOT Statewide Planning System (SPS) database was used to identify structural deficiencies and insufficient vertical clearances for bridges, as well as pavement conditions along roadways within the study area. A field inspection was conducted to identify geometric roadway deficiencies and travel time data was obtained from TomTom (Global Navigation) which provides average peak weekday congestion information for a two-year period. The TomTom data was analyzed to obtain the Travel Time Ratio (TTR) for each roadway segment. The TTR is

the ratio of average peak congested travel time to the free-flow travel time at the same location. For example, a value of 1.20 means that average peak congested travel times are 20 percent longer than free-flow travel times. **Figure 9** through **Figure 12** present the bridge and roadway geometric deficiencies within the study area. **Figure 13** and **Figure 14** present roadway operational deficiencies, as well as the TTR for the most congested peak hour along the roadways. The figures show the location and type of deficiency and **Table 4** describes each in detail.

Additional detail about the existing transportation conditions assessment can be found in **Appendix C**.

Figure 9: Transportation Network Deficiencies (Map 1 of 4)

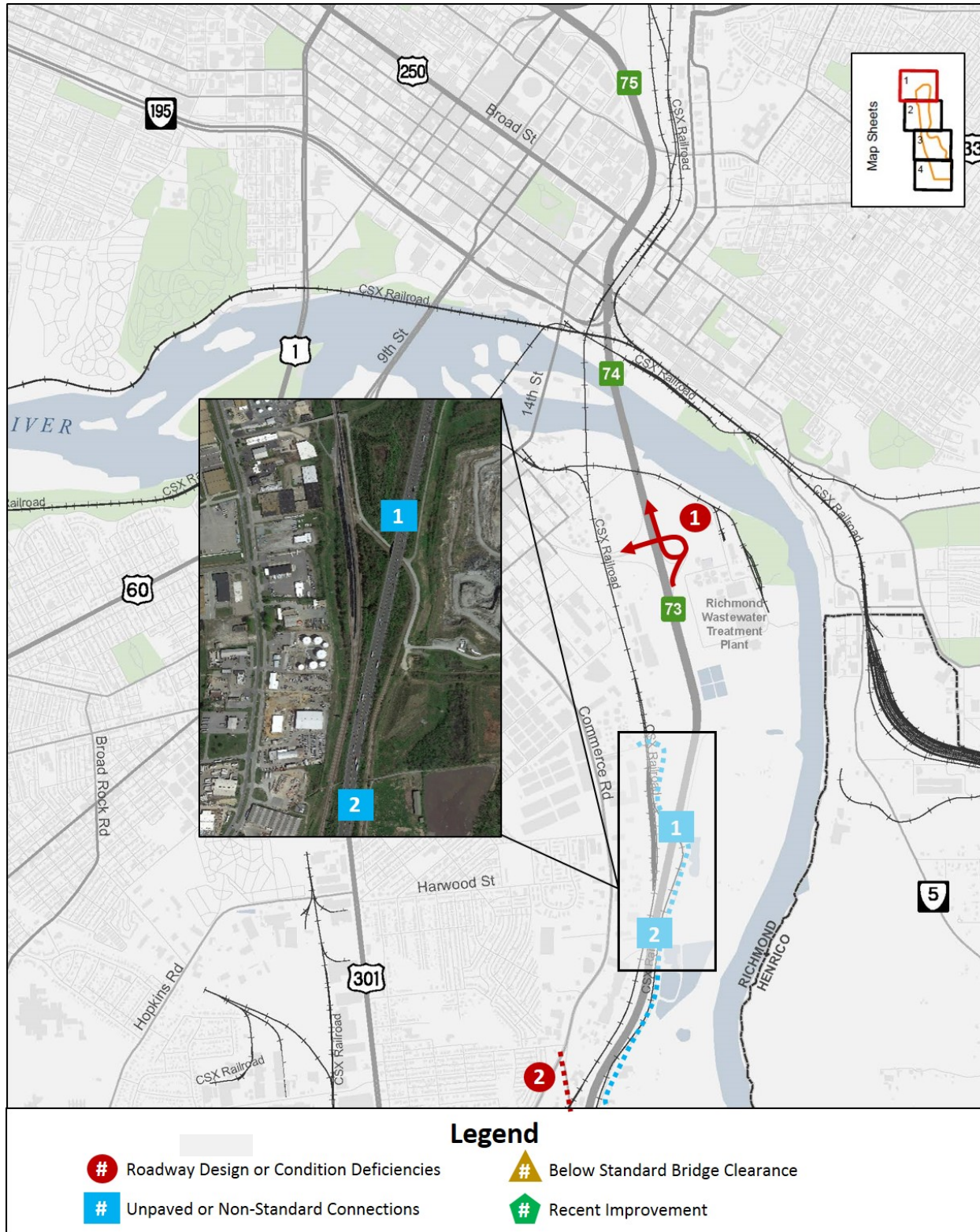


Figure 10: Transportation Network Deficiencies (Map 2 of 4)

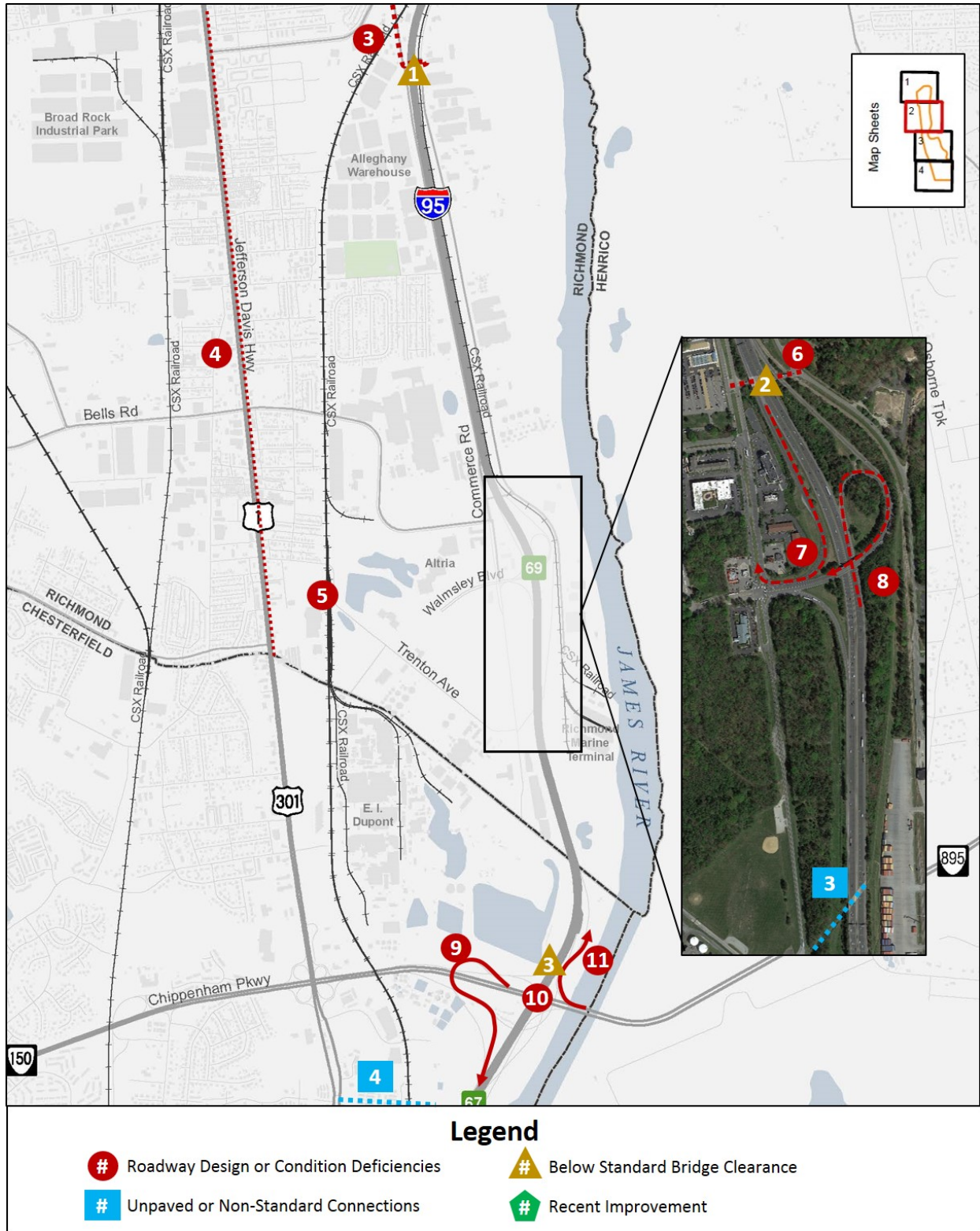


Figure 11: Transportation Network Deficiencies (Map 3 of 4)

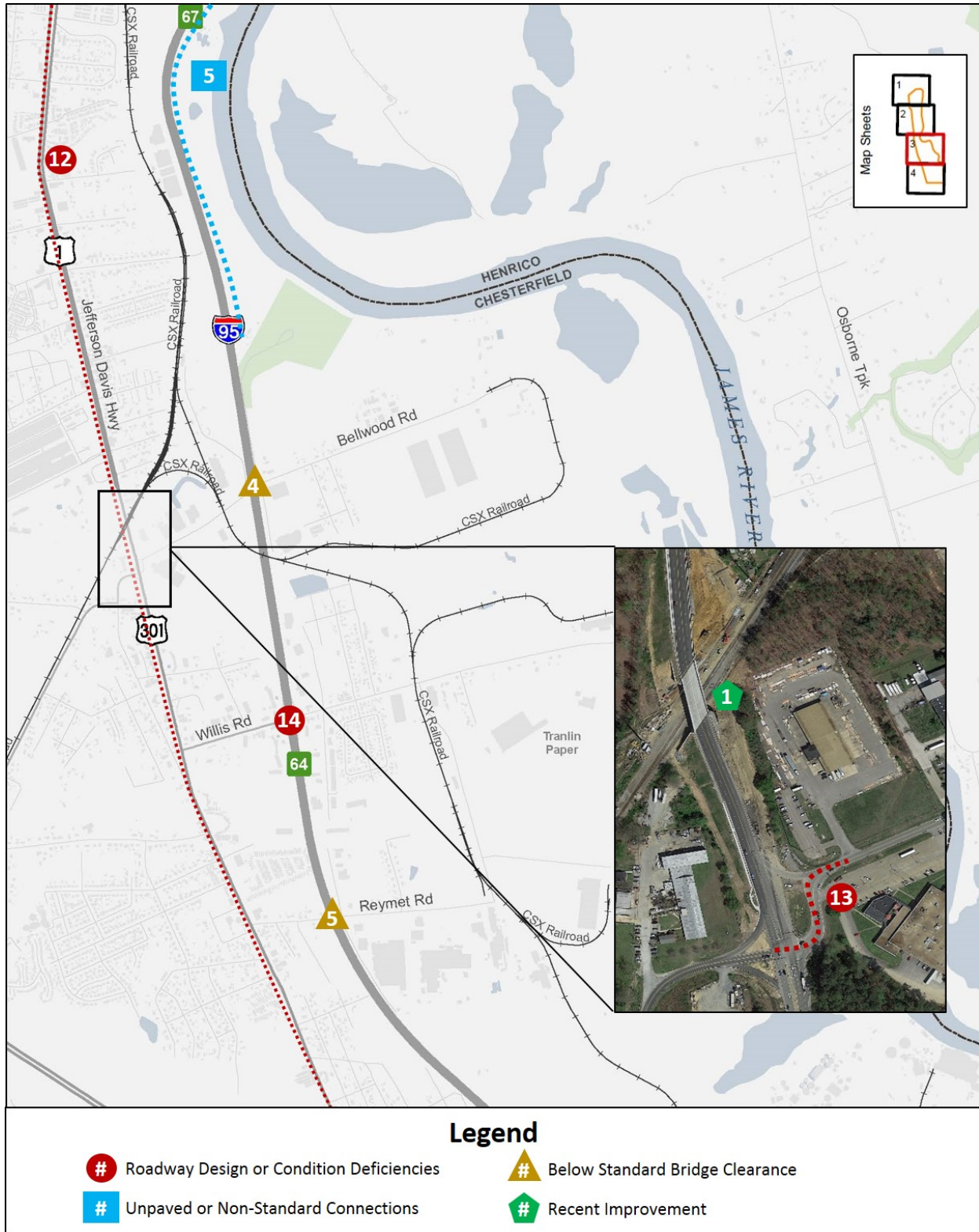


Figure 12: Transportation Network Deficiencies (Map 4 of 4)

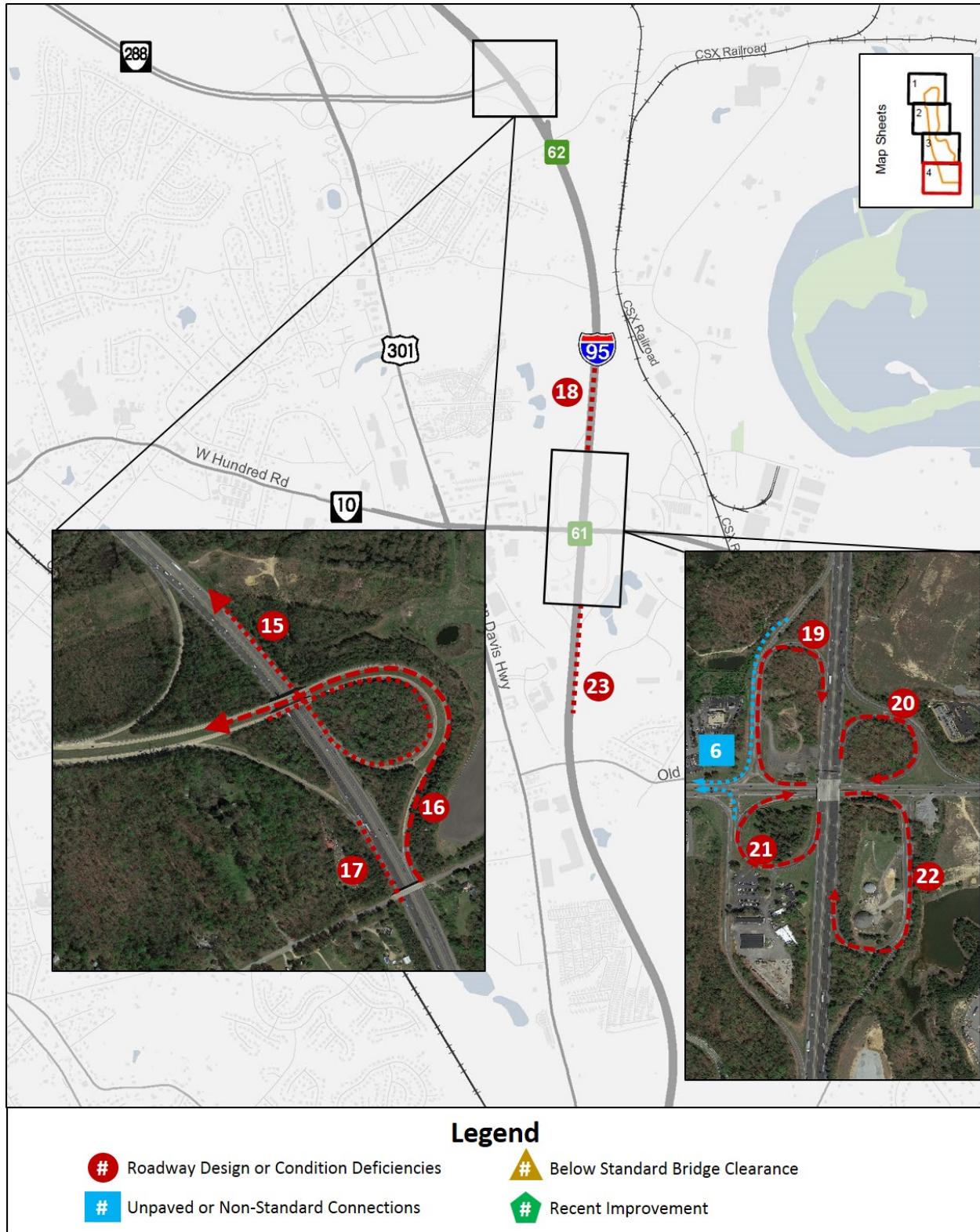


Table 4: Transportation Network Deficiencies and Roadway Operations Details

Roadway Design and Condition Deficiencies

1	The loop ramps at the Maury Street interchange (exit 73) have tight radii with posted 20 mph warning signs.
2	The pavement on Commerce Road at this location is in poor condition.
3	The pavement on Commerce Road at this location is in poor condition.
4	Jefferson Davis Highway (Route 1) has multiple driveways and intersections that do not meet VDOT access spacing standards
5	There are an insufficient number of east-west railroad crossings at this location.
6	The pavement of the Bells Road access road under I-95 is in poor condition.
7	The loop ramp from southbound I-95 to Wamsley Boulevard has a tight radius with a posted 25 mph warning sign.
8	The loop ramp from northbound I-95 to Wamsley Boulevard has a tight radius with a posted 20 mph warning sign.
9	The flyover ramp from westbound Route 895 to southbound I-95 has a tight radius with posted 20 mph warning sign
10	The I-95/Route 895 interchange does not include the southbound to eastbound movement.
11	The ramp from westbound Route 895 to northbound I-95 has a tight radius with posted 20 mph warning sign.
12	Route 1 has multiple driveways and intersections that do not meet VDOT standard spacing.
13	Dog-leg intersection with tight turning radii.
14	Willis Rd interchange design is outdated. Signal spacing does not meet VDOT standards.
15	Sub-standard NB acceleration lane length.
16	Ramps have tight radii with 30 mph warning & truck rollover signs.
17	Sub-standard SB acceleration lane length.
18	Sub-standard SB deceleration lane length.
19	The loop ramp onto southbound I-95 from West Hundred Road has tight radii with 25 mph warning signs.
20	The loop ramp from northbound I-95 onto West Hundred Road has tight radii with 25 mph warning signs.
21	The loop ramp from southbound I-95 onto West Hundred Road has tight radii with 25 mph warning signs.
22	The loop ramp onto northbound I-95 from West Hundred Road has tight radii with 25 mph warning signs.
23	Sub-standard SB acceleration lane length.

Unpaved or Non-Standard Connections

1	Goodes Street is a gravel/dirt road at the location of the I-95 overpass.
2	There is a small gravel road that leads under I-95. The road extends from a property directly on the west side of I-95 and is not a public facility.
3	The segment of Marina Drive from Commerce Street to Fort Darling Road is not paved.
4	There is a private utility easement under I-95 at this location
5	Private gravel/dirt road under I-95.
6	Interchange includes two options for the southbound I-95 to westbound Rt. 10 movement.

Below Standard Bridge Clearances

1	The vertical clearance of the I-95 overpass for the road that connects Commerce Road to Deepwater Terminal Boulevard is below the VDOT requirement.
2	The Bells Road access road vertical clearance under the I-95 overpass is below the VDOT requirement.
3	On northbound I-95, the vertical clearance under the Chippenham Parkway ramp overpass is below the VDOT requirement.
4	The vertical clearance of the I-95 overpass to Bellwood Road is below the VDOT requirement.
5	The vertical clearance of the I-95 overpass to Reymet Road is below the VDOT requirement and the bridge deck is structurally deficient.

Operational Deficiencies

1	Closely spaced signalized intersections along Rt. 1 cause increased congestion during peak travel times.
2	Daily peak hour congestion along surface streets at Bells Rd. interchange area.
3	Re-occurring congestion causes queue lengths that extend beyond the adjacent signalized intersection.
4	The Purpose and Need Statement from the Willis Rd. IMR states safety and operations on the I-95 off-ramps as deficiencies that require modifications to the interchange.
5	The Purpose and Need Statement from the Rt. 10 IMR states that the loop-ramp from southbound I-95 to eastbound Rt. 10 and the loop-ramp from eastbound Route 10 to northbound I-95 currently have safety and operational deficiencies that require modifications to the interchange.
6	Daily peak hour congestion along surface streets Rt. 10 interchange area.

Figure 13: Roadway Operations (Map 1 of 2)

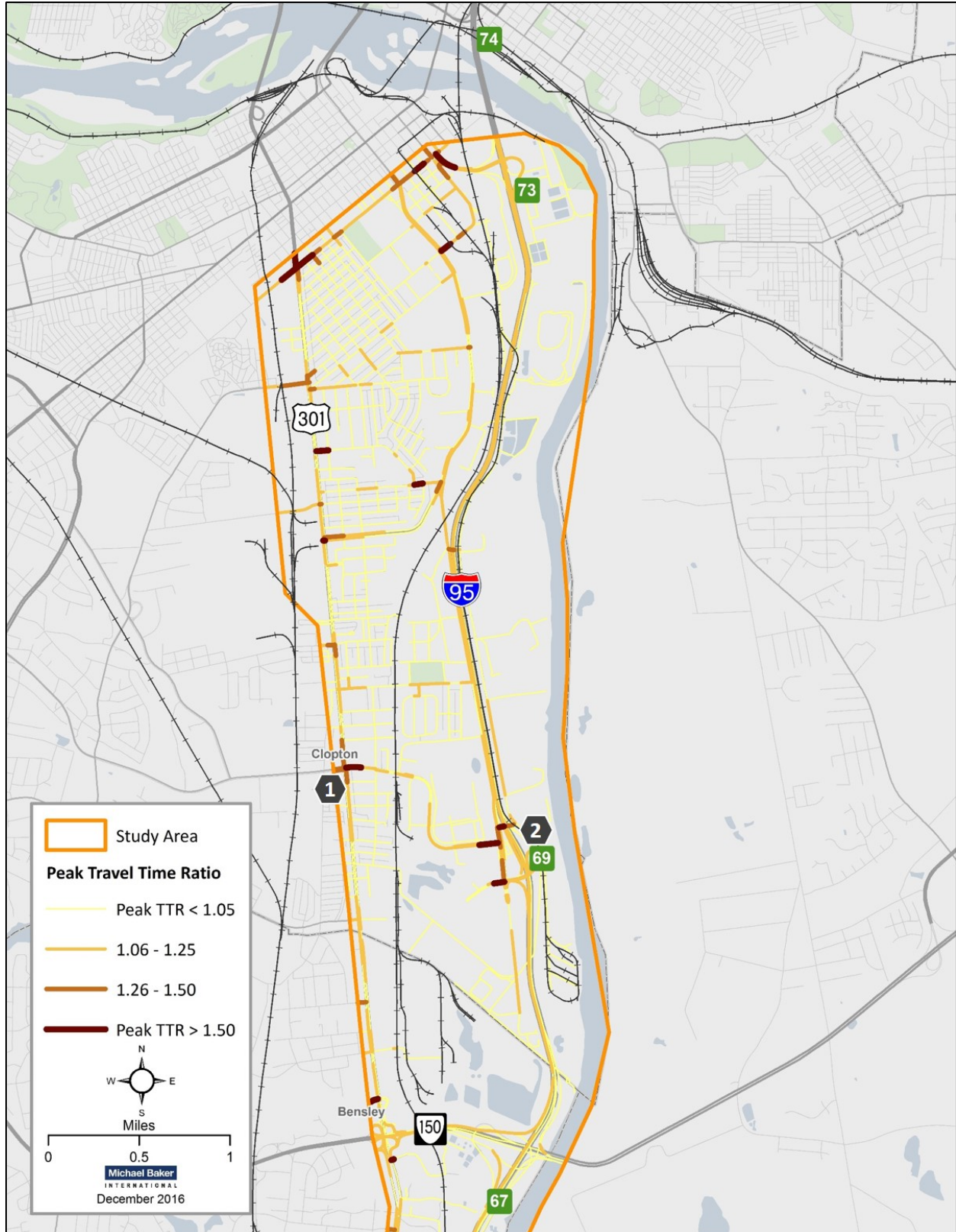
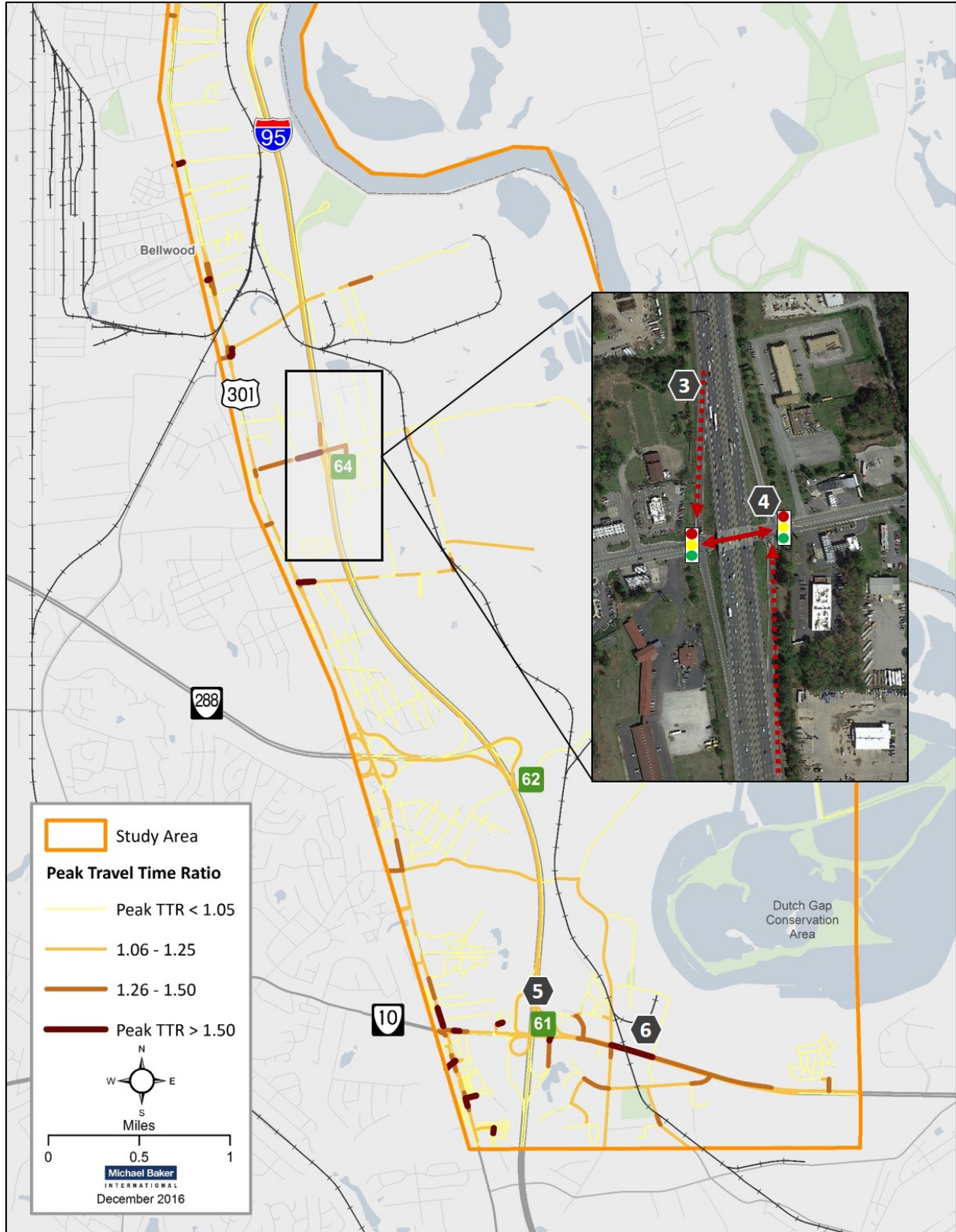


Figure 14: Roadway Operations (Map 2 of 2)



As shown in **Figure 9** through **Figure 12** most of the geometric deficiencies of the roadway network directly impact heavy vehicle traffic. For example, tight loop ramp radii can slow trucks and cause a safety hazard, while the lack of railroad crossings can increase shipment travel times. Inadequate vertical clearance under bridges can force trucks to another, less direct route. There are multiple dirt or gravel roads that cross the I-95 corridor (blue squares 1 through 4) however these are not public facilities. These crossing locations will be examined later in the report as possible crossing solutions for the growth scenarios. The TTR figures show that a majority of study area roadways have current peak hour travel times that are within five percent of free flow travel times. Roadway segments adjacent to traffic signals show the greatest TTRs, especially within the I-95 interchange influence areas as commuters converge to these locations during the peak hour. These conditions are typical for an area of this type. It is important to note that interchange modification studies are complete for two of the interchanges: Willis Road and Route 10. It is likely that the recommendations from those studies would ease congestion and decrease peak hour travel times at those locations if implemented.

2.6 RAILROAD TRANSPORTATION NETWORK DEFICIENCIES

Staples Mill Station is the busiest Amtrak train station in Virginia, as well as the southern U.S. It is located west of ACCA Yard where the Richmond Terminal Sub meets the RF&P Sub. The Staples Mill Station services Amtrak's Northeast Regional, Carolinian, Silver Meteor and Palmetto routes. Passenger trains south of the Staples Mill Station on the North End Sub pass through the Carytown area of Richmond at 40 mph before crossing the James at 50 mph, and then reach maximum authorized speeds of 60 to 79 mph. In general, freight speeds through and along the North End Sub run approximately 10 mph slower than passenger trains.

Passenger service east of the Staples Mill Station slows down significantly as trains pass through ACCA Yard, the Richmond Terminal Sub, Fulton Yard and the Peninsula Sub. With some exceptions, which are brief, the existing network train speeds through these areas do not exceed 30 mph for passenger trains with freight speeds running slower, but not less than 10 mph. This is a considerable concern for the Main Street Station in downtown Richmond, which is designated to be a hub and future station for the Southeast High Speed Rail Corridor. The open deck and aging steel viaduct structure at and along the east approach of Main Street Station and proximity of Fulton Yard are contributing factors for slower train speeds in an area of the city that is a confluence of several lines, which move trains to all four directions of the state. Richmond is somewhat unique in that it is one of the few locations along the eastern seaboard that can move or transfer products to all four directions of the country.

The maximum authorized speed for freight trains on the Bellwood Sub, which runs alongside the Main Street Station and within the study area, ranges from 10 to 25 mph. At the triple crossing, the Bellwood Sub structure has a height restriction as it passes under the Rivanna Sub viaduct. This prohibits CSXT from moving high cube box cars, certain containers, certain auto transport, and any generally oversize loads along this route. This restriction and the popularity of high cube boxes could be a concern for future warehousing / distribution centers developing anywhere south of the James River along Bellwood Sub.

The Deepwater IT Lead is a dead-end into the RMT, requiring CSXT to jockey the engines around to ‘back-in’ the cargo so that it is accessible to the internal port process. CSXT also experiences challenges breaking up trains that are longer than what will fit onto the port property. There is a siding just north of the port entrance where they can do some of this but its limited. The Deepwater IT Lead is very old and in need of rehabilitation. The greatest impact is experienced when Perdue is actively using the port. This effectively shuts down the ability for other rail cargo to access the port during this peak activity. This is one of several operational issues that ultimately comes back to the RMT property being space-constrained.

Transporting goods from the western part of the state through Richmond to proceed north or south remains a challenge for CSX. All trains on the Rivanna Sub must go to Fulton Yard. At Fulton Yard, the trains are then pulled on the Peninsula Sub to the junction where the BBRR and the Bellwood Sub meet. At this location, trains can then proceed onto the BBRR or move southward on the Bellwood Sub. However, most trains proceed to ACCA to transfer onto the North End Sub to go south or to go north on the RF&P Sub. In addition, NS trains interchanging with CSX must proceed south on the Bellwood Wye to the CSXT South Yard before they may proceed north.

3. STAKEHOLDER OUTREACH

The OIPI and RRTPO recognize the importance of both public and private sector partners in planning for an efficient and effective transportation system within the Commerce Corridor study area. This recognition promotes the need for coordination between these stakeholders to develop and implement a vision for the corridor and infrastructure investment priorities. Stakeholders play a critical role in identifying issues, prioritizing projects, and determining recommendations within the study. Their input is critical to ensure the study reflects the real priorities of existing and potential businesses within the study area as well as the communities that surround it. Successful implementation of the plan will depend on these stakeholders generating buy-in for future public and private investment in transportation infrastructure and economic development.

The stakeholder involvement approach is focused on developing relationships with private sector businesses as well as representatives of public sector agencies engaged in transportation related activities that support the Commerce Corridor and nearby Richmond Marine Terminal. Outreach activities included a series of stakeholder meetings with established participating committees, a visioning workshop, an economic development focus group, an online community survey, and one-on-one industry interviews. A brief summary of each of these activities is further described in the sections below. A complete overview of the stakeholder outreach activities is included in **Appendix A – Summary of Stakeholder Outreach**.



Table 5: Policy Advisory Committee Members

Name	Organization
Carlos Brown	Commonwealth Transportation Board
Pete Burrus	Department of Rail and Public Transportation
Ronique Day	Office of Intermodal Planning and Investment
Lee Downey	City of Richmond
Bill Dupler	Chesterfield County
Jeff Florin	Port of Virginia
John Loftus	Virginia Economic Development Partnership
Ben Mannell	Virginia Department of Transportation
Barbara Nelson	Richmond Regional Transportation Planning Organization
Mark Riblett	Virginia Department of Transportation

Table 6: Technical Advisory Committee Members

Name	Organization
Chris Detmer	Virginia Department of Transportation
Chris Gullickson	Port of Virginia
Amy Inman	City of Richmond
Sarah McCoy	Port of Virginia
Barb Smith	Chesterfield County
Todd Eure, Rosemary Deemer	Henrico County
Ron Svejksky	Virginia Department of Transportation
Michael Todd	Department of Rail and Public Transportation
Chris Wichman	Richmond Regional Transportation Planning Organization

3.2 DEFINING THE FUTURE OF THE COMMERCE CORRIDOR

Early in the development of the Commerce Corridor Study, the PAC and TAC members participated in a visioning workshop to define the economic and transportation future of the Commerce Corridor. During the four-hour workshop, attendees participated in several activities to discuss multimodal transportation assets and deficiencies; identify economic development and transportation priorities; prepare a Statement of the Future; and choose four sites for connectivity and operations assessment. A summary of the visioning workshop held on August 11, 2016 is included in **Appendix A**.

A week prior to the workshop, PAC and TAC members were invited to participate in a webinar to review inland logistics hub case studies and best practices. The presentation provided attendees an understanding of what type of development and modal mix are key to successful inland logistics hubs. A summary of the webinar held on August 4, 2016 is included in **Appendix A**.

Commerce Corridor Statement of the Future

In 2040 the Commerce Corridor will...

- *Be a dynamic, economic engine for the region that serves as its gateway for commerce.*
- *Be a vibrant, intermodal corridor that provides sustainable, multimodal transportation opportunities.*
- *Be recognized nationally for its integrated economic and transportation systems development.*
- *Foster continued growth in quality, well-paying jobs and ladders of opportunity for the community.*
- *Catalyze investment and redevelopment in the corridor and around the region.*

On November 9, 2016 the TAC and PAC were again assembled in a webinar hosted by the project team. The purpose of this event was to discuss in detail the potential future growth scenarios such that the team could reach agreement on the make-up and intensity of future industrial development at the four agreed-upon study sites. This information was used to directly inform the technical work described in Section 4 of this report. More information about the November 9, 2016 event can be found in **Appendix A**.

3.3 ECONOMIC DEVELOPMENT FOCUS GROUP

An economic development focus group was convened in September 2016 for a roundtable discussion how the Commerce Corridor could benefit from regional economic development initiatives as well as understand what freight-related business might be looking for when considering locations in the region. The economic development directors for the nine jurisdictional partners of the RRTPO and the Virginia Economic Development Partnership were invited to participate. The goal of the roundtable discussion was to garner qualitative information to support the unified vision for the Commerce Corridor; understand the needs of freight-related businesses considering locating in the Corridor; and recognize the perceived market potential and/or limitation of the Corridor. The participants acknowledged that the Commerce Corridor is well poised for economic development opportunities. There is also tremendous

opportunity for regional collaboration and a regional marketing strategy should be coordinated with existing efforts. The summary of the economic development focus group is included in **Appendix A**.

3.4 COMMUNITY OUTREACH AND SURVEY

A series of questions were prepared to solicit feedback from community members within the Commerce Corridor area as part of the Commerce Corridor Study. The questions were related to the quality of the transportation system, employment opportunities, and quality of life of neighborhoods in and around the Commerce Road Corridor. Written survey responses were solicited from A Place of Miracle's Café on October 18, 2016 and the Bellemeade Community Civic Association meeting on October 20, 2016. An online format of the survey was also made available to civic association members as well as the Jefferson Davis Association board members. A total of 48 survey responses were received. The complete summary of the community survey responses is included in **Appendix A**.

3.5 STAKEHOLDER INTERVIEWS

In addition to the outreach described above, telephone and in-person interviews were held with various project stakeholders representing public and private entities with direct interest in multimodal transportation and economic development in the study area. **Table 7** below summarizes that outreach opportunity and the nature of the discussion.

Table 7: Stakeholder Interview Summary

Name	Organization	Date	Nature of Discussion
Sarah McCoy	Port Of Virginia	7/27/16	Phone interview to discuss her role, modal and product-nature of current business at RMT, history of rail service at terminal, area transportation constraints, existing & future operations 'inside the gate', their desire for modal diversity
Ali Lauzon	Virginia P3 Office	7/27/16	In-person meeting to discuss High-Level and Detailed-Level real-estate study commissioned by VaP3 for P3 development opportunities in Commerce Corridor
Chris Gullickson	Port of Virginia	8/3/16	In-person meeting to discuss POV's long-term lease of Richmond Marine Terminal. Included guided walking tour of RMT facility.
Pete Burrus & Mike Todd	Department of Rail & Public Transportation	8/30/16	In-person meeting to discuss DRPT perspective on top rail constraints, view of RMT, changes in the way freight is being moved (e.g. longer trains), impact of passenger rail, changes in legislation, and outreach strategy for CSX
Chris Gullickson	Port of Virginia	9/14/16	In-person meeting to discuss short- and long-term growth strategy of the POV as it relates to RMT. Also discussed RMT's key customers and upcoming outreach to CSX

Name	Organization	Date	Nature of Discussion
Amy Inman	City of Richmond	10/6/16	Phone discussion to discuss City's perspective about rail challenges / local impacts in corridor and for project team to explain approach to rail element of study. Also discussed regional nature of rail influence on local area
Jim VanDerzee	CSX Transportation	10/25/16	In-person meeting to hear CSX process for attracting and developing rail-oriented business in corridor. Also discussed how our study will need feedback from CSX.
Kristy Seaton	VHI Transport	11/1/16	In-person meeting to allow study team to better understand how this significant RMT customer operates in the area and makes business decisions about cost-effectiveness of moving freight to/from port and in region

4. MARKET OPPORTUNITY SCENARIO ANALYSIS & FUTURE NEEDS ASSESSMENT

This chapter addresses the development and testing of growth scenarios for the corridor. Growth scenarios are defined in terms of changes in land use for target development sites, employment by industry, freight generation and modal usage patterns. The ultimate goal of these development scenarios is to “stress test” the transportation network in the region under a series of plausible profiles of market demand. The remainder of this chapter walks through the process by which three growth scenarios—the baseline and two alternatives—were defined, using a combination of data-driven analysis and stakeholder input. It also details the results of a set of travel modelling exercises used to assess future needs under these alternative visions of the future.

4.1 METHODOLOGY AND PROCESS

INTRODUCTION TO SCENARIO PLANNING

Scenario planning is an analytical tool used in transportation planning to help transportation agencies, professionals, and decision-makers prepare for what lies ahead. Scenario planning provides a framework to compare and contrast interactions between multiple factors, such as transportation, land use, and economic development. It incorporates analysis of how different land use, demographic, or other types of scenarios could impact transportation networks. Successful scenario planning leads to the identification of possible strategies that a state, region, community, or study area can implement to achieve elements

of the preferred future. Stakeholder engagement is a key element throughout the process to educate them about growth trends and trade-offs, and incorporating their values and feedback into future plans.

“Scenarios are stories about the future that planners develop to consider and prepare for possible challenges and opportunities. Scenario planning helps transportation agencies work with stakeholders and the public to establish a vision and implement a strategic plan for success...” – 2011 FHWA Guidebook on Scenario Planning

ANALYTICAL RESOURCES – TOOLS AND DATA

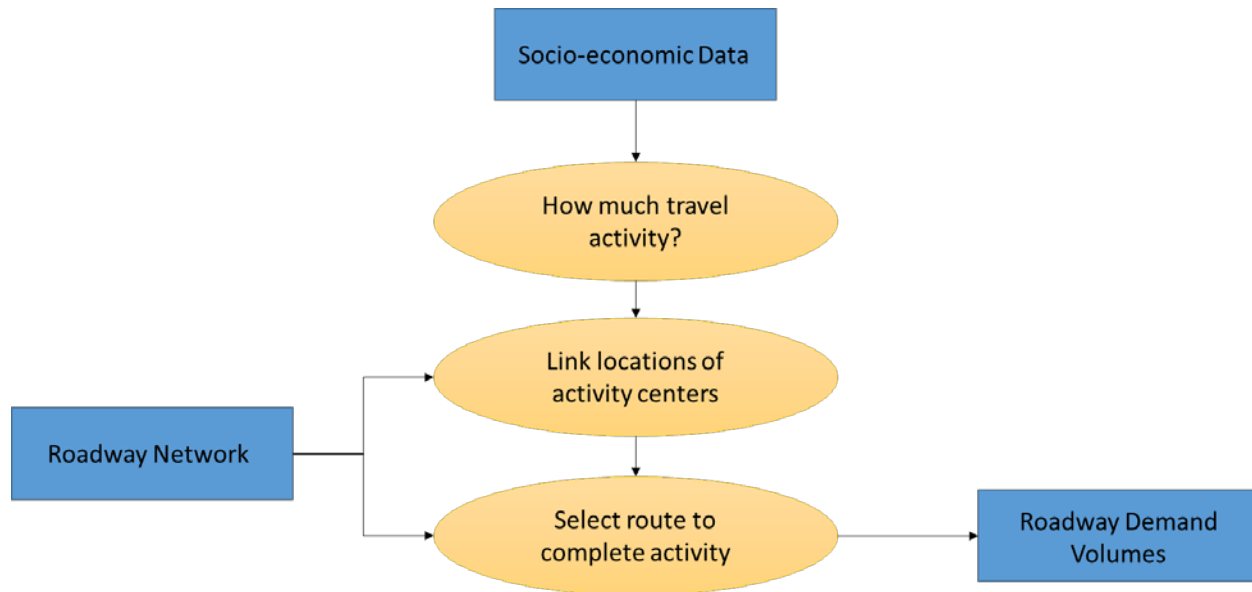
The market opportunity scenario analysis and future needs assessment builds on the insights and leverages analytical capabilities embedded in a number of tools, in particular: (a) the Richmond/Tri-Cities (RTC) Travel Demand Model and (b) the TREDIS vFreight economic modelling system. In addition, local CSX Industrial Development staff supported the team by identifying potential bottlenecks and capacity constraints resulting from the growth scenarios.

The RTC Travel Demand Model is an advanced practice “four step” model. The RTC model describes travel activity within, to, from, and through the Richmond/Petersburg Metropolitan Area and is routinely used to support regional long-range transportation planning and stand-alone project development. As shown in **Figure 15**, the model uses a description of land use activity, expressed through socio-economic data; and a description of the transportation network, including roadways and public transit services, to determine the volume of vehicles traveling on the transportation network using a four step process:

- Trip generation – How much travel activity?
- Trip distribution – How are the activity centers linked?
- Mode choice – Will travel activity make use of public transit?
- Assignment – Which route over the transportation network will be used to complete activities?

The current version of the RTC model has benefited from several recent enhancements including the ability to forecast heavy truck movements in response to freight activity in the region.

Figure 15: Travel Demand Model Process



TREDIS® is a decision support modeling system for transportation planners that spans economic impact analysis as well as freight and trade analysis. TREDIS enables both diagnostics and economic impact assessments. The scenario definition component of this exercise focused primarily on the system’s diagnostic capabilities, using data on economic and freight trends to build a cohesive picture of potential future development scenarios. Specifically, the analysis makes use of current and future industry composition information (assembled from combination of IMPLAN region-specific economic data and Moody’s Analytics forecasts) as well as county-level freight flow information embedded in the TREDIS vFreight dataset. vFreight provides enhanced modal freight movement detail above that provided by the U.S. Department of Transportation, Federal Highway Administration’s Freight Analysis Framework (FAF) data, in a manner that is consistent with the U.S. Census Bureau’s Foreign Merchandise Trade Database.¹ Subsequent phases of the analysis make use of the TREDIS system’s economic impact assessment capabilities to examine specific investments in the future connectivity of the corridor.

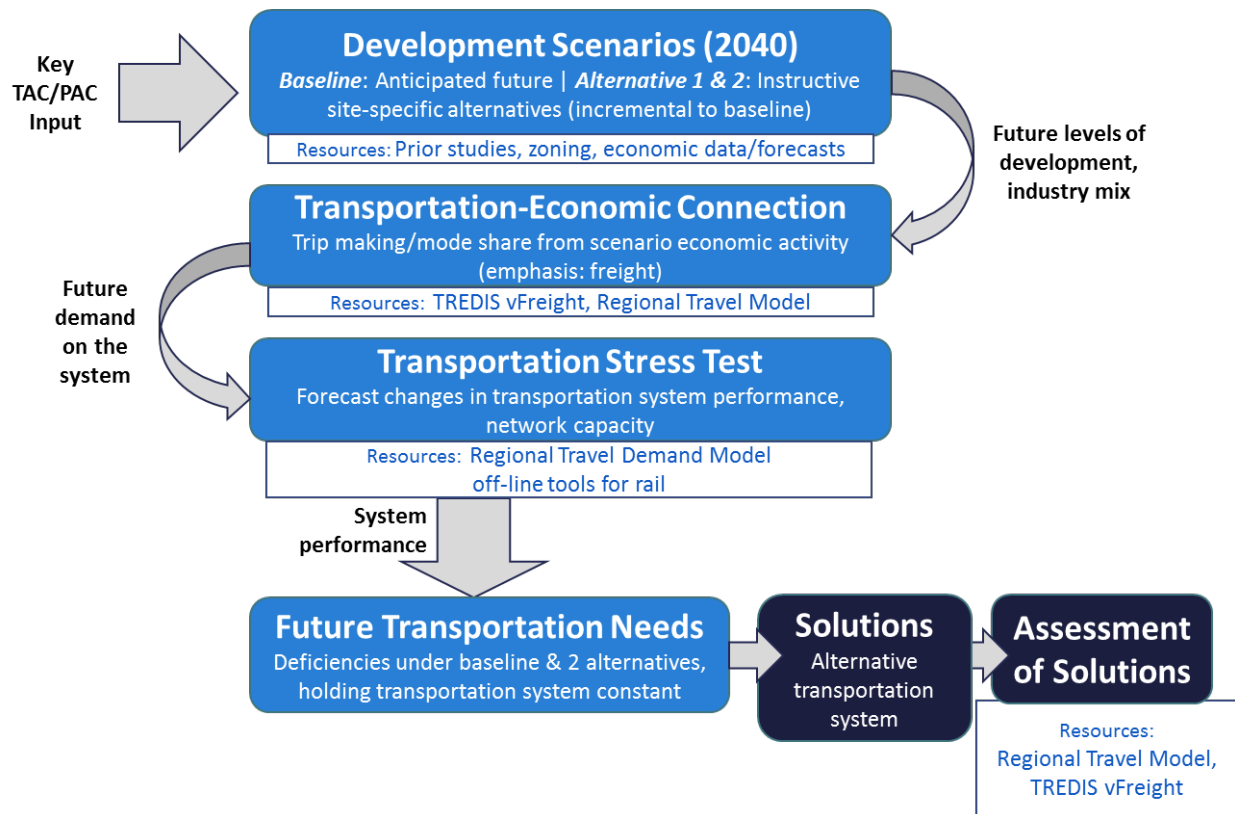
A CUSTOMIZED PROCESS FOR THE COMMERCE CORRIDOR

Figure 16 summarizes the customized process employed for analysis of the Commerce Corridor under alternate future development scenarios. The process began with definition of development scenarios for the project’s future horizon year, 2040. The development scenarios included a baseline that represents the anticipated future, and two alternatives that are site-specific alternatives incremental the baseline. As described in **Section 3**, TAC/PAC input was used to shape the parameters of these alternatives in terms of their level of development buildout and industry mix. These scenarios were also grounded in reality through a review of prior regional studies, zoning regulations, and current and future forecast economic

¹ For more information about the tool and supporting data, visit www.tredis.com

activity in the region. Site-specific development scenarios were then translated into future demand on the transportation system using a combination of TREDIS vFreight and the regional travel model introduced above. The transportation stress tests enable a definition of future transportation needs. These needs are subsequently prioritized and then addressed through a process of solution identification and assessment, as described in subsequent chapters of this report.

Figure 16 Analysis Process and Key Resources



4.2 TARGET DEVELOPMENT SITES

As described in **Section 3** and **Appendix A** of this report, the TAC & PAC helped the study team identify four sites in and around the project study area where intensified industrial land use will be tested to determine its impact on the transportation system and resulting investment needs. **Figure 17** shows the general location of the four identified target development sites in relation to the metro area.

Figure 17: Target Development Sites

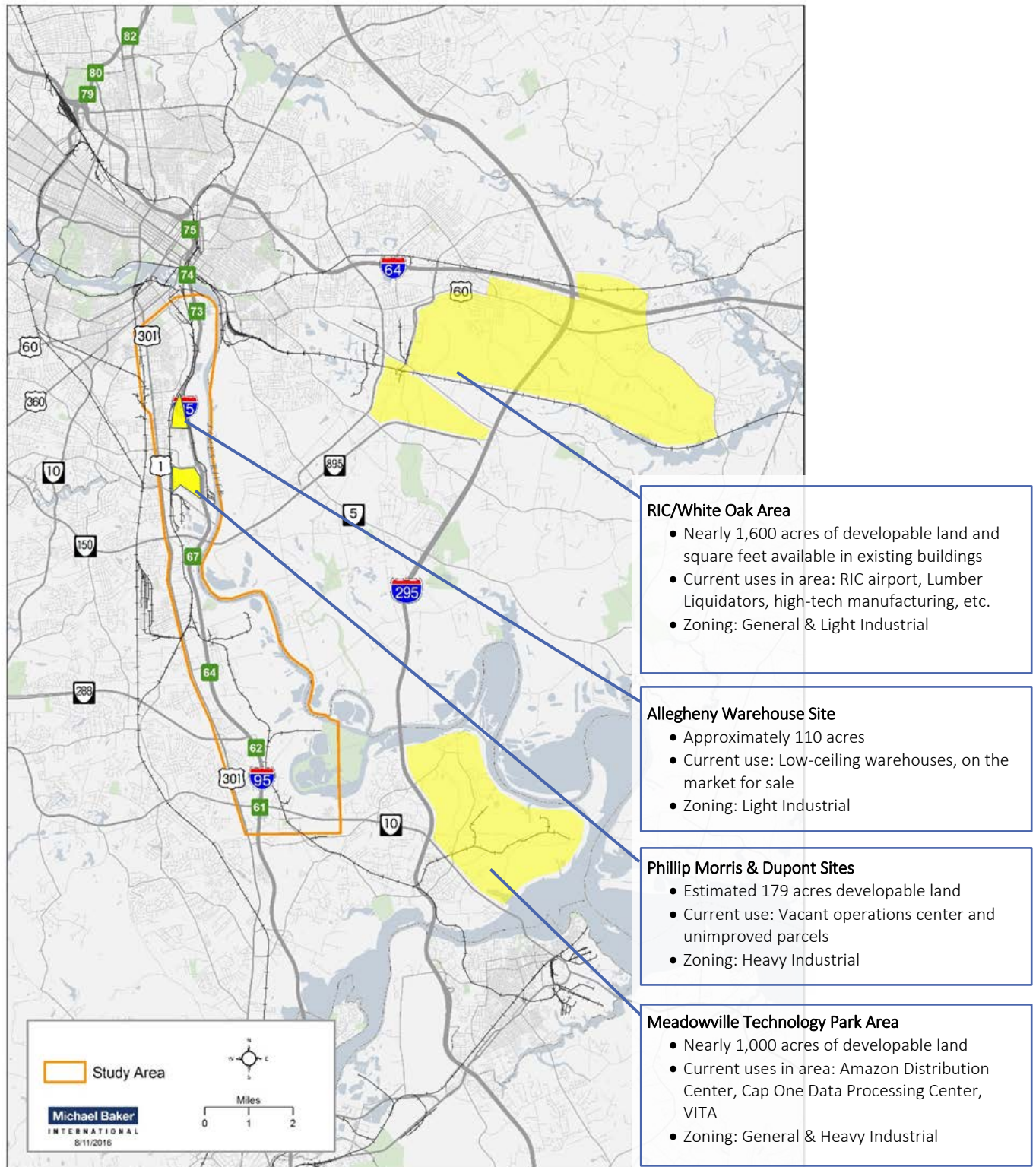


Table 8 summarizes the characteristics of the four selected target development sites. The sites span a number of localities and are thus governed by a mix of zoning regulations. Nearly all parcels are zoned for a form of industrial activity, with some small areas in Site 3 zoned agricultural or subjected to special zoning conditions due to proximity to the airport. It is assumed, based on a general review of zoning classifications, that the desired manufacturing and logistics-oriented industry is generally compatible with the spirit and intent of existing land use regulations. This was confirmed through feedback from members of the TAC/PAC. Note that the review of regulatory requirements was done at a high level consistent with the principles of general scenario planning. Individual site developments would require more detailed evaluations of applicable local regulations.

Developable site acreage and building square footage were derived from data provided by the Virginia Office of Public Private Partnership, information contained in the Richmond Regional Comprehensive Economic Development Strategy (CEDS), and updates provided by the staff at RRTPO and local jurisdictions. In defining developable acreage on Site 1, it was assumed that the pre-existing water/wetland areas are in-practice undevelopable in this timeframe because of the likely costs of permitting requirements from a developer perspective.

The 261,057 square feet of vacant building space in Site 3 correspond to the Interport Business Center (168,113 sf) and the QTS Data Center (92,944 sf). It is assumed that by 2040 these vacancies will be filled under both alternative development scenarios with distribution center and data processing center activities, respectively.

Table 8: Summary of Target Development Site Characteristics

	Site 1	Site 2	Site 3	Site 4
Name	Philip Morris	Alleghany Warehouse	RIC / White Oak	Meadowville Technology Park
Acres	179 acres (excluding water/wetland)	110 acres	1,598 acres + 261,057 sf vacant in buildings	984 acres
Current Use	Vacant or partially improved	Low-ceiling warehouses	In area: RIC airport, Lumber Liquidators, High-Tech Manufacturing, USPS	In area: Amazon Distribution Center, Capital One Data Processing Center, VA Information Tech Agency
Development assumptions	Assume Operations Center building not reused (sub-optimal configuration)	Assume all tenants vacated & demolition of existing warehouses	Development of vacant sites + securing tenants for vacant buildings	Development of vacant sites
Zoned Use	Heavy industrial (Most permissive, allows a broad range of manufacturing & wholesale/ distribution)	Light industrial (Allows lighter manufacturing, & wholesale/ distribution)	Majority of the land is General & Light Industrial ; Other – Agricultural district, Airport adjacent special zoning	General & heavy industrial (Manufacturing and similar activities)

Each of the four development sites has interstate and arterial roadway access to varying degrees. **Section 6** of this report provides details about the quality of roadway access in the context of needs and potential solutions.

If rail-oriented development came to the **Alleghany Warehouse Site**, it would be possible to serve it with rail, but there are some challenges. There is currently a siding adjacent to the site; however, it is not used for that site, but instead used for train passing and other operations. A second siding could be added but it's not desired to have a siding within a horizontal curve. The preferred option would be to construct a lead to enter the site from the southern-most point, where the track is in a tangent (straight) alignment. Another consideration is the presence of two at-grade rail crossings in close proximity to the Alleghany Site (Ruffin Rd & Commerce Rd). Rail operations to and from this site would need to be accomplished without causing stationary trains from blocking these crossings. It may be possible to overcome these challenges but the requirements may influence a developer's decision about investing in this site versus other locations.

With regards to the **Philip Morris Site**, CSXT has had interest from some developers in relation to this location. This site could be served by rail economically; however, there is concern about an existing fenced nature preserve in the southwest area (triangle-shaped) of the site that may limit the potential of fully utilizing the property.

From a rail perspective the **RIC/White Oak Site** offers many development opportunities but any given interior parcel would have the challenge of cost in securing right-of-way for rail access. Rail access from the CSXT Peninsula Sub is available along the south edge of the large area and NS Railway is located on the northern boundary. CSXT has a number of existing customers in the area that are served by local switching companies out of Fulton Yard. These customers are mostly in the area southwest of RIC property. Some topographic and water challenges exist within this potential large site.

The **Meadowville Site** is also a good location for new industrial rail customers. CSXT has indicated the rail network in this area is changing. Some leads within this site have been removed or may be sold. Serving new industrial customers in this area will likely require construction of new lead tracks. This does not mean the site is a poor choice for rail-oriented development. This is a normal part of rail industrial development / negotiation and will be considered on a case-by-case basis as investors express interest.

4.3 DEFINING THE BASELINE

The future economic activity in the baseline scenario is defined primarily using the economic and demographic data embedded within the RTC travel demand model. The model contains assumptions about the levels and spatial distribution of population and employment by industry in the region as approved by the RRTPO for the year 2040. In order to isolate the effects of site development in the two alternative scenarios, the baseline scenario maintains the current state of vacancy on identified target sites out to the year 2040. Macro-economic forecasts from TREDIS then provided additional insight into industry-specific trends and the patterns of freight modal reliance by industry.

As is often the case when working with multiple datasets, forecasts of employment growth contained in the travel demand model and in TREDIS's macroeconomic forecasts differ slightly due to the age of the forecasts. Future travel demand model employment levels govern for the purposes of estimating future

demand on the transportation system in the baseline scenario. Macroeconomic forecasts from TREDIS are used in a supportive role to help identify growth industries as well as the relationship between employment levels and business sales, gross regional product, wage income, and commodity movements.

4.4 ALTERNATIVE DEVELOPMENT FUTURES

Based on input from the TAC/PAC, two alternative development futures were defined for the four target development sites. To match the high-level of the scenario analysis, a single industry profile was developed for each scenario to apply uniformly to all four sites (with the exception of the two individual buildings that have predetermined uses). The only “candidate industries” considered for future development were manufacturing, wholesale, and warehousing/storage, based on the expressed focus of regional stakeholders and TAC/PAC representatives. Both alternatives assume full build-out on the identified sites, according to a typical development profile of the selected industries.

INDUSTRY COMPOSITION

The industry mixes of the two scenarios are defined in the following manner:

Alternative Scenario 1 – Forecast Future Industry Mix. This scenario assumes that future development on the target sites will mimic the forecast target industry mix for the region as a whole in 2040. Based on these forecasts, the scenario assumes that the dominant activity attracted to the target sites is wholesale trade, followed by warehousing and storage, with some manufacturing included as well.

Alternative Scenario 2 – Port-Oriented Manufacturing. This scenario is focused only on manufacturing (with the exception of the Site 3 buildings which have specific pre-determined uses). The intent of the scenario is to target the types of manufacturing that in the future might rely on goods movement through the Richmond Marine Terminal—namely the types of businesses that ship or receive containerized cargo that are on the lower-end of the “time-sensitivity” spectrum. Because the water mode share for this region is so small at present, it is not possible to simply develop an industry profile based on knowledge of *current waterborne shipping-oriented industries*. This is a classic scenario challenge of imagining a future that diverges in some meaningful way from the present. To address this, an industry profile was developed according to the following steps, which mix data and expert judgments by the project team: (1) Start with the forecast profile of manufacturing in the region by 2040, ranked by employment, (2) Exclude manufacturing sectors that are not strong facility growth prospects in the region (e.g. paper manufacturing), are unlikely targets for industrial property expansion (e.g. primary metal manufacturing, which is heavy industry), or would not have prospects of relying on containerized goods port movements, and (3) Maintain the relative distribution between remaining manufacturing sectors as expected in the region in 2040. The resulting distribution shows concentrations in manufacturing industries that hypothetically could take advantage of port containerized cargo with lower time-sensitivities, e.g.: chemical and food manufacturing.

DEVELOPMENT INTENSITY

For the purpose of the travel and economic modelling exercises, development scenarios were defined in terms of employment counts by industry. Converting from available developable acres to numbers of jobs

requires information on (1) the average square footage of floor space per employee, and (2) the average floor-area-ratio (FAR) for a given industrial development typology.

Information on square footage of floor space per employee is sourced primarily from national research based on surveys conducted by the US Energy Information Administration, as shown in **Table 9**.

Table 9: Average square feet of floor space per employee, by industry

NAICS ²	Industry	SF/Employee	Source
42; 493	Warehouse and Storage, Wholesale Trade	2048	(1)
311	Food Manufacturing	567	(2)
312	Beverage & Tobacco Product Manufacturing	1273	
313	Textile Mills	1552	
314	Textile Products Manufacturing	1552	
315	Apparel Manufacturing	704	
316	Leather & Allied Product Manufacturing	755	
321	Wood Product Manufacturing	1091	
322	Paper Manufacturing	1132	
323	Printing & Related Support Activities	836	
324	Petroleum and Coal Products Manufacturing	570	
325	Chemical Manufacturing	870	
326	Plastics & Rubber Products Manufacturing	1218	
327	Nonmetal Mineral Product Manufacturing	973	
331	Primary Metal Manufacturing	1306	
332	Fabricated Metal Manufacturing	964	
333	Machinery Manufacturing	860	
334	Computer and Electronic Manufacturing	429	
335	Electrical Equipment & Appliance Manufacturing	821	
336	Transportation Equipment Manufacturing	999	
337	Furniture and Home Furnishings Manufacturing	1558	
339	Miscellaneous Manufacturing	719	
518	Data processing	8771	(3)
<p>(1) U.S. S, Office of Energy Consumption and Efficiency Statistics, Form EIA-871A of the 2012 Commercial Buildings Energy Consumption Survey.</p> <p>(2) NAIOP Research Foundation. Stabilization of the U.S. Manufacturing Sector and Its Impact on Industrial Space. (Data from 2006, Energy Information Administration (EIA), Manufacturing Energy Consumption Survey (MECS)). See Figure 18.³</p> <p>(3) Estimate calculated from a specific example of a Facebook data center in Oregon.⁴</p>			

² North American Industry Classification System.

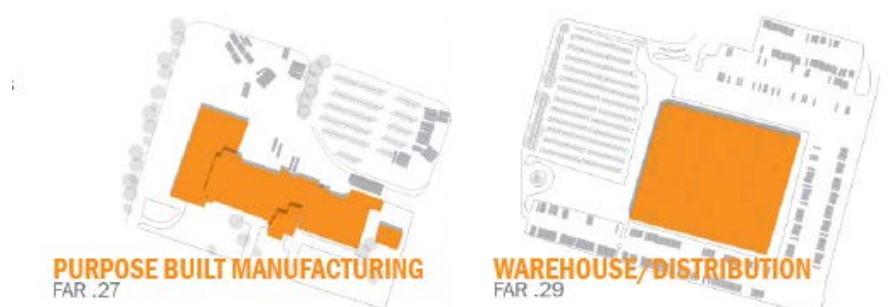
³

http://www.naiop.org/~media/Research/Research/Research%20Reports/Stabilization%20of%20the%20US%20Manufacturing%20and%20Its%20Impact%20on%20Industrial%20Space/NAIOP_Ronderos_FINAL_web%20version.aspx

⁴ https://www.facebook.com/note.php?note_id=411605058132

Typical floor-area-ratios (FARs) are sourced from a study completed for the Philadelphia Industrial Development Corporation.⁵ The FAR figures assume buildings constructed specifically for their intended purpose (as opposed to more generic flex spaces that might combine with research and development or other activities) (see **Figure 18**). These ratios are further validated by the conceptual site plan put forth by CBRE Richmond for the Allegheny Warehouse Site, which shows an FAR of approximately 0.26.⁶

Figure 18: Floor-Area-Ratios by Development Typology⁷



FINAL JOB DISTRIBUTION

The final distribution of jobs for each alternative scenario, based on the above stated assumptions, is presented in **Table 10**. Alternative 2 has more jobs overall because of the more intensive land development pattern of manufacturing compared to wholesale and warehouse/distribution activities. These jobs represent an increment of activity above the baseline that is assumed to occur across the four development sites in each alternative development scenario.

Table 10: Alternative Scenarios – Total Jobs by Industry Sector

Target Industry	NAICS	Jobs – Alt. 1	Jobs – Alt.2
Wholesale Trade	42	10,953	0
Food Manufacturing	311	1,075	5,864
Beverage & Tobacco Product Manufacturing	312	484	2,641
Textile Mills	313	54	0
Textile Products Manufacturing	314	44	0
Apparel Manufacturing	315	29	0
Leather & Allied Product Manufacturing	316	8	0
Wood Product Manufacturing	321	457	2,493

⁵ Philadelphia Industrial Development Corporation. An Industrial Market and Land Use Strategy for the City of Philadelphia. 2010.

http://www.pidcphila.com/images/uploads/resource_library/PIMLUS_Report_September_2010.pdf

⁶ Visit <http://www.rvaindustrialand95.com/> and click “brochure” for more detail.

⁷ Source: Philadelphia Industrial Development Corporation. An Industrial Market and Land Use Strategy for the City of Philadelphia. 2010.

Target Industry	NAICS	Jobs – Alt. 1	Jobs – Alt.2
Paper Manufacturing	322	573	0
Printing & Related Support Activities	323	549	0
Petroleum and Coal Products Manufacturing	324	46	0
Chemical Manufacturing	325	1,202	6,556
Plastics & Rubber Products Manufacturing	326	332	1,810
Nonmetal Mineral Product Manufacturing	327	375	2,045
Primary Metal Manufacturing	331	226	0
Fabricated Metal Manufacturing	332	896	4,888
Machinery Manufacturing	333	670	3,655
Computer and Electronic Manufacturing	334	146	794
Electrical Equipment & Appliance Manufacturing	335	218	1,191
Transportation Equipment Manufacturing	336	146	796
Furniture and Home Furnishings Manufacturing	337	529	2,884
Miscellaneous Manufacturing	339	316	0
Warehousing and Storage	493	2,628	82
Data Process, Hosting Services	518	11	11
TOTAL JOBS		21,968	35,709

4.5 DEMANDS ON THE TRANSPORTATION NETWORK

DERIVED DEMAND ON THE HIGHWAY NETWORK

The Richmond/Tri-cities travel forecasting model estimates roadway demand based, in part, on trips generated from employment activity aggregated into high-level (2-digit NAICS) industry sectors. Total jobs associated with the alternative development futures were distributed across the four site areas as a function of available acreage and vacant building square footage at each of the sites. **Table 11** summarizes the resulting distribution of employment activity that serve as input to the travel model.

Table 11: Jobs by Site by Industry – Travel Model Inputs

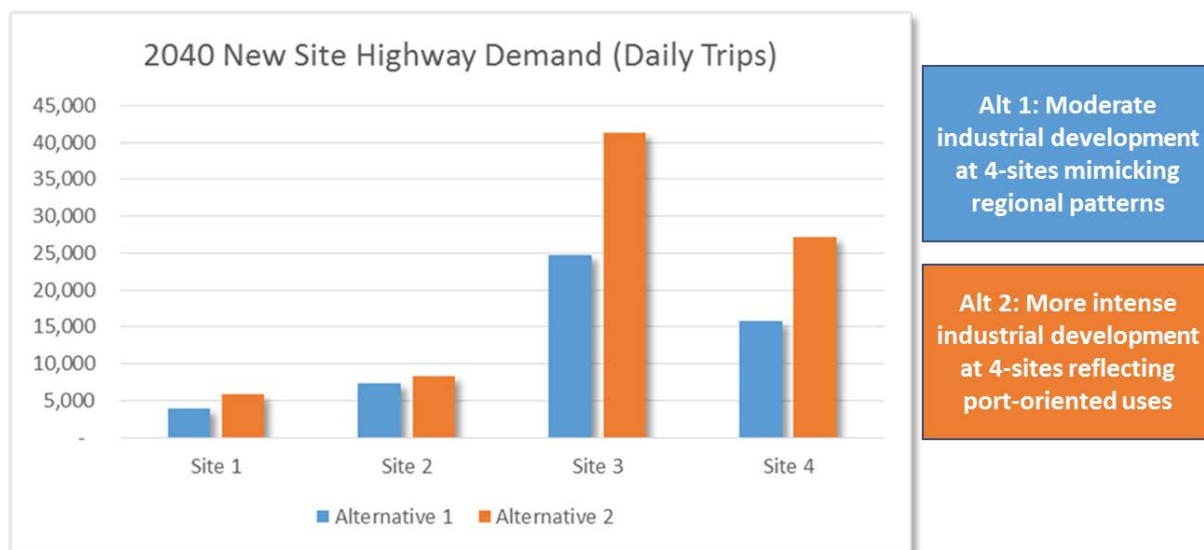
Sector / Site	Alt 1				Alt 2			
	1	2	3	4	1	2	3	4
Manufacturing	522	321	4662	2871	2221	1365	19824	12207
Wholesale Trade	683	420	6097	3754	0	0	0	0
Transportation*	159	98	1499	873	0	0	82	0
Information**	0	0	11	0	0	0	11	0

* Site 3 includes jobs in warehousing/distribution at the Interport Business Center.
 **Site 3 includes jobs associated with the QTS Data Center.

Note that employment activity at the Richmond Marine Terminal was also modified for the alternative development futures, reflecting use of the Port in accommodating distribution of goods associated with enhanced wholesale trade and manufacturing activity at the development sites.

Using the revised employment activity derived for each alternative development future, the travel model produced revised Year 2040 roadway specific traffic estimates in the form of personal and commercial vehicle volumes. These volumes reflect changes in personal vehicle traffic due to commuters accessing the added site employment opportunities as well as the distribution of goods from the sites via long-haul commercial traffic and drayage to the Port. Resulting PM peak period traffic volumes were subsequently used to conduct a highway-oriented needs evaluation for the respective development futures. **Figure 19** shows a comparison of travel demand for the two growth scenarios across the four development sites. The daily highway trips include both employee work trips as well as trucks generated by industrial activity. From an acreage / development potential standpoint, Sites 3 and 4 are able to generate significantly more demand than Sites 1 and 2.

Figure 19: Development-Generated Highway Demand



DEVELOPMENT-GENERATED RAIL DEMAND

TREDIS vFreight data enables forecasting of regional commodity movements generated by future economic activity, and allocated by mode of transport. These forecasts are based on current observed relationships between a given industry's pattern of production and consumption (physical inputs and outputs) and aggregate statistics describing the volumes of specific commodities transported by specific modes. Because the forecasts are pivoted from current industry-commodity-modal relationships, they do not account for future technological or other industry operational shifts that might cause an industry to become more or less reliant on a given commodity or mode. They do, however, offer a picture of the potential future demand, based on current practices.

Figure 20 and Table 12 present forecast rail freight volumes for the baseline and two alternative development scenarios. The difference between the alternative forecasts' rail volumes and the baseline represents the forecast additional rail demand associated with the specific site development scenarios.

Figure 20: Forecast Rail Volumes (kTons) by Scenario – Effects of Site Development 2014-2040⁸

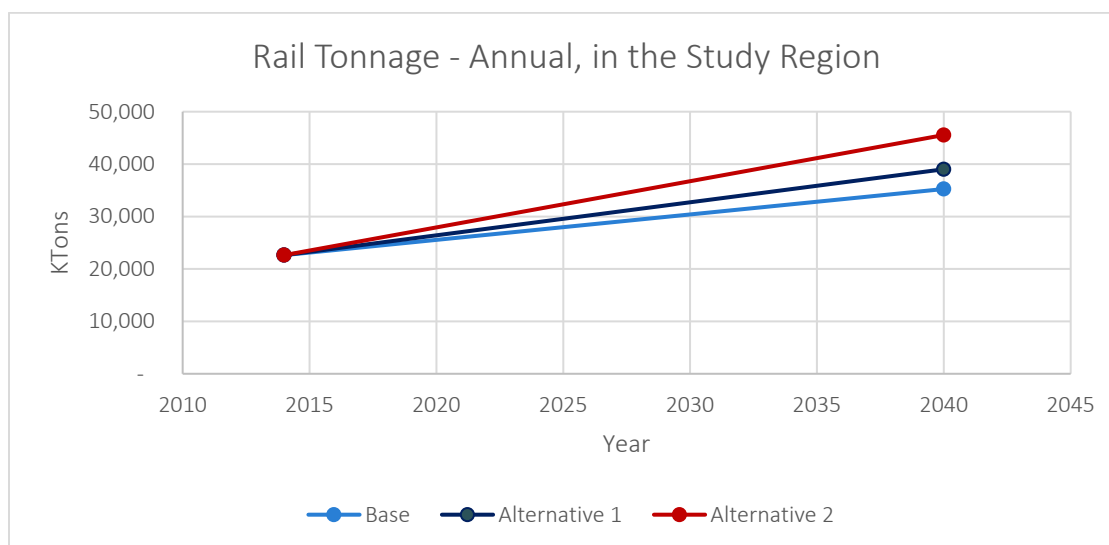


Table 12: Forecast Rail Volumes (kTons) by Scenario –Effects of Site Development 2014-2040⁹

kTons of Rail Freight:	2014	2040	% Growth
Base	22,634	35,246	56%
Alternative 1	22,634	39,017	72%
Alternative 2	22,634	45,551	101%

In addition, Table 13 presents the forecast directional distribution of freight rail movement.

Table 13: Additional Freight Rail Volumes Generated by Scenario Development, % by Direction¹⁰

Flow Type	Alternative 1	Alternative 2
Inbound	82%	71%
Internal	2%	4%
Outbound	16%	25%
<i>Total</i>	<i>100%</i>	<i>100%</i>

Focusing on rail lines that directly affect the Richmond Region, the largest impacts will be on the CSXT Baltimore and Florence Divisions. There are several on-going initiatives that may potentially affect

⁸ Source: EDR Group analysis, using TREDIS vFreight modal commodity flow database

⁹ Source: EDR Group analysis, using TREDIS vFreight

¹⁰ Source: EDR Group analysis, using TREDIS vFreight

Richmond including the Atlantic Gateway, ACCA Yard Improvements, CSXT's Siding Extension Program, and CSX's plans to construct the Carolina Connector Intermodal Rail Terminal (CCX) in Rocky Mount, North Carolina.

To provide reliable rail service, CSXT has partnered with the Virginia Department of Rail and Public Transportation (DRPT) to complete several rail capacity projects that will improve passenger rail service and freight traffic in Virginia and within the Richmond Region. Once completed, the new features will ease train traffic congestion and keep trains moving to better maintain freight schedules.

The largest of the initiatives is Atlantic Gateway, which is a mega program that extends from Washington, D.C., to Norlina, NC, along CSXT's RF&P, Richmond Terminal, Bellwood, Peninsula, and North End Subdivisions. Portions of the S-Line in the Commerce Corridor Study Area would be restored under this program to help provide the necessary connection for the Southeast High Speed Rail Corridor, which would extend from Washington, D.C. to Atlanta, GA and other locations to the south. Prior to restoration of the S-Line, right of way needs to be re-established since the 1987 abandonment of the line. As part of this project, CSX will engage with the Commonwealth in a commitment to enable the Commonwealth to obtain the S Line. The program could include modifications for interlockings, additional tracks at Long Bridge over the Potomac, construction of a third mainline from D.C. to Richmond with a four-track section south of Long Bridge, construction of crossovers and possibly additional / extension / replacement passenger stations for Amtrak and Virginia Railway Express services. Work on the first section of third track construction, Arkendale to North Possum Point, is nearing completion. DRPT will oversee the Atlantic Gateway program beginning in 2017, which is estimated to take 10 to 15 years to complete.

As previously mentioned, Amtrak goes through ACCA Yard when passing through Richmond. Freight and Amtrak must slow down since the tracks go through the center of the yard. Design and construction is in place to shift yard tracks to provide room for two new tracks along the west edge of ACCA yard. This work began in late 2015 and is scheduled for completion in 2018.

As shipper demands require longer trains, CSXT has an active siding extension program in place to extend or connect existing siding tracks. The length of trains is expected to get as long as 15,000 feet. Improvements to sidings or additional mainlines with crossovers will maintain fluidity of rail traffic for the proposed lengths. Capacity improvements such as double tracking from Reams, VA to Carson, VA, south of Collier, VA and adding crossovers are great additions to stay ahead of the potential issues of longer trains and the adverse effects they may pose at highway-railroad grade crossings in proximity to yards and crew change locations.

The CCX Intermodal Terminal in Rocky Mount, NC, will be transformative on the North End Sub since interchanging with east-west routes will most likely occur at existing major rail yards in Richmond and Petersburg. The South End Sub begins in Rocky Mount, which extends to a major rail yard in Florence, SC. The scheduled operation date for the \$270 million CCX Terminal is 2020, which is initially expecting to handle 260,000 containers annually. Rail network improvements north of Rocky Mount must continue to provide fluidity for freight and passenger rail service and mitigate increase truck traffic on I-95.

Completion of the additional third lane of the Panama Canal to handle Post-Panamax ships will increase shipments of containers to east coast ports including major port facilities in Norfolk and Charleston, SC. Improving the existing network deficiencies will be necessary to improve handling of the expected container growth and other products at major existing and new facilities, increasing speeds for freight and future high passenger service, and improving a local transit system to maintain fluidity in the Richmond Region. Flexibility to alter mode-choice decisions and investments will be needed to maintain a quality of life standard and to best serve the interests of residents and businesses in the Richmond Region and the general public that pass through the major north-south corridor of I-95.

4.6 EVALUATION OF DEVELOPMENT ALTERNATIVES

The evaluation of development alternatives' impact on future travel demand considered both auto commuters, and the truck and rail freight volumes generated by new economic activity. The stress test of the regional travel demand model, operational analysis at key intersections, and application of other tools for rail considerations were all used to evaluate future transportation needs throughout the corridor.

5. NEEDS IDENTIFICATION

Based on the transportation and economic analyses described above, a comprehensive list of transportation needs was identified and categorized as Highway-Oriented Needs, Rail-Oriented Needs, Port-Oriented Needs, and Miscellaneous (Policy/Community) Needs. **Table 14** lists the transportation needs identified for the Commerce Corridor.

Table 14: Transportation Needs within the Commerce Corridor Study Area

	Ref #	Transportation Need
Highway-Oriented Needs	H1	Improved connection from Commerce Corridor to I-64 east corridor and RIC / White Oak area
	H2	Improve access from I-95 to industrial corridor within project study area
	H3	Improve ability to bring larger / oversized cargo to RMT via truck
	H4	Address poor pavement condition at key locations in study area
	H5	Improve function and capacity of Commerce Road
	H6	Maintain and enhance I-95 mainline capacity
	H7	Improve truck / auto capacity into and out of Site 1 (Altria / DuPont)
	H8	Improve truck / auto capacity into and out of Site 2 (Alleghany Warehouse)
	H9	Improve truck / auto capacity into and out of Site 3 (RIC / White Oak area)
	H10	Improve truck / auto capacity into and out of Site 4 (Meadowville area)
	H11	Improve development potential of Site 1
Rail-Oriented Needs	R1	Enhance cost-competitiveness of rail access to Richmond Marine Terminal
	R2	Improvements to Deepwater Terminal Industrial Track lead
	R3	Improvements to CSX Bellwood Sub (S-Line)
	R4	Improvements to CSX Peninsula Sub line
	R5	Improvements to CSX Bermuda Hundred Lead
	R6	Improvements to NS Burkeville to West Point line
	R7	Limit at-grade rail crossings along key freight roadways and railways
	R8	Ability to bring larger / oversized cargo to RMT via rail
	R9	Increased ability for Class 1 railroads to accommodate future peak demand
Port-Oriented Needs	P1	Improve access to Richmond Marine Terminal
	P2	Increase rail capacity inside the gates of RMT
	P3	Increase port activity via on-site tenants
	P4	Improve ability for RMT to interact with longer unit trains
	P5	Improve intermodal transfer performance at RMT

Miscellaneous Needs	Ref #	Transportation Need
	P6	Maximize use of Richmond Marine Terminal
	M1	Improve image & competitiveness of Commerce Corridor
	M2	Increase rail grant funding
	M3	Facilitate intermodal and transload between truck, rail and barge
	M4	Comprehensive Industrial Master Plan for RMT and surrounding area
	M5	Improve Multimodal Workforce Access to Jobs
	M6	Reduce community impacts of rail and highway traffic in surrounding residential areas

6. SOLUTION IDENTIFICATION & ASSESSMENT

For each need identified in **Table 14** above, one or more recommended solutions (i.e., infrastructure project or future study) was developed. Potential investment packages of recommended solutions were evaluated for the transportation and economic impact of project implementation. The project solutions identified by transportation need are listed in **Table 15**.

Table 15: Project Solutions by Transportation Need

Ref #	Transportation Need	Project Solution
H1.1	Improved connection from Commerce Corridor to I-64 east corridor and RIC / White Oak area	Construct missing southbound to eastbound movement at I-95 and Route 895 interchange. Project is complex from an engineering perspective, requiring a new flyover tying into an existing interchange. Additional complexity in permitting and approvals as an interstate highway project that also impacts a privately operated asset in Route 895.
H1.2		Increase capacity of the existing two lane section of New Market Road between South Laburnum Avenue and Osborne Turnpike; improvements could take form as a three-lane or four-lane divided roadway section to be defined by Henrico County.
H2.1	Improve access from I-95 to industrial corridor within project study area	Improve Interchange function at I-95/Willis Road. Construct roundabout interchange consistent with preferred alternative in I-95 at Willis Road Interchange Modification Report (IMR).
H2.2		Improved arterial access to James River Industrial Park from I-95/Willis Road Interchange. Construct arterial improvements consistent with preferred alternative in I-95 at Willis Road Interchange Modification Report including following intersections: Willis Rd. at US 1, Willis Rd. at Coach Rd, Coach Rd. at Battery Brooke Parkway, and US 1 at Reymet Rd.
H2.3.1		Phase 1 improvements to interchange function at I-95/Route 10. Improve curve radius on I-95 NB to Route 10 EB off-ramp. Add lane on Route 10 EB from I-95 NB off-ramp to Old Stage Rd to allow free-flow. Add lane on Route 10 EB to I-95 NB ramp. Add 1,800' acceleration lane on I-95 NB.
H2.3.2		Phase 2 improvements to interchange function at I-95/Route 10. Removal of loops, signalize ramps, NB & SB I-95 auxiliary lanes between Route 10 &

Ref #	Transportation Need	Project Solution
		Route 288 (accomplished by solution H2.6), construct 249-space Park & Ride lot at Exit 58.
H2.4.1	Improve access from I-95 to industrial corridor within project study area	Phase 1 of the interstate access study would investigate the feasibility and greatest need for new access in Bellemeade area or improved access in Bells Road area. Once preferred solution is established, Phase 2 would deliver either an IMR (Bells Road) or IJR (Bellemeade) to reflect the needed improvement. (see solution H2.4.2 and H2.4.3).
H2.4.2		Construct interchange modifications at I-95/Bells Road area to improve operational performance. Address deficient design of identified ramps and ramp termini approaching Commerce Road as defined by the IMR proposed in solution H2.4.1.
H2.4.3		Construct I-95 interchange (new access point) in Bellemeade Road/ Commerce Road area.
H2.5.1		Improve interchange function at I-95 / Maury Street. Improve and shift the ramps to Maury Street from I-95 and construct single-lane roundabout at the convergence of the ramps, Maury Street and 4 th Street consistent with project fully funded in VDOT SYIP. UPC #109321.
H2.5.2		Improve operations along Maury Street corridor by: <ul style="list-style-type: none"> a) 1st Street improvements between Maury & Hull, b) Widen Maury between I-95 ramps & Commerce, and c) Concept study for improvements to Maury between Commerce & East 16th St
H2.6		The addition of auxiliary lanes on I-95 on both the northbound and southbound travel lanes between Route 288 and Route 10, or for approximately 1.2 miles consistent with project fully funded in VDOT SYIP. UPC #T19435
H3.1	Improve ability to bring larger / oversized cargo to RMT via truck	Construct 0.7 mile Deepwater Terminal Road extension to Goodes Street
H3.2		Increase horizontal and vertical clearance at two I-95 underpass locations that connect Commerce Road to Deepwater Terminal Rd.
H5.1	Improve function and capacity of Commerce Road	Reconstruct roadway including protected turn lanes, improved entrance curb radii for industrial traffic, bicycle & pedestrian facilities, corridor-wide access management, and a bridge replacement. UPC #15958
H5.2		Additional improvements to the operations and multimodal safety along Commerce Road include: <ul style="list-style-type: none"> a) Operational Enhancements at Hull St intersection b) Ped safety curb extensions between McDonough & Hull c) Signal enhancements at Bellemeade
H6.1	Maintain and enhance I-95 mainline capacity	Conduct operational study of I-95 from Willis Road (Exit 64) to James River Bridge to identify improvements that are needed beyond those identified for Need H2. Such solutions can include physical improvements as well as strategies to help divert thru traffic to parallel facilities (I-295) to preserve existing I-95 capacity.

Ref #	Transportation Need	Project Solution
H6.2	Maintain and enhance I-95 mainline capacity	Implement ITS solutions including cameras and variable message signs along I-95 to improve operations, congestion mitigation and incident management. This is a fully funded project in the VDOT FY 17-22 Six-year Improvement Program at a total cost of \$1.65 million. UPC #107772
H6.3		Widen I-95 between Willis Road (Exit 64) and Route 288 (Exit 62). Improvements include an additional general purpose lane in each direction. Paired with fully funded solution H2.6, the result will be a continuous 4 th general purpose lane between Willis Road and Route 10.
H7.1	Improve truck / auto capacity into and out of Site 1 (Altria / DuPont)	Upon specific redevelopment details at Site 1 (Altria / DuPont), perform necessary traffic study to determine what improvements are needed beyond that included in solution H5. This includes function of Bells Road Access Rd.
H7.2		Construct missing link of Walmsley Boulevard with grade separated crossing of CSX Bellwood Subdivision Line.
H8.	Improve truck / auto capacity into and out of Site 2 (Alleghany Warehouse)	Upon specific redevelopment details at Site 2, perform necessary traffic study to determine what improvements are needed beyond that included in solution H5. This includes function of Commerce Access Rd.
H9.1	Improve truck / auto capacity into and out of Site 3 (RIC / White Oak area)	Perform traffic study of the following roadways near the site: East Williamsburg Road, Technology Blvd, Elko Road, and Airport Drive.
H9.2		Upon specific industrial development details at Site 3, perform traffic study of the I-295 facility and four nearby interchanges in close proximity to the RIC/White Oak area.
H10.1	Improve truck / auto capacity into and out of Site 4 (Meadowville area)	Construct project to improve safety & operations along Route 10 from Bermuda Triangle Road through Meadowville Road / Old Bermuda Hundred Road. Project UPC #101020 is fully funded in the VDOT SYIP and scheduled for completion in FY 2019.
H10.2		Widen Meadowville Technology Parkway to four lanes at the interchange of I-295 to include the construction of a new bridge over I-295. Sidewalk will be built on a portion of the project.
H10.3		Widen North Enon Church Road to four lanes from Meadowville Technology Parkway to Route 10 / East Hundred Road.
H10.4		Upon specific redevelopment details at Site 4, perform necessary traffic study to determine what area improvements are needed on roadways such as Allied Road, Meadowville Road, and East Hundred Road beyond that included in solution H10.1.
H11.	Improve development potential of Site 1	Relocation of Commerce Road to be adjacent to I-95 between Walmsley Blvd and Trenton Avenue to allow for a larger contiguous land mass for development at Site 1.
R1.1	Enhance cost-competitiveness of rail access to Richmond Marine Terminal	Implement short-line service or alternative operating agreement for the rail lead between the RMT and CSX South Yard. The lead track is owned by the City of Richmond, which grants operating rights to CSX to provide rail service. Evolving market conditions may make alternative arrangements and/or participation by another operator feasible in the future.

Ref #	Transportation Need	Project Solution
R1.2		Extend existing Deepwater Terminal rail lead north of current I-95 underpass connection to CSX South Yard to provide additional rail access to industrial sites as well as connect to the existing Norfolk Southern rail spur (Rocketts Spur) which terminates near the Richmond Wastewater Treatment Plant. Will require roughly 1-mile of new trackage
R2.1	Improvements to Deepwater Terminal Industrial Track lead	Further improve physical condition and operational speed of existing Deepwater Terminal Industrial Track lead. This project would go beyond programmatic maintenance to include future upgrades meant to accommodate additional rail volume in the future, should be considered as demand intensifies along the Deepwater Terminal Industrial track lead.
R2.2		Extend existing or construct new siding along Deepwater Terminal Industrial Track approximately 1-mile north of RMT, on the west side of Deepwater Terminal Rd. in the vicinity of Sims Metal. This improvement will allow additional siding capacity for storing and building longer trains accessing the RMT area. Approximately 1,800' of siding exists today.
R3.1	Improvements to CSX Bellwood Sub (S-Line)	Construct additional trackage along CSX Bellwood Sub (S-Line) and bridge over James River as contemplated in the Tier II EIS for Richmond-to-Raleigh High Speed Rail and DC2RVA High Speed Rail.
R3.2		Construct improvements to CSX South Yard (east of Manchester area) to allow for increased ability to break up long trains and store rail cars and tankers until industrial customers are ready. Current yard is at capacity. These improvements will also allow South Yard to serve as better reliever to Acca (Richmond Yard).
R3.3		Construct sidings and leads as needed to provide rail access to Site 2 (Alleghany Warehouse) and Site 1 (Altria / DuPont) development areas along Commerce Road.
R4.	Improvements to CSX Peninsula Sub line	Construct sidings and leads as needed to provide rail access to select parcels within Site 3 (RIC/White Oak area).
R5.	Improvements to CSX Bermuda Hundred Lead	Construct sidings and leads as needed to provide rail access to select parcels within Site 4 (Meadowville area).
R6.	Improvements to NS Burkeville to West Point line	Construct sidings and leads as needed to provide rail access to select parcels within Site 3 (RIC/White Oak area).
R7.	Limit at-grade rail crossings along key freight roadways and railways	Grade separate key crossings as they relate to increased usage of the CSX Bellwood Sub (S-line) for both freight & future high-speed rail.
R8.	Ability to bring larger / oversized cargo to RMT via rail	Increase horizontal and vertical clearance at triple crossing to allow transport of high cube box cars.
R9.	Increased ability for Class 1 railroads to accommodate future peak demand	Add more 'locals' and crews as needed to serve future rail demand along industrial corridor(s).

Ref #	Transportation Need	Project Solution
P1.1	Improve access to Richmond Marine Terminal	Increase RMT business hours and/or establish off-hours secure laydown yard(s). This proposal is related to Solutions P1.2 and P1.3 in that vehicular access under I-95 would help facilitate a secure laydown yard just west of I-95 (DuPont property). If P1.2 and P1.3 are unsuccessful, it's possible a secure laydown yard could be located on the same side of I-95 as RMT.
P1.2		Conduct study of proposal to allow vehicle traffic to utilize existing underpass of I-95 adjacent to RMT property. This underpass is currently used as a utility corridor and might be able to support vehicle movement if improved. 'Low-clearance' freight movers may be part of solution here. See Solution H3.1. Solution P1.2 also relates to Solution P1.1.
P1.3		Construct vehicle access under I-95 at current utility crossing to allow flow of select traffic from Commerce Road to RMT property. See solutions P1.1 and P1.2.
P1.4		Conduct study of gate operations at RMT with goal of maintaining gate capacity during times of increased activity via truck and to accommodate future anticipated volumes.
P2.	Increase rail capacity inside the gates of RMT	Conduct rail operations study inside the RMT facility to identify most cost-effective investment to improve rail capacity & operations. Study to follow completion of 'Richmond Marine Terminal Rail Improvements' project funded at \$3.24 million in DRPT SYIP.
P3.	Increase port activity via on-site tenants	Develop vacant 14-acres for users that rely on barge, truck and rail. Pursue long-term tenant lease agreements for existing on-site warehouse space.
P4.	Improve intermodal transfer performance at RMT	Re-pave north wharf area, repair dilapidated at-grade rail crossings, replace fender along wharf wall. UPC #109266
P5.	Maximize use of Richmond Marine Terminal	Seek more balanced and diversified mix of RMT users / modes (e.g. more rail, customers that keep port busy during slower seasons).
M1.	Improve image & competitiveness of Commerce Corridor	Explore branding Commerce Corridor to improve image, recognition and competitiveness. Consider tax incentives and/or establishment of business association to encourage visual improvements in Corridor. Provide for services vital to businesses, including broadband connectivity, access to restaurants and amenities. Improve signage and wayfinding.
M2.	Increase grant funding	Encourage increased ceiling of Rail Industrial Access Grant program to allow for Class I railroads to respond quickly to development proposals.
M3.	Facilitate intermodal and transload between truck, rail and barge.	Encourage and/or incentivize rail operators to offload at RMT and barge to POV facilities in Hampton Roads.
M4.	Comprehensive Industrial Master Plan for RMT & surrounding area	Implement master land use planning process to integrate near-terminal development efforts with on-terminal activities, to inventory rail accessible development and redevelopment sites not currently utilizing rail, and to consider residential development pressures on nearby industrial properties
M5.1		Led by each respective local jurisdiction to plan for housing and / or transit service in proximity to the four sites of future increased job activity: Site 1

Ref #	Transportation Need	Project Solution
		(Altria/DuPont), Site 2 (Alleghany Warehouse), Site 3 (RIC/White Oak area), and Site 4 (Meadowville area).
M5.2	Improve Multimodal Workforce Access to Jobs	Promote the importance of workforce training opportunities in advance of new jobs arriving. Identify champion to spearhead workforce development efforts catered to the needs of businesses in the Commerce Corridor.
M5.3		Improve multimodal connectivity including transit, walking, and biking modes. Focus efforts on high-impact local priority projects linking areas of existing and future employment to residential areas and workforce.
M6.1	Reduce community impacts of rail and highway traffic through surrounding residential areas	Truck Routing: Designate by signing and wayfinding preferred truck routes to guide heavy vehicles toward roadways better equipped to accommodate their size and to minimize residential interaction/community impacts.
M6.2		Implement strategies to minimize freight-generated noise pollution, including technology improvements at at-grade rail crossings to allow trains to advance without sounding horns in or near residential areas. Noise mitigation could also take the form of sound walls at select locations. Cost estimate based on 3-miles of sound walls. Related to Solution R7.
M6.3		Community Engagement: Develop Community Impacts Analysis for the Commerce Corridor study area to analyze population characteristics, propose community and health impacts mitigation strategies, and identify public engagement strategies to inform locality outreach efforts as projects advance to implementation.

6.1 SOLUTIONS BUNDLING

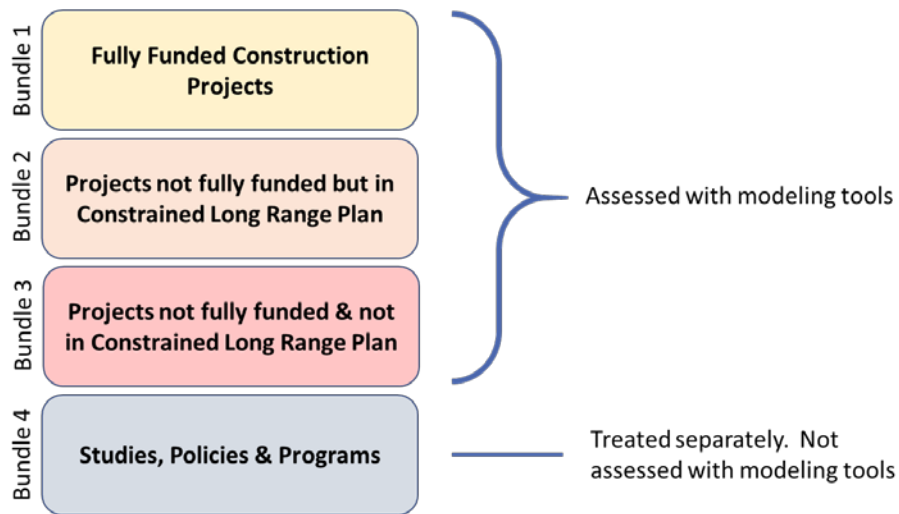
Bundling of the project solutions was intended to group individual improvements logically for the purposes of modeling transportation and economic impacts of various levels of infrastructure investment. Four discrete bundles are described as follows and illustrated in **Figure 21**:

- Bundle One: All construction projects currently fully funded
- Bundle Two: Projects identified in the RRTPO's Constrained Long Range Plan but not fully funded
- Bundle Three: Projects not identified in the RRTPO's Constrained Long Range Plan and not fully funded
- Bundle Four: Studies, policies, or programs

The assessment approach frames a series of what-ifs for the corridor, What is the expected transportation and economic impact of this investment by 2040?:

- Bundle One: If the region constructed only the fully-funded projects committed for construction?
- Bundle Two: If the region were able to construct both fully-funded projects and the project concepts included in the RRTPO's plan2040 fiscally-constrained plan?
- Bundle Three: If the region were able to construct the full vision list of solutions as contemplated in the Commerce Corridor?

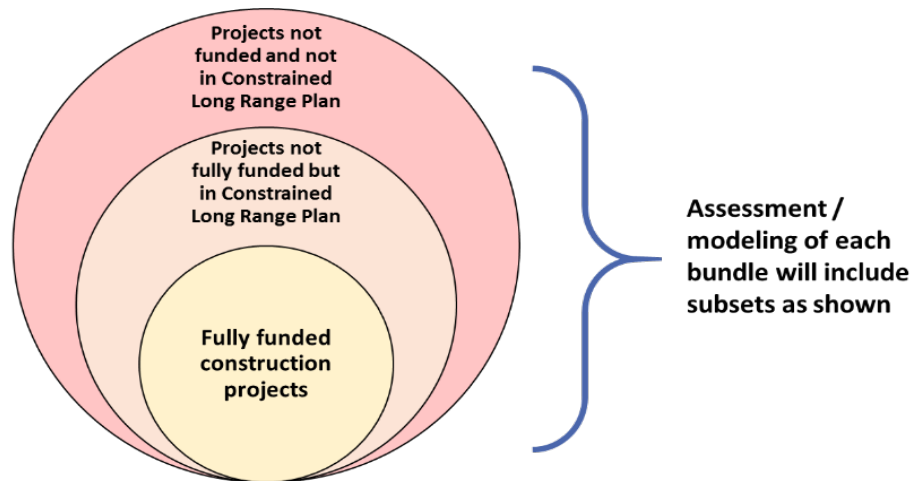
Figure 21: Project Bundles for Assessment



For the purposes of conducting the transportation and economic assessments, the project bundles were assessed as follows and illustrated in Figure 22:

- Bundle One
- Bundle One + Bundle Two
- Bundle One + Bundle Two + Bundle Three

Figure 22: Project Bundles for Assessment



6.2 TRANSPORTATION ASSESSMENT

The transportation assessment of the solution bundles included both a qualitative and quantitative assessment of the solutions. The qualitative assessment reported anticipated multimodal benefits in the areas of:

- Congestion relief and travel time improvement
- Transportation network connectivity improvements
- Enhancements to intermodal performance
- Improve last mile access to or transportation function of RMT
- Improve travel safety
- Improve workforce or image / marketability of corridor

The quantitative assessment of the multimodal solutions used the regional travel demand model and operational models to identify spot locations to report anticipated travel impacts. This analysis was performed for each of the three bundles of improvements compared to the future baseline scenario.

TRANSPORTATION ASSESSMENT RESULTS

The Richmond Regional Travel Demand Model was used to assess the impacts of each bundle of projects described earlier in this Section. To develop a future baseline scenario, the land uses and socioeconomic data from the 2040 Regional Model were combined with the transportation network from the 2012 regional model. To determine the operational deficiencies resulting from the build-out of the proposed development sites, the land use and socioeconomic data for each development site were added to the future baseline model. The future baseline model was compared to the updated model with the increased land use at each development site; the only difference between the two models is the additional land use and employment generated by the development sites. Through this process, the effects of the site development on the existing transportation network were shown by locations that indicated increased congestion when compared to the future baseline model. To determine the positive impacts for Bundle One, the transportation network improvements from Bundle One were added into the future model and the results were again compared; any decrease in congestion was attributed to the construction of the Bundle One projects. The projects from Bundle Two were then added to the regional network so projects from both Bundle One and Bundle Two were included. The results were again compared; any operational improvements were attributed to the projects included in Bundle Two. This process was completed again for Bundle Three to determine the operational improvements from those projects.

Summarized results of each model comparison are shown in **Table 16** for spot locations relevant to freight and commuter travel. A *Poor* assessment (shown as a red box) indicates that the facility operates with a Level of Service (LOS) E or F in the given scenario. A *Fair* assessment (orange box) indicates a LOS D or C. A *Good* assessment indicates a LOS A or B. As shown in the table, most transportation facilities are expected to improve at least one assessment level (Poor to Fair or Fair to Good) as a result of the project bundles; however, there are a few facilities that do not see a significant improvement. East Williamsburg Road is one example; this facility is projected to be over-capacity for all of the future bundle scenarios. A proposed solution for this location is to conduct a traffic study for the facilities around Site 3 to determine the proper roadway improvements once the land use for Site 3 is known. The reason why the facility did not show an operational improvement is shown in the last column of **Table 16**.

Table 16: 2045 Transportation Operational Assessment Results

Facility	From	To	Type	No-Build	Bundle 1	Bundle 2	Bundle 3	Explanation for unexpected results
Maury Street	I-95	Jefferson Davis Hwy	Roadway link	Poor	Poor	Poor	Good	
I-95	Maury Street	Route 288	Roadway link	Poor	Poor	Poor	Poor	ITS strategies cannot be coded into the regional model. It is not expected that ITS improvements will greatly improve I-95 operations
I-95	Route 288	Route 10	Roadway link	Poor	Fair	Fair	Fair	I-95 does not have sufficient capacity for the vehicles generated by regional growth which includes increased development at sites #1 & #2
W Hundred Road (Route 10)	Rivers Bend	Old Stage Rd	Roadway link	Poor	Good	Good	Good	
W Williamsburg Rd (Route 60)	Airport Drive	Beulah Rd	Roadway link	Poor	Fair	Fair	Fair	
E Williamsburg Rd (Route 60)	I-295	Technology Blvd	Roadway link	Poor	Poor	Poor	Poor	Universe of Needs Study (H9.1) will develop recommendations to improve operations
E Williamsburg Rd (Route 60)	Meadow Road	Route 33	Roadway link	Poor	Poor	Poor	Poor	Universe of Needs Study (H9.1) will develop recommendations to improve operations
Elko Road	Route 60	Elko Tract Road	Roadway link	Poor	Poor	Poor	Poor	Universe of Needs Study (H9.1) will develop recommendations to improve operations
I-64	I-295	Route 33	Roadway link	Poor	Poor	Poor	Poor	I-64 does not have sufficient capacity for the vehicles generated by regional growth which includes increased development at site #3
Memorial Drive	Technology Blvd	Portugee Rd	Roadway link	Poor	Poor	Good	Good	
I-295	Through Route 60 Interchange		Roadway link	Poor	Poor	Poor	Poor	I-295 does not have sufficient capacity for the vehicles generated by regional growth which includes increased development at site #4
Commerce Road	Maury Street	Trenton Ave	Roadway link	Fair	Good	Good	Good	
I-95 / Willis Road	Interchange movements		Interchange	Poor	Poor	Good	Good	
I-95 / Route 10	Interchange movements		Interchange	Poor	Fair	Good	Good	
I-95 / Bells Rd Interchange	Interchange movements		Interchange	Poor	Poor	Poor	Good	
I-95 / Maury Street Interchange	Interchange movements		Interchange	Poor	Good	Good	Good	
CSX Bellwood Sub (S-Line)	Rail improvements		Rail	Fair	Fair	Fair	Good	
Commerce Road / Bells Rd Access Rd	Intersection movements		Intersection	Fair	Good	Good	Good	
Deepwater Terminal Road / Bells Rd Access Rd	Intersection movements		Intersection	Fair	Good	Good	Good	
Bells Road / Jefferson Davis Hwy	Intersection movements		Intersection	Poor	Poor	Poor	Fair	
Bells Road / Ruffin Road	Intersection movements		Intersection	Good	Good	Good	Good	
Commerce Road / Bellmeade Rd	Intersection movements		Intersection	Fair	Good	Good	Good	
W Hundred Road (Route 10) / Rivers Bend Blvd	Intersection movements		Intersection	Poor	Good	Good	Good	
Meadowville Road / Meadowville Technology Pkwy	Intersection movements		Intersection	Good	Good	Good	Good	
E Williamsburg Road (Route 60) / Technology Blvd	Intersection movements		Intersection	Poor	Poor	Poor	Poor	Universe of Needs Study (H9.1) will develop recommendations to improve operations
E Williamsburg Road (Route 60) / Elko Rd	Intersection movements		Intersection	Poor	Poor	Poor	Poor	Universe of Needs Study (H9.1) will develop recommendations to improve operations
E Williamsburg Road (Route 60) / Airport Drive	Intersection movements		Intersection	Poor	Fair	Fair	Fair	

Additional detail about the future transportation conditions assessment can be found in **Appendix C**.

A cost estimate was developed for each recommended project in the bundles. The projects included in Bundle One are all currently funded and their costs have already been developed as part of the project development process. Bundles Two and Three represent improvements that have not procured funding. In these cases, the VDOT Statewide Planning Cost Estimate Tool was used to develop cost estimates. For those project types not referenced in the VDOT Cost Estimate Tool, estimates were developed through the online research of similar projects throughout the state. Cost estimates for the studies in Bundle Four were developed based on professional experience with similar studies. The costs for each project, normalized to 2017 dollars, along with the source used to develop each estimate are included in the **Appendix B**. Because some project costs have been converted to 2017 dollars, some project costs may not directly reflect the published costs from other documents or sources.

The planning-level cost estimates provided the study team with important information about the scale of the project and burden of funding required. This helped to shape decisions made regarding grouping into short-, medium-, and long-term categories and also provided input to the regional economic impact described in the following **Section 6.3**.

6.3 ECONOMIC ASSESSMENT

To quantify economic impacts of the improvements, the bundles were assessed for how they affect the economy in two ways; 1) how the projects change transportation efficiency and 2) how improvement expenditures affect the economy. Data required for this analysis were derived from the following sources:

- Transportation efficiency data were obtained directly from the Transportation Assessment modeling of network-scale impacts.
- Expenditure data was provided from the Solution Identification task development of the bundled improvement projects and cost estimates.

Travel cost and time savings attributable to changes in travel distances, speeds, and levels of congestion were based on changes to the transportation network reviewed by the transportation assessment of project bundles. Cost and time savings for business travelers, on-the-clock workers, commuters, and freight movements results in changes in business costs. Cost savings can be reinvested into businesses to improve competitiveness and productivity. Each industry sector has a range of possible uses for these cost savings, including investing in capital, lowering prices, or increasing shareholder returns. The TREDIS analysis system takes these factors into account, treating each industry sector individually, and calculates the economic impacts of business responses to performance changes and reports the associated changes in business sales, value added, labor income and employment by industry sector.

The TREDIS system also analyzes how lower transportation costs enable households to reallocate money saved on travel to other consumption categories.

The changes in business and household spending patterns and investment result in additional impacts up the supply chain and induced impacts when spending results in additional wages for workers.

BUNDLED PROJECT IMPACTS EVALUATION

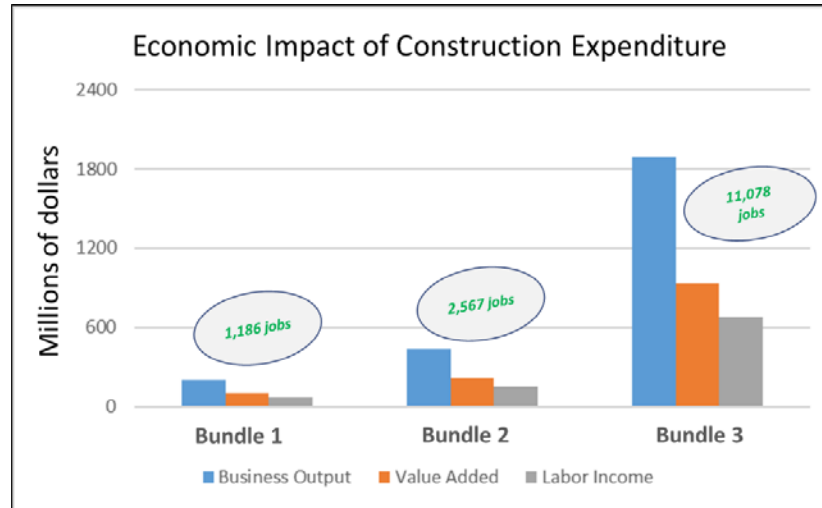
Bundled projects with modeled network impacts were used to assess economic impacts. Economic impacts from individual projects were not assessed due to the scale of many of the projects. Because of the nature of this study, many of the projects were also proposed to work together to improve the transportation system in the corridor. Just as network results for three bundles were provided in the Transportation Assessment, the Economic Assessment focuses on the outcomes possible at these levels of investment to capture the full range of interactions between individual investments.

Projects which, together as a bundle, generate greater improvements in travel time, reliability, and reductions in route circuitry, generate greater economic impacts. The projects as a bundle improve the performance of the regional transportation network. The improvements in network performance are estimated in the travel assessment. Travel improvements were measured at the regional level, as well as for bundles of projects. The economic assessment incorporates the regional approach because it is important to consider the effects of investments on the entire network and not just a single facility. For example, although it may be possible to identify time savings associated with a particular interchange, the vehicles passing through that interchange belong to companies and households from across the region as well as those traveling to origins and destinations outside the study area. For example, when businesses increase productivity, and pay additional worker wages, TREDIS can estimate what portion of those wages occur in the study region regardless of the specific location of the transportation improvement that supports them.

ECONOMIC ASSESSMENT RESULTS

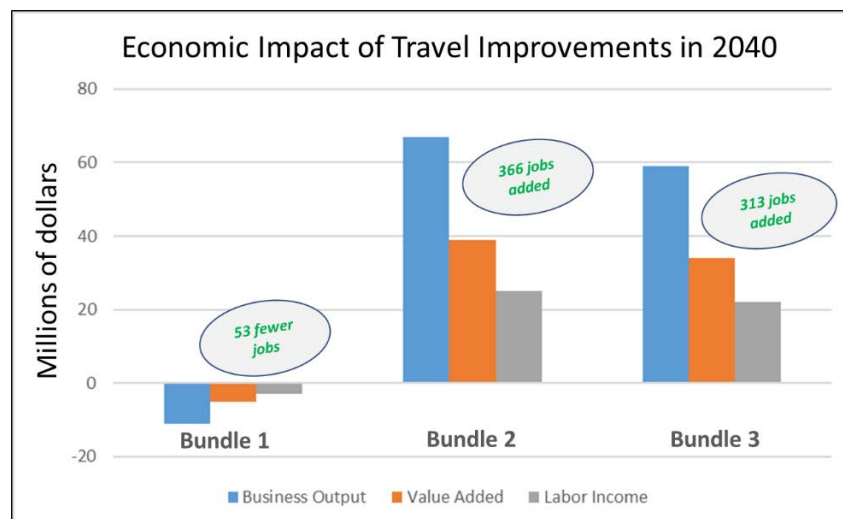
The economic assessment of the investment packages quantifies the economic impacts using measures of employment, wages and output effects of the improvements on the region's economy. The output measures used include the business output, in terms of sales by businesses, and value added, which represents the difference between a business' sales and the cost of its inputs. The economic impacts associated with construction of projects included in the investment spending for each of the three project bundles are shown in **Figure 23**. As the overall level of investment increases when projects are added in Bundles Two and Three, the total economic effect on the region increases. Construction impacts were calculated for the total number of individuals employed as if all work was completed in a single year because data on multi-year project timing is imprecise or unavailable. This means that if investment Bundle Three was completed over 10 years, some jobs may exist in multiple years and therefore the total number of individuals in each year could be lower, but would probably average around 1,100. These jobs include both direct and indirect construction employment. Indirect employment includes associated workers providing project management, construction supplies, accountants, and all the jobs supported by the spending of additional take home wages of direct and indirect workers in industries like retail, groceries, and other household spending categories – all tailored specifically to the construction in the region.

Figure 23: Economic Impact of Construction Expenditure



There are economic impacts associated with travel characteristic changes with the three improvement bundles that accrue over the long-term. These impacts are illustrated for 2040 in **Figure 24**. These long-term effects vary year by year based on increased economic activity associated with the investment bundles and related traffic growth and system performance as modeled in the transportation assessment. The results of the economic assessment estimates follow the transportation assessment estimates, where the projects within Bundle One see a decrease transportation efficiency for the region. These network-scale changes result in slightly higher costs for business, including those shipping and receiving freight, as well as for households, which result in a small loss of regional economic activity and employment in 2040. It is possible that without any of the three bundles of improvements, the deterioration in performance could be worse than under Bundle One. Economic development could end up suppressed on one or more of the development sites and along the Commerce Road corridor in general, taking away economic impacts otherwise generated by the investment bundles.

Figure 24: Economic Impact of Travel Improvements in 2040



Investment Bundles Two and Three generate positive economic outcomes, with the largest impacts estimated for Bundle Two. The improvements in Bundles Two and Three result in better long-term system performance, saving businesses and workers time and transportation expense. Bundle Two boosts single-year business sales by over \$67 million in 2040 and supports over 350 more jobs in the region than if the transportation network hadn't been improved. Roughly 16 percent of sales and 12 percent of value added benefits accrue to manufacturing companies in the region, which depend heavily on efficient freight transportation for both their production inputs and outputs. Most of the regional economy is comprised of businesses in the service sector and estimated gains in jobs accrue most to the professional and business services sectors (33 percent). Those service sectors benefit from business travelers and commuters having faster, more reliable trips. Some of the spending associated with Bundle Three is for rail and port improvements that were not well-captured by the regional highway travel demand model used for the network-level bundled transportation assessment. This means the economic impact estimates are conservative as they are based on the predominant highway system travel improvement assessment, and exclude likely positive impacts from other projects such as those marketing and workforce investments that could support jobs.

6.4 ASSESSMENT SUMMARY (OR ASSESSMENT CONCLUSIONS)

Based on the results of the transportation and economic assessments it is apparent that investment in infrastructure projects in the Commerce Corridor will bring positive direct and indirect benefits to the study area and wider Richmond Region. The assessments provide justification for developing and pursuing projects via an implementation plan of short-, medium-, and long-term projects as described in the following section.

The transportation assessment revealed that not all deficiencies are addressed by the solutions identified in this study. Some significant regional transportation challenges would still exist, such as future congestion on the interstate system. These challenges are well-known by regional transportation entities and will be addressed through ongoing planning and programming processes.

The economic assessment clearly differentiated between the 'stimulus' benefits associated with the construction of identified solutions as well as the secondary economic benefits to the region resulting from increased long-term jobs through industrial activity.

Both the transportation and economic assessment indicate a positive impact to the region from the actions identified in this study process.

7. IDENTIFICATION OF SHORT-, MEDIUM-, & LONG-TERM SOLUTIONS

For implementation planning purposes, the project solutions were organized into short-, medium-, and long-term timeframes based on anticipated implementation considerations such as cost, funding status, and complexity among other criteria. Criteria for each timeframe are summarized below.

7.1 SHORT-TERM CRITERIA

Solutions are marked as short-term if the activity could generally be completed within a 10-year timeframe and has at least three of the following attributes:

- Relatively low cost (generally \$0 to \$50m)
- There exists a current need
- Funding is in place
- Not waiting for something else to occur before proceeding (e.g. not waiting on development to occur, federal, state or local approvals required)
- The action would help to market the area for industrial redevelopment
- Project Champion is identified

7.2 MEDIUM-TERM CRITERIA

Solutions are marked as medium-term if the activity could generally occur in the 10 to 20-year timeframe and has at least three of the following attributes:

- Higher cost than short-term solutions & generally up to \$100m
- Solution is not fully funded
- Solution is based on needs identified in the 10 to 20-year timeframe
- Requires more complex project delivery such a multi-jurisdiction, public and private infrastructure, multiple funding sources, federal, state or local approvals
- Waiting for other activities to occur before it makes sense to pursue (e.g. waiting for clarity on nature & intensity of industrial redevelopment, increased rail demand at port)

7.3 LONG-TERM CRITERIA

Solutions are marked as long-term if the activity would realistically occur beyond the 20-year timeframe and has at least two of the following attributes:

- Higher cost than short-term and medium-term solutions and generally above \$100m
- Solution is not fully funded
- Solution is based on needs identified in the 20+ year timeframe
- Requires very complex project delivery such a multi-jurisdiction, public and private infrastructure, multiple funding sources, or significant federal, state or local approvals
- Waiting for other activities to occur before it makes sense to pursue (e.g. waiting for clarity on nature & intensity of industrial redevelopment, increased rail demand at port)

8. IMPLEMENTATION PLAN / ROADMAP

The results of the transportation and economic analyses of the solution bundles informed the Implementation Plan of short-, medium-, and long-term infrastructure priorities positioned to compete

for federal, state, and regional funds. The short-, medium-, and long-term solutions are listed in **Tables 17, 18, and 19**.

One page factsheets were developed for each individual project solution. The briefs are standalone snapshots of the implementation status of each project solution and are intended to be regularly updated as the solutions move through the process. Each solution brief includes a summary of the need and project, the modal features, a location map, funding and project development information, and implementation status. The individual project solutions sheets are included in the *Commerce Corridor Implementation Plan*.

Table 17: Short-Term Project Solutions

Ref #	Short-Term Project Solution
H2.3.1	<p>I-95/Route 10 Interchange (Phase 1)</p> <p>Phase 1 improvements to interchange function at I-95 / Route 10. Improve curve radius on I-95 NB to Rte 10 EB off-ramp. Add lane on Rte 10 EB from I-95 NB off-ramp to Old Stage Rd to allow free-flow. Add lane on Rte 10 EB to I-95 NB ramp. Add 1,800' acceleration lane on I-95 NB.</p>
H2.3.2	<p>I-95/Route 10 Interchange (Phase 2)</p> <p>Phase 2 improvements to interchange function at I-95 / Route 10. Removal of loops, signalize ramps, NB & SB I-95 auxiliary lanes between Route 10 & Route 288 (accomplished by H2.6), construct 249-space Park & Ride lot at Exit 58.</p>
H2.4.1	<p>I-95 at Commerce Road Access Study</p> <p>Phase 1 of the interstate access study would investigate the feasibility and greatest need for new access in Bellemeade area or improved access in Bells Road area. Once a preferred solution is established, Phase 2 would deliver either an IMR (Bells Road) or IJR (Bellemeade) to reflect the needed improvement. (see solution H2.4.2 and H2.4.3).</p>
H2.5.1	<p>I-95/Maury Street Interchange Improvement</p> <p>Improve interchange function at I-95 / Maury Street. Improve and shift the ramps to Maury Street from I-95 and construct single-lane roundabout at the convergence of the ramps, Maury Street and 4th Street consistent with project fully funded in VDOT SYIP. UPC #109321.</p>
H2.6	<p>I-95 Auxiliary Lanes</p> <p>The addition of auxiliary lanes on I-95 on both the northbound and southbound travel lanes between Route 288 and Route 10, or for approximately 1.2 miles consistent with project fully funded in VDOT SYIP. UPC #T19435</p>
H3.1	<p>Deepwater Terminal Road Extension</p> <p>Construct 0.7 mile Deepwater Terminal Road extension to Goodes Street.</p>
H5.1	<p>Commerce Road Improvements</p> <p>Reconstruct roadway including protected turn lanes, improved entrance curb radii for industrial traffic, bicycle & pedestrian facilities, corridor-wide access management, and a bridge replacement. UPC #15958</p>

Ref #	Short-Term Project Solution
H5.2	<p>Commerce Road Area Improvements</p> <p>Additional improvements to the operations and multimodal safety along Commerce Road include:</p> <ul style="list-style-type: none"> a) Operational Enhancements at Hull St intersection b) Ped safety curb extensions between McDonough & Hull c) Signal enhancements at Bellemeade
H6.1	<p>I-95 Operational Study</p> <p>Conduct operational study of I-95 from Willis Road (Exit 64) to James River Bridge to identify improvements that are needed beyond those identified for Solution H2. Such solutions can include physical improvements as well as strategies to help divert thru traffic to parallel facilities (I-295) to preserve existing I-95 capacity.</p>
H6.2	<p>I-95 ITS Improvements</p> <p>Implement ITS solutions including cameras and variable message signs along I-95 to improve operations, congestion mitigation and incident management. This is a fully funded project in the VDOT FY 17-22 Six-year Improvement Program at a total cost of \$1.65 million. UPC #107772</p>
H9.1	<p>RIC/White Oak Traffic Study</p> <p>Perform traffic study of the following roadways near the site: East Williamsburg Road, Technology Blvd, Elko Road, and Airport Drive.</p>
H10.1	<p>Route 10 Improvements</p> <p>Construct project to improve safety & operations along Route 10 from Bermuda Triangle Road through Meadowville Road / Old Bermuda Hundred Road. Project UPC #101020 is fully funded in the VDOT SYIP and scheduled for completion in FY 2019.</p>
H10.2	<p>Meadowville Technology Parkway Widening</p> <p>Widen Meadowville Technology Parkway to four lanes at the interchange of I-295 to include the construction of a new bridge over I-295. Sidewalk will be built on a portion of the project.</p>
H10.3	<p>North Enon Church Road Widening</p> <p>Widen North Enon Church Road to four lanes from Meadowville Technology Parkway to Route 10 / East Hundred Road.</p>
R9.	<p>Rail Service Expansion</p> <p>Add more 'locals' and crews as needed to serve future rail demand along industrial corridor(s).</p>
P1.1	<p>RMT Off-Hours Delivery Solutions</p> <p>Increase RMT business hours and/or establish off-hours secure laydown yard(s). This proposal is related to Solutions P1.2 and P1.3 in that vehicular access under I-95 would help facilitate a secure laydown yard just west of I-95 (DuPont property). If P1.2 and P1.3 are unsuccessful, it's possible a secure laydown yard could be located on the same side of I-95 as RMT.</p>
P1.2	<p>RMT New Access Point Feasibility Study</p> <p>Conduct study of proposal to allow vehicle traffic to utilize existing underpass of I-95 adjacent to RMT property. This underpass is currently used as a utility corridor and might be able to support vehicle movement if improved. 'Low-clearance' freight movers may be part of solution here. See Solution H3.1. Solution P1.2 also relates to Solution P1.1.</p>

Ref #	Short-Term Project Solution
P1.3	<p>RMT New Access Point</p> <p>Construct vehicle access under I-95 at current utility crossing to allow flow of select traffic from Commerce Road to RMT property. See solutions P1.1 and P1.2.</p>
P1.4	<p>RMT Gate Operations Study</p> <p>Conduct study of gate operations at RMT with goal of maintaining gate capacity during times of increased activity via truck and to accommodate future anticipated volumes.</p>
P2.	<p>RMT Inside-the-Gate Rail Operations Study</p> <p>Conduct rail operations study inside the RMT facility to identify most cost-effective investment to improve rail capacity & operations. Study to follow completion of 'Richmond Marine Terminal Rail Improvements' project funded at \$3.24 million in DRPT SYIP.</p>
P3.	<p>Attract On-Site Tenants to RMT</p> <p>Develop vacant 14-acres for users that rely on barge, truck and rail. Pursue long-term tenant lease agreements for existing on-site warehouse space.</p>
P4.	<p>RMT Intermodal Transfer Improvements</p> <p>Re-pave north wharf area, repair dilapidated at-grade rail crossings, replace fender along wharf wall. UPC #109266</p>
P5.	<p>RMT Business Development and Diversification</p> <p>Seek more balanced and diversified mix of RMT users / modes (e.g. more rail, customers that keep port busy during slower seasons).</p>
M1.	<p>Image & Competitiveness of Commerce Corridor</p> <p>Explore branding Commerce Corridor to improve image, recognition and competitiveness. Consider tax incentives and/or establishment of business association to encourage visual improvements in Corridor. Provide for services vital to businesses, including broadband connectivity, access to restaurants and amenities. Improve signage and wayfinding.</p>
M2.	<p>Rail Industrial Access Grant Program Expansion</p> <p>Encourage increased ceiling of Rail Industrial Access Grant program to allow for Class I railroads to respond quickly to development proposals.</p>
M3.	<p>Intermodal Business Development and Incentives</p> <p>Encourage and/or incentivize rail operators to offload at RMT and barge to POV facilities in Hampton Roads.</p>
M4.	<p>RMT & Commerce Road Area Land-Use Plan</p> <p>Implement master land use planning process to integrate near-terminal development efforts with on-terminal activities, to inventory rail accessible development and redevelopment sites not currently utilizing rail, and to consider residential development pressures on nearby industrial properties.</p>
M5.1	<p>Local Initiatives for Workforce Access to Jobs</p> <p>Led by each respective local jurisdiction to plan for housing and / or transit service in proximity to the four sites of future increased job activity: Site 1 (Altria/DuPont), Site 2 (Alleghany Warehouse), Site 3 (RIC/White Oak area), and Site 4 (Meadowville area).</p>

Ref #	Short-Term Project Solution
M5.3	Multimodal Connectivity to Jobs Improve multimodal connectivity including transit, walking, and biking modes. Focus efforts on high-impact local priority projects linking areas of existing and future employment to residential areas and workforce.
M6.1	Truck Routing and Wayfinding Truck Routing: Designate by signing and wayfinding preferred truck routes to guide heavy vehicles toward roadways better equipped to accommodate their size and to minimize residential interaction/community impacts.
M6.3	Community Impacts Analysis Community Engagement: Develop Community Impacts Analysis for the Commerce Corridor study area to analyze population characteristics, propose community and health impacts mitigation strategies, and identify public engagement strategies to inform locality outreach efforts as projects advance to implementation.

Table 18: Medium-Term Project Solutions

Ref #	Medium-Term Project Solution
H1.2	New Market Road (Route 5) Widening Increase capacity of the existing two lane section of New Market Road between South Laburnum Avenue and Osborne Turnpike; improvements could take form as a three-lane or four-lane divided roadway section to be defined by Henrico County.
H2.1	I-95/Willis Road Interchange Improve Interchange function at I-95/Willis Road. Construct roundabout interchange consistent with preferred alternative in I-95 at Willis Road Interchange Modification Report (IMR).
H2.2	I-95/Willis Road Arterial Improvements Improved arterial access to James River Industrial Park from I-95/Willis Road Interchange. Construct arterial improvements consistent with preferred alternative in I-95 at Willis Road Interchange Modification Report including following intersections: Willis Rd. at US 1, Willis Rd. at Coach Rd, Coach Rd. at Battery Brooke Parkway, and US 1 at Reymet Rd.
H2.4.2	I-95/Bells Road Interchange Improvement Construct interchange modifications at I-95 / Bells Road area to improve operational performance. Address deficient design of identified ramps and ramp termini approaching Commerce Road as defined by the IMR proposed in Solution H2.4.1.
H2.5.2	I-95/Maury Street Network Improvements Improve operations along Maury Street corridor by: <ul style="list-style-type: none"> a) 1st Street improvements between Maury & Hull, b) Widen Maury between I-95 ramps & Commerce, and c) Concept study for improvements to Maury between Commerce & East 16th St

Ref #	Medium-Term Project Solution
H7.1	<p>Traffic Study for Altria/Dupont Redevelopment</p> <p>Upon specific redevelopment details at Site 1, perform necessary traffic study to determine what improvements are needed beyond that included in Solution H5. This includes function of Bells Road Access Rd.</p>
H7.2	<p>Walmsley Boulevard Extension</p> <p>Construct missing link of Walmsley Boulevard with grade separated crossing of CSX Bellwood Subdivision Line.</p>
H8.	<p>Traffic Study for Alleghany Warehouse Redevelopment</p> <p>Upon specific redevelopment details at Site 2, perform necessary traffic study to determine what improvements are needed beyond that included in Solution H5. This includes function of Commerce Access Road.</p>
H9.2	<p>I-295 Interchanges Traffic Impact Study</p> <p>Upon specific industrial development details at Site 3, perform traffic impact study of the I-295 facility and four nearby interchanges in close proximity to the RIC/White Oak area.</p>
H10.4	<p>Meadowville Technology Park Traffic Study</p> <p>Upon specific redevelopment details at Site 4, perform necessary traffic study to determine what area improvements are needed on roadways such as Allied Road, Meadowville Road, and East Hundred Road beyond that included in Solution H10.1.</p>
H11.	<p>Commerce Road Realignment</p> <p>Relocation of Commerce Road to be adjacent to I-95 between Walmsley Blvd and Trenton Avenue to allow for a larger contiguous land mass for development at Site 1.</p>
R1.1	<p>Richmond Marine Terminal Short-Line Service</p> <p>Implement short-line service or alternative operating agreement for the rail lead between the RMT and CSX South Yard. The lead track is owned by the City of Richmond, which grants operating rights to CSX to provide rail service. Evolving market conditions may make alternative arrangements and/or participation by another operator feasible in the future.</p>
R1.2	<p>Deepwater Terminal Rail Lead Extension</p> <p>Extend existing Deepwater Terminal rail lead north of current I-95 underpass connection to CSX South Yard to provide additional rail access to industrial sites as well as connect to the existing Norfolk Southern rail spur (Rocketts Spur) which terminates near the Richmond Wastewater Treatment Plant. Will require roughly 1-mile of new trackage</p>
R2.2	<p>Deepwater Terminal Industrial Track - New Siding</p> <p>Extend existing or construct new siding along Deepwater Terminal Industrial Track approximately 1-mile north of RMT, on the west side of Deepwater Terminal Rd. in the vicinity of Sims Metal. This improvement will allow additional siding capacity for storing and building longer trains accessing the RMT area. Approximately 1,800' of siding exists today.</p>
R3.2	<p>CSX South Yard Improvements</p> <p>Construct improvements to CSX South Yard (east of Manchester area) to allow for increased ability to break up long trains and store rail cars and tankers until industrial customers are ready. Current yard is at capacity. These improvements will also allow South Yard to serve as better reliever to Acca (Richmond Yard).</p>

Ref #	Medium-Term Project Solution
R3.3	<p>Rail Access to Commerce Road Development Sites</p> <p>Construct sidings and leads as needed to provide rail access to Site 2 (Alleghany Warehouse) and Site 1 (Altria / DuPont) development areas along Commerce Road.</p>
R4.	<p>Rail Access to RIC/White Oak Development Sites (CSX)</p> <p>Construct sidings and leads as needed to provide rail access to select parcels within Site 3 (RIC/White Oak area).</p>
R5.	<p>Rail Access to Meadowville Development Sites</p> <p>Construct sidings and leads as needed to provide rail access to select parcels within Site 4 (Meadowville area).</p>
R6.	<p>Rail Access to RIC/White Oak Development Sites (NS)</p> <p>Construct sidings and leads as needed to provide rail access to select parcels within Site 3 (RIC/White Oak area).</p>
R7.	<p>CSX S-Line Crossing Improvements</p> <p>Grade separate or gate key crossings as they relate to increased usage of the CSX Bellwood Sub (S-line) for both freight & future high-speed rail. Key locations as identified in DC2RVA Tier II EIS may include Maury St, Goodes St, E Commerce Rd, Ruffin Rd, Bells Rd, and Dale Ave.</p>
M5.2	<p>Commerce Corridor Workforce Development Initiative</p> <p>Promote the importance of workforce training opportunities in advance of new jobs arriving. Identify champion to spearhead workforce development efforts catered to the needs of businesses in the Commerce Corridor.</p>
M6.2	<p>Noise Reduction Strategies</p> <p>Implement strategies to minimize freight-generated noise pollution, including technology improvements at at-grade rail crossings to allow trains to advance without sounding horns in or near residential areas. Noise mitigation could also take the form of sound walls at select locations. Cost estimate based on 3-miles of sound walls. Related to Solution R7.</p>

Table 19: Long-Term Project Solutions

Ref #	Long-Term Project Solution
H1.1	<p>I-95/Route 895 Interchange Improvement</p> <p>Construct missing southbound to eastbound movement at I-95 and Route 895 interchange. Project is complex from an engineering perspective, requiring a new flyover tying into an existing interchange. Additional complexity in permitting and approvals as an interstate highway project that also impacts a privately operated asset in Route 895.</p>
H2.4.3	<p>I-95/Bellemeade Road New Interchange</p> <p>Construct I-95 interchange (new access point) in Bellemeade Road / Commerce Road area</p>

Ref #	Long-Term Project Solution
H3.2	Deepwater Terminal Access Improvements Increase horizontal and vertical clearance at two I-95 underpass locations that connect Commerce Road to Deepwater Terminal Rd. Vertical (truck) clearance along both Bells Road Access Rd & Commerce Road Access are 14'1".
H6.3	I-95 Widening Widen I-95 between Willis Road (Exit 64) and Route 288 (Exit 62). Improvement will include addition of one general purpose lane in each direction. The north end of this improvement will connect to the south side of the proposed interchange improvements described in H2.1. The south end of this improvement will tie into the auxiliary lanes described in H2.6. The result will be a continuous 4th general purpose lane between Willis Road and Route 10.
R2.1	Deepwater Terminal Rail Lead Improvements Further improve physical condition and operational speed of existing Deepwater Terminal Industrial Track lead. This project would go beyond programmatic maintenance to include future upgrades meant to accommodate additional rail volume in the future, should be considered as demand intensifies along the Deepwater Terminal Industrial track lead.
R3.1	CSX S-Line Improvements Construct additional trackage along CSX Bellwood Sub (S-Line) and bridge over James River as contemplated in the Tier II EIS for Richmond-to-Raleigh High Speed Rail and DC2RVA High Speed Rail.
R8.	Triple Crossing Improvements Increase horizontal and vertical clearance at triple crossing to allow transport of high cube box cars.

9. CONCLUSION

[To be completed once stakeholder comments are received during the comment period.]

APPENDICES

APPENDIX A – SUMMARY OF STAKEHOLDER OUTREACH

Last Name	First Name	Affiliation
Client Attendees		
Nelson	Barbara	RRTPO
Wichman	Chris	RRTPO
Christmas	Shaquille	RRTPO
TAC & PAC Attendees		
Lauzon	Alexandra	VAP3
Amanin	Jasmine	VDOT Richmond District
Langston	Jay	VEDP
Todd	Mike	DRPT
McCoy	Sarah	Port of Virginia
Detmer	Chris	VDOT
Faulkner	Chessa	Chesterfield County
Florin	Jeff	Port of Virginia
Consultant Team Attendees		
Prideaux	Paul	Baker
Thomas	Bill	Baker
Harris	Zach	Baker
Goodin	Krista	CDM Smith
Bingham	Paul	EDRG

MEETING AGENDA

- Introduction to Project and Opening Remarks – Barbara Nelson, Director of Transportation RRTPO
- Consultant Team & Scope Overview – Paul Prideaux, P.E., Michael Baker International
- TAC & PAC Roles & Responsibilities – Prideaux
- Project Timeline – Prideaux & Krista Goodin, AICP, CDM Smith
- Next Steps – Prideaux & Nelson

MEETING SUMMARY

INTRODUCTION AND OPENING REMARKS

Barbara Nelson with the Richmond Regional Transportation Planning Organization (RRTPO) led a roll call of participants and gave a brief introduction of the project including the history and recent initiatives and opportunities.

PRESENTATION

Paul Prideaux with Michael Baker International gave a brief presentation introducing the consultant team and reviewing the scope of work. Paul also reviewed the roles of the Technical and Policy Advisory Committees. Paul then reviewed the project timeline and next steps. Chris Wichman with RRTPO reviewed the communication protocol for the TAC and PAC members and noted the website location for the project.

Discussion

- Does the timeline allow for the development of a FAST Lane grant for the next grant cycle in December if we decide to do that? Barbara Nelson explained that we will have a better feel and

understanding of the ability to advance an application in December for the next grant round in April 2017. The RRTPO is comfortable with the study timeline in place. Paul mentioned that if a project seems to be in line with the FAST Lane criteria it might be possible to accelerate it if need be. The next funding opportunity after the FAST Lane grant cycle will be the Smart Scale application period in 2017.

- The next deadline for the SMART Scale project applications is October, will there be an opportunity to submit something? The study timing will not allow for applications in the next round, however Chesterfield County is looking at two IMRs at Willis Road and Route 10 on I-95 that may be ready for the October SMART Scale application round.
- Will the project website just be an internal link for the study team or will the general public be able to access information on the project through the website also? The current project website is designed as a working tool for the TAC/PAC. However, they anticipate having a link to the project website on the agency's front page in a few weeks to promote the study and allow access for the public.
- Chris Detmer with VDOT mentioned that Zach Harris with Baker has already reached out requesting the traffic data for the corridor. He anticipates getting additional requests for previous studies, data, etc. and is happy to help out. Kimley Horn is doing a VISSIM Model for the corridor and is doing the two IMRs for Chesterfield. Chessa Faulkner with Chesterfield County will be collecting any available data from Kimley Horn to pass on to the team as well.

Decisions Made

- Chris Wichman will send out an email in a week with the link to the website, possible dates for the August meeting, and request for list of stakeholders for the outreach tasks.

COMMERCE CORRIDOR STUDY

Technical Advisory Committee / Policy Advisory Committee

Project Kick-Off Meeting

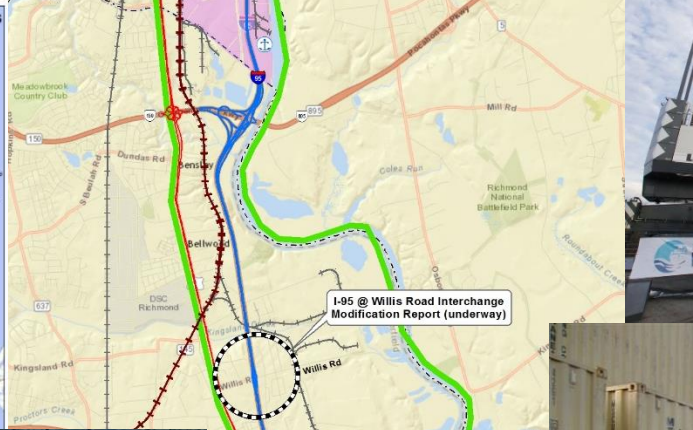
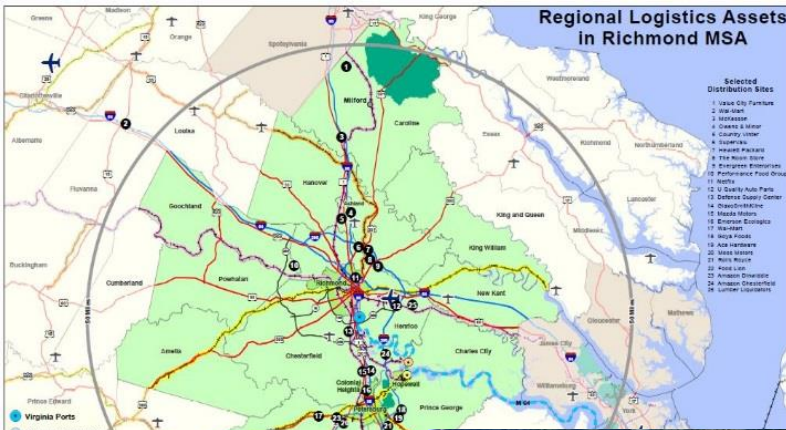
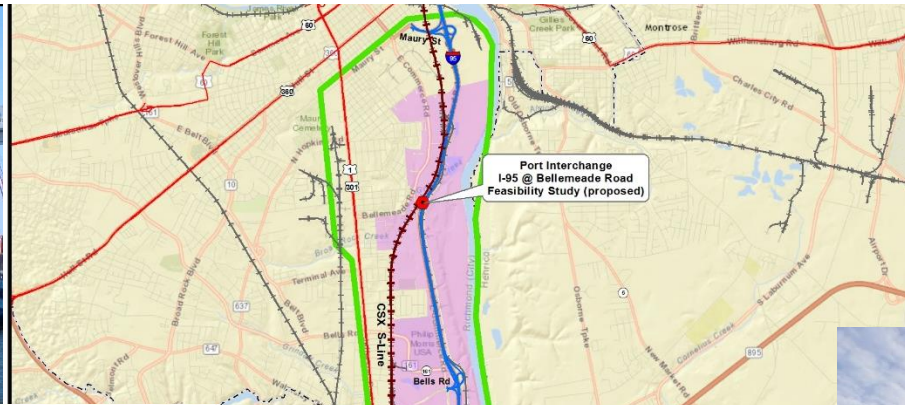
6/23/2016



Agenda

- Introduction to Project – *Barbara Nelson, Director of Transportation RRTPO*
- Consultant Team & Scope Overview – *Paul Prideaux, P.E., Michael Baker International*
- TAC & PAC Roles & Responsibilities – *Prideaux*
- Project Timeline – *Prideaux & Krista Goodin, AICP, CDM Smith*
- Next Steps – *Prideaux & Nelson*

Introduction to Commerce Corridor



Consultant Team

- Michael Baker International – Paul Prideaux, Consultant Project Manager
- CDM Smith – Krista Goodin, Deputy Consultant Project Manager
- Economic Development Research Group

Scope Overview

Task 1: Existing Conditions & Asset Inventory

Task 2: Existing Deficiency & Needs Identification

Task 3: Visioning & Focus Groups

Task 4: Market Opportunity Scenario Analysis &
Future Needs Assessment

Task 5: Needs Prioritization

Task 6: Solution Identification

Scope Overview, Cont'd

Task 7: Assessment of Solutions

Task 8: Identification of Short, Medium, & Long-Term Solutions

Task 9: Implementation Plan/Roadmap

Task 10: Project Coordination

Task 11: Project Management

PAC & TAC Membership

Stakeholder	Technical Advisory Committee	Policy Advisory Committee
Chesterfield County	Barb Smith	Bill Dupler
City of Richmond	Amy Inman	Lee Downey
CTB		Carlos Brown
DRPT	Michael Todd	Pete Burrus
OIPI/ Secretary's Office	Kelli Nash	Nick Donohue
POV	Chris Gullickson or Sarah Mccoy	Jeff Florin
P3	Ali Lauzon	Ali Lauzon
RRTPO	Chris Wichman	Barbara Nelson
VDOT Central Office	Chris Detmer	Ben Mannell
VDOT Richmond District	Ron Svejkovsky	Mark Riblett
VEDP		John Loftus

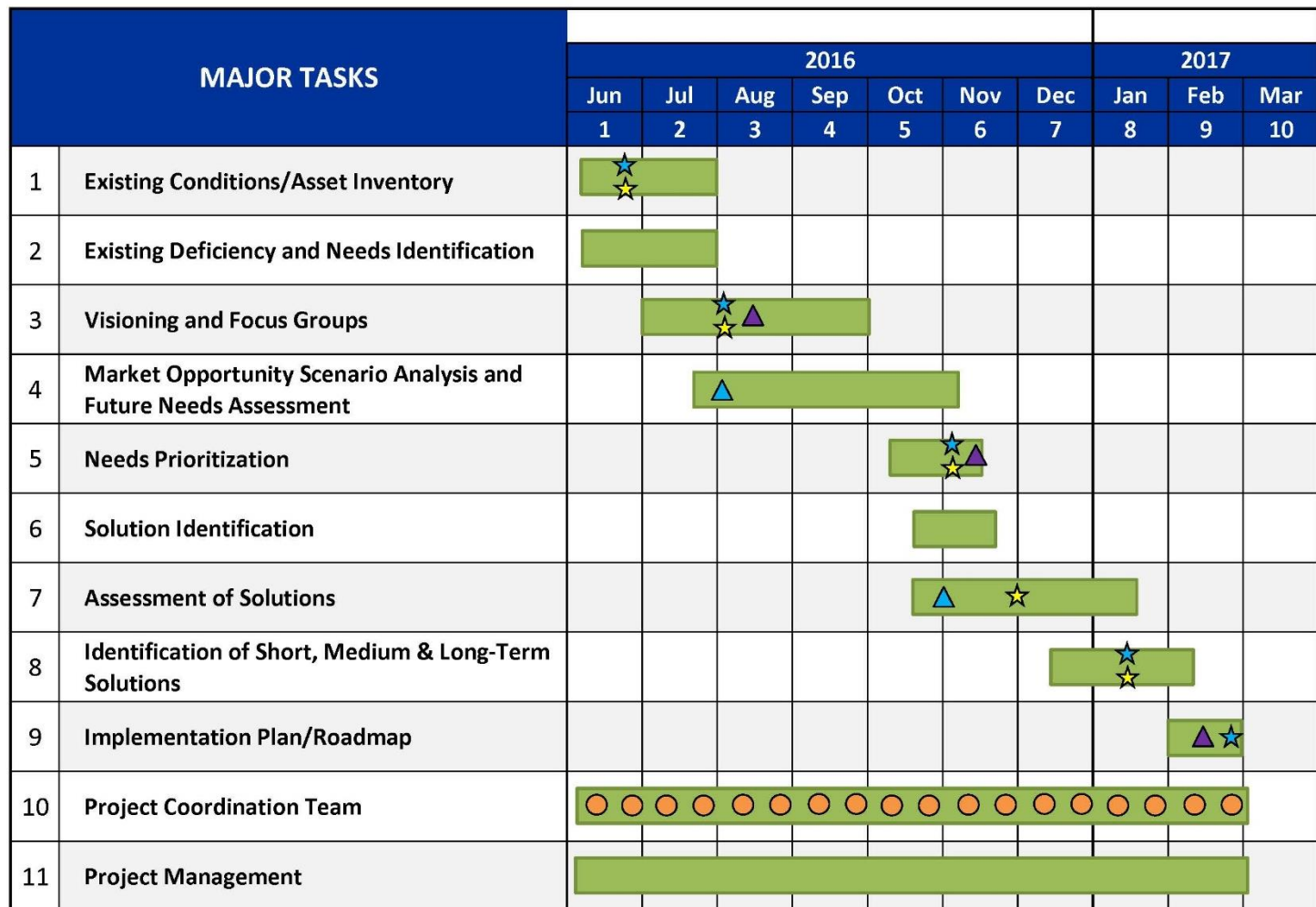
PAC & TAC Responsibilities

- Policy Advisory Committee
 - Provides high level policy input
 - Steers direction of the study
 - Reviews final deliverables
- Technical Advisory Committee
 - Participates more directly in technical approaches
 - Provides mode-specific expertise
 - Reviews draft deliverables






Project Timeline

- Notice to Proceed – June 9, 2016
- 8-9 month schedule
 - Anticipated completion February 2017
- 5 PAC Meetings
- 5 TAC Meetings

Commerce Corridor Study - Timeline



LEGEND

-  Project Coordination Team Calls
-  Policy Advisory Committee
-  Technical Advisory Committee
-  Input/Coordination with P3 Detailed Level Screening
-  Public Input or Public Comment Period with MPO CTAC and/or TAC

Communication Strategy

Meeting coordination and information sharing through RRTPO staff.

Primary contact:

Chris Wichman

cwichman@richmondregional.org

(804) 323-2033

Project website:

[http://www.richmondregional.org/Commerce Corridor/](http://www.richmondregional.org/Commerce_Corridor/)

Next Steps

- Updates to project webpage
- Schedule PAC & TAC meetings in early August
 - Will include Visioning Workshop
 - Will use Doodle poll to set date

ATTENDEES

Last Name	First Name	Affiliation
Client Attendees		
Nelson	Barbara	RRTPO
Wichman	Chris	RRTPO
Bray	Caty	RRTPO
TAC & PAC Attendees		
Gullickson	Chris	POV
McCoy	Sarah	POV
Rucker	Ivan	FHWA
Mannell	Ben	VDOT Central Office
Nash	Kelli	OIPI
Lauzon	Ali	VaP3
Lftus	John	VEDP
Amanin	Jasmine	VDOT Richmond District Office
Faulkner	Chessa	Chesterfield County
Brown	Mr. Carlos	Commonwealth Transportation Board
Inman	Amy	City of Richmond
Burrus	Pete	DRPT
Todd	Mike	DRPT
Consultant Team Attendees		
Prideaux	Paul	Baker
Wagg	Scudder	Baker
Harris	Zach	Baker
Thomas	Bill	Baker
Stein	Naomi	EDRG
Bingham	Paul	EDRG

MEETING AGENDA

- Welcome and roll call – Barbara Nelson, Director of Transportation RRTPO
- Introduction to Webinar – Paul Prideaux, P.E., Michael Baker International
- Presentation on Inland Logistics Hub Case Studies & Best Practices – Paul Bingham, Economic Development Research Group
- Discussion / Questions on presented material -All
- Introduction to August 11 Workshop – Scudder Wagg, AICP, Michael Baker International
- Next Steps / Wrap Up – Paul Prideaux / Barbara Nelson

MEETING SUMMARY

INTRODUCTION AND OPENING REMARKS

Barbara Nelson with the Richmond Regional Transportation Planning Organization (RRTPO) welcomed the attendees and led a roll call of participants. Paul Prideaux with Michael Baker International gave a brief introduction and explained the purpose of the webinar.

PRESENTATION

Paul Prideaux started the presentation by giving a status update on where the project team was in the study. He then described the base maps that will be used for the project. Paul Bingham with Economic Development Research Group next presented five case studies for ports with inland logistics hubs. For each case study, Paul Bingham described the market, associated development, supportive strategies/ investments, and key points/lessons. The five case studies included:

- Virginia Inland Port –Front Royal, VA
- CenterPoint Intermodal – Joliet, IL
- Port of Albany, NY – M-87
- Port of Savannah, GA
- Inland Port Greer – Greer, SC included

Discussion

- Mike Todd: When you are looking at associated distribution centers, commercial space, increased traffic, some of the effects of these port areas/hubs, is there any correlation with public investment? Did you see anything like an influx of public investment and infrastructure, in X year and in the following years, if there was an increase in traffic or commercial development space?
 - Paul Bingham: It's hard from this limited number of facilities that were developed at different times to tag it down to say this expenditure happened in this year – and here's a rule of thumb for X years later. Partly because of factors outside of the control of the public sector, such as where in the business cycle you are in terms of the pace of trade growth that is underlying. What's the market as a whole doing for which you can compete for a portion of the traffic during that particular year. And when you are looking at periods of faster growth in a recovery or go back more than then 10 years past the Great Recession, previous in history to that you had some faster growth in trade volumes where in some cases it was easier to quickly pick up some incremental additional trade volume growth then try to compete away from market share and a slower growing marketplace. That is somewhat happenstance when you can get this done. If you are going through a permitting process and planning process, and arranging for some public funding, in the year it becomes available, it may not be aligned with where you are in a business cycle.

General lessons that the public investment and infrastructure has enabled – has been an enabling function that often times was a prerequisite for being able to gain the economic development benefits that have followed. You had to have built out some public access roads in place and complete to actually make some of these facilities work and it wasn't until those investments were made and roads completed that the access into these gates to make these facilities viable and the access over to the interstate that was sufficient for the volume of trucks running in and out of these facilities to make that happen.

Similarly, some of the co-located development in terms of distribution centers and warehouses have been dependent on local road access into the facility to make sure the roadway geometry and other things worked for the volume of trucks going out into these large multi door distribution center facilities that depend on that utility build out. In some cases, it is not just the road network, you also had to have electric and water and sewer in places actually run so you are down to the local utilities not just the transportation infrastructure portion of it.

But all that public investment was necessary, but not sufficient to get these facilities up and running. But in the end, the jobs and tax revenues and other benefits to the county and state of capturing that activity flowed solely because of that public investment. Without the public investment, you would not have captured the jobs or tax revenue.

- Mike Todd: Paul's story would be good to define just to expand expectations. So often when talking about public investment, people think of the one to one relationship between investment and then growth. Something we struggle with at DRPT is where we have a few programs that require a public benefit relating specifically to the project we are doing and often contingent upon the business cycle. That may be something to highlight out of these case studies, that even though the platform of that infrastructure is required, to let those businesses do what they need to do, not necessarily a one to one relationship.
 - Paul Prideaux: I'm sure any large corridor investor, if they are doing their due diligence about possibly locating 100 acres or 200 acres around the Commerce Corridor, they will commission a traffic impact study to determine if their proposed site would work on the local roadway systems in terms of getting their employees there and moving the freight. We want to get ahead of that with the study and have answers already for these things that may be an issue.
- Paul Prideaux: It is clear to me, that coordination and collaboration is key. And I heard Paul B also talk about federal, state and local support being important.
- Paul Prideaux: I was surprised when Paul Bingham talked about at Savannah, over 3 million square feet of warehouse and then you said within 30 miles – that's a large radius and that's encouraging because we are certainly looking at closer than 30 miles. Maybe that tells us something about the appetite for shippers and how much time they are willing to spend over the road on their way to a hub.
- Ben Mannell: Have we had any discussions with shippers? Looking at the case studies, the ones that were successful were shipper focused. Any anticipation of having outreach to shippers to potentially gauge interest, get their insights?
 - Paul Prideaux: No discussions with shippers yet. It is part of scope to look at shippers as stakeholders and reach out to them.
- Paul P. asked Paul B. if he wanted to add something that he's done on another project that he can share with us.
 - Paul Bingham: No discussions specifically to RMT in the scope of this project around the case studies, but Port of Virginia and the state has been active in talking to shippers in pursuing investment by them wherever it is proven advantageous within the state so that we can include and this a factor here we face with the Commerce Corridor, in Virginia you have some alternatives – you can be in Front Royal or you can be in Tidewater. We have seen a fair amount of investments in distribution centers not that far from the terminals in Hampton Roads. Depending upon the network operations and design of the distribution networks of the various shippers, what works for them can vary based on their national purview of the end markets they are serving and the success from the Commerce Corridor is going to come from finding shippers where it fits into that well in terms on being located right on I-95. That far inland from Hampton Roads rather than being in Tidewater where you are trying to drive your trucks all the way out I-64, you face something different then if you are starting in Richmond. That is the kind of perspective we are going to bring to this and later in the project, certainly be talking to existing shippers that exist in metro Richmond. Looking beyond that to some of the bigger companies that are constantly evolving their networks. Another take away from this – development of each of these case studies have been done in a snap shot of time and the decision was made to go

forward based on the conditions at the time they approved it. But all the networks in which they are serving or competing are evolving over time. Even a facility that was built for certain expectation like the idea in Front Royal originally. Things have changed in terms of size of shipment volumes and the geography of some those flows in and out of ports. Some of these were done before the Panama Canal was expanded and that is one issue that is directly playing right in the hands of Virginia by having Hampton Roads the poster child for it on the coast. One of the lessons is also to expect in the future some of the potential for shippers decision making to choose Commerce Corridor may arise that isn't there today. When an Amazon decides to expand their distribution center network for example. They may choose a site in a few years that they are not considering today.

- Paul Prideaux: Sarah and Chris, should we have chosen different case studies then the ones we did or did you feel this was a good sampling for the purpose of this exercise?
 - Chris Gullickson: This is a great sampling – each particularly different somewhat, but I appreciate the sampling. I do see that looking at the successes, one of the common factors trying to address there in Richmond is the control of land. You look at Joliet, Center Point, and Savannah, their access or control of developmental land. Thought each one of those case studies was spot on and just as a side to Paul's last remark regarding the evolution of the network of a shipper, I think you would use Lumber Liquidators as somebody we would refer to locally and that they did locate a big facility in the Greater Richmond area. But initially was not done on the premise of utilizing the barge. Whereas today, over half of their cargo is on the barge. I think there is an evolutionary factor to it which is exciting for all of us on this project.

Scudder Wagg with Michael Baker then briefly described the plan for the in-person workshop to be held on August 11, 2016. Paul Prideaux concluded the meeting by explaining the next steps in the study.

ATTENDEES

Last Name	First Name	Affiliation
Client Attendees		
Nelson	Barbara	RRTPO
Wichman	Chris	RRTPO
TAC & PAC Attendees		
Lauzon	Alexandra	VAP3
Amanin	Jasmine	VDOT Richmond District
Todd	Mike	DRPT
McCoy	Sarah	Port of Virginia
Detmer	Chris	VDOT
Faulkner	Chessa	Chesterfield County
Florin	Jeff	Port of Virginia
Gullickson	Chris	Port of Virginia
Day	Ronique	Secretary of Transportation Office
Inman	Amy	City of Richmond
Florin	Jeff	Port of Virginia
Rucker	Ivan	FHWA
Mannell	Ben	VDOT
Detmer	Chris	VDOT
Additional Team Attendees		
Crotts	Matthew	VAP3
Bray	Catherine	RRPDC
Gammel	Billy	RRPDC
Aryal	Sulabh	RRPDC
Kronenthal	Mark	City of Richmond
Ferrara	Jane	City of Richmond
Prideaux	Paul	Baker
Harris	Zach	Baker
Thomas	Bill	Baker (on phone)
Goodin	Krista	CDM Smith
Bingham	Paul	EDRG (on phone)

AGENDA

- Welcome and Introductions
- Inland Logistics Case Studies Review
- Market Opportunity Scenarios Discussion
- Multimodal Transportation Assets and Deficiencies
- Site Connectivity & Operations Assessment
- Group Consensus on Direction for Corridor

MEETING SUMMARY

Paul Prideaux welcomed the group and reviewed the agenda.

Inland Logistics Hub Conference Call Review

Paul Bingham provide a quick review of the inland logistics hub case studies that were presented at the August 4, 2016 webinar.

Market Opportunities Scenarios

Ali Lauzon introduced herself and mentioned the collaboration between the City of Richmond, Port of Virginia, and the VAP3 Office on 40-year lease agreement for the Richmond Marine Terminal (RMT). The group is now focusing on underutilized properties located “outside the gates” of the RMT. They are interested in promoting development within the 1,800 acre study area. The VAP3 recently conducted a real estate analysis and screening process for properties within the Commerce Corridor. The study also included an industrial market analysis for the Richmond region.

Paul Bingham then introduced the process, inputs and expected outputs of the upcoming market opportunities scenario analysis.

Discussion

- Is the consultant team including freight rail in the model? Which travel demand model is being used and is it calibrated for freight rail? Are we using the Regional TPO model or something else more calibrated for freight rail activities? The team will investigate the impacts of at-grade railroad crossings on the surface roadway system using “off-model” methods. The team is using the Richmond/Tri-Cities model in our study to determine impacts of the growth scenarios. This model does not forecast rail operations.
- Are there any superfund issues at RMT? No, the one site was cleared a few weeks ago
- Could the corridor be considered a megasite? Possibly if you include the RMT and the Commerce Corridor area, but the P3 office is currently working through the state’s site readiness process
- Is the team going to do a deficiency analysis for freight rail as well and associated costs? yes

Activity 1 Results: Focus Industries

To help guide the development of market opportunity scenarios, what are the top four industries, in order of priority, which you believe should be the primary focus of economic development in the corridor?

Priority 1	Priority 2	Priority 3	Priority 4
Retail (Amazon) Distribution	Manufacturing	Mid-size Manufacturing	
Amazon/Distribution Centers	UPS/Fed Ex	Military Support/Ft. Lee/DGSC	
Port to Doorstep - Industry/ Logistics	Industries with synergy with RMT	Industry focus on technology	
Manufacturing - Advance/ Light Assemble/Heavy	Food Processing	Warehouse/ Distribution	e-Commerce
Production /Technology	Warehouses/ Distribution	Medical/ Pharmaceutical	
Supply Chain Management - Wholesale Trade / Multimodal Transport	Advanced Manufacturing - Foods, Processing & Packaging/Research & Development/CCAM Model in Prince George		

Priority 1	Priority 2	Priority 3	Priority 4
Echo Transportation Counter Part	Echo Transportation Counter Part	Echo Transportation Counter Part	Echo Transportation Counter Part
Advanced Manufacturing	Distribution Centers - Retail	Warehousing	Supportive Transportation Services Export - Heavy Ag Products
Regional Distribution Centers (Retail) that would leverage the location on I-95 and intended connection to port	Heavy Cargo - Projects like	Agricultural Products	Pharmaceuticals
Advanced Manufacturing	Supply Chain Logistics	Distribution	Agricultural - Exports
Medical Device Manufacturing	Advanced Manufacturing	Logistics & Supply Chain Related	Defense Contracting (DGSC/Ft. Lee) Food & Beverage - Agribusiness

Activity 2: Strengths, Weaknesses and Opportunities

From an economic development and land development perspective, please list the greatest strength, greatest weakness and greatest opportunity for the corridor, in your opinion.

Strength	Weakness	Opportunity
Location (I-95)	Access to Port	Available Lane
Access to transportation facilities, E/W & N/S. Access to multiple modes (air, rail, port, highway)	Depressed Economics (perception)	Enterprise zone along Jeff Davis
Location, available land, industry in corridor access to transport	Access into RMT, limitations at interchanges	Workforce availability/ transportation improvement
Location - markets served/labor/easy access	Lack of available sites and buildings	Port of Virginia is a willing partner to drive growth and economic development in the corridor. P3-CRC redevelopment project.
Access to primary interstates Availability of land		
Proximity to I-95 locations. For business, resiliency w/multimodal	Available developable land & site ready. Threat for residential encroachment.	Exercise we are currently undertaking.
U.S. Defense Supply Center/DuPont/ Altria other manufacturing facilities along the corridor	Transportation infrastructure/ Access to Port (e.g. Bells Road Interchange underpass clearance issue/Skills gap of local labor force	Available land/Proximity & location to major transportation/Networking - CSX, I-95, I-295
Location near I-95/near bodies of water/access to rail/transportation as economic driver	Access to I-95 perhaps a parallel network	Room for expansion & coordination with neighboring ports

Strength	Weakness	Opportunity
Location, location, location + POV presence and partnership @RMT	Transportation deficiencies could limit growth/put a ceiling on growth /Land assembly and marketing as an inland logistics hub	Unified message/of what Commerce Corridor is/what opportunity exists
Location & transportation connections & available sites & land - "Diamond in the Rough"	May not be known outside state	Access to port with bigger ships & location, location & transportation connections inland reach & access to industry
Infrastructure/Position as an inland facility	Assembling property	Increasing dual access for freight rail/Increase in jobs & workforce development
Available properties for development	Site Control/Site Readiness	Long-term lease for RMT facility/Workforce development initiatives
Multi-modal - RMT, Interstate, Rail	Existing inventory of modern industrial space and sites that are not development ready	Opportunity to control existing sites that are currently on the market for sale

Activity 3: Headlines of the Future

If you were reading headlines about the economic success of the corridor in 10-20 years, what would you hope they would say? Please write up to three.

Headlines
Chesterfield crushes Henrico in job development
RMT seen as leader in job development
Commerce Corridor an economic engine for the area
Corridor continues to successfully serve the needs of the region and the state
Area has reinvented itself - transformed from sleepy Rt. 1 to a highly competitive and desired market
Rt. 1 south of the James - a place you want your business located
RMT/ Commerce Corridor provided foundation for continued economic growth in region
Commerce Corridor / vision and strategy key to securing several major employers in region
Commerce Corridor a model in leveraging regional partnerships to foster economic growth
The Commerce Corridor is a success with 10,000 new jobs created in the economic development / redevelopment of this key gateway
Port of Virginia has a record year at RMT. Surpassing TEU volume records set in the 1990's
Port related jobs improves the fiscal wellbeing of the City of Richmond
Commerce Road Corridor, model of redevelopment and growth
Central VA, a magnet for advanced manufacturing
International trade booms inland
Port of Richmond: Opportunity met 20 years later
Regional push in supply chain management & advanced manufacturing drives economic development in the Port of Richmond
Workforce development initiatives help lower unemployment rate in Port of Richmond area

Headlines
Forward thinking, equitable, economic generator/Accessible inland distribution hub
RMT: Ten straight year-over-year growth
Governor announces big investment along Commerce Road
The Commerce Corridor - Now the manufacturing mecca of Greater Richmond
James River deepened to 35' as container ships cascade to call in the RMT
The Commonwealth declares the Commerce Corridor as its most successful inland distribution hub
Port adds 3 new mobile ---- cranes to handle exploding volumes
Richmond reaches capacity of their Richmond Marine Terminal
An inland port that has experienced tremendous growth in redevelopment, creating jobs and housing opportunities
Collaborative effort to revitalize the Richmond region
The Richmond region multimodal hub becomes Virginia's front door to a global market and creates economic prosperity in the region

Multimodal Transportation Assets and Deficiencies

Paul Prideaux and Zach Harris with Baker presented the transportation assets and deficiencies within the corridor.

Discussion

- If the study area was developed to its full potential, what happens to the congestion? Step 1 is the growth scenarios, then model what happens with the transportation
- Is there a role in the airport and how development may plan into this study? Barb Nelson has been in conversations with the Richmond Airport. They are looking at aeronautical industry development, but not necessarily use of other modes
- The rail piece of this is critical
- Mike Todd mentioned that he will take a look at which rails are owned by which companies. DRPT is currently involved with a project where CSX is rehabilitating access to their lines

Activity 4: Strengths, Weaknesses and Opportunities

From a transportation systems perspective, please list the greatest strength, greatest weakness and greatest opportunity for the corridor.

Strength	Weakness	Opportunity
Room for additional capacity on I-95 in the near term	Poor design in regards to access onto I-95	Expanding multimodal nature of the corridor
Capacity on water system cheaper alternative than road infrastructure	Height/clearance Interchange / Transit	Smart Scale Funding Go after Goode St. extension first / low hanging fruit / approved / in all regional plans
True lack of congestion deficiencies are in spot locations	Bridge clearance / Tight ramp radius inadequate interchanges)	

Strength	Weakness	Opportunity
Linkage between RMT site, I-95, CS, Goodes Road overpass at 21' clearance will allow for truck access	I-95 can be a barrier - only one crossing with adequate clearance	Look at ways to improve clearances with minimal disruption to interstate
Access to I-95 / Ability to diversity transportation methods	Deficient bridges / Future of mainline I-95 congestion concerns	
Proximity to I-95/I-64 -- but access is difficult	Outdated interchanges - lack of investment in infrastructure in past 20 or so years	Growth in water borne freight
Convergence of interstate, rail, water (intermodal); Regional corridor * I-95- get people now; Available water capacity; Environmental savings; Benefits of rail/barge	Limited interstate access - one way in/out	
Capacity of water system - intermodal	I-95 - overlap \$1B in 4 projects. I-95S	Accessibility to jobs (transit vision plan)
I-95 / Chippenham /895 current operations - generally good	I-95 capacity needs - long term deficiencies	Ability now to plan to address future needs - Step 1: I-95 between Rte. 288 & Rte. 10
Little congestion / Future investments programmed / Intermodal	Geometry / Pavements	
Proximity of various multimodal transportation modes	Access, clearances, infrastructure	Opportunity to invest today for desired future outcome

Activity 5: Transportation Needs for Specific Industries

Thinking about the industries discussed earlier, what do you think are the priorities for transportation systems improvements for the key industries?

Industry	Priority for Transportation System
Heavy manufacturing or equipment	Access to roadways and development sites due to height restrictions
Advance manufacturing	Safety / traffic for employees using I-95 interchanges
Out of gauge	Clearance and width issues
Retail distribution	Key interchange improvements
Bulk commodity / Agriculture	Rail improvement access
Specialized manufacturing	
Distribution centers	Truck access
RMT synergy with existing shippers	Container on frame/body and container on rail capability
Retail / pharmaceutical	Doorstep capability - smaller delivery access
Agribusiness	Breakdown of bulk goods
Distribution centers	Distribution centers and low bridge clearances need to be addressed
Military oriented	Address access to and from I-95 as well as the capacity of parallel networks

Industry	Priority for Transportation System
All economic growth	Question of how you are getting your workforce to the site; what is the capacity of your network and alternative transportation modes
Advanced manufacturing (i.e. drive employment)	Workforce access to jobs/capacity to accommodate shift workers
Distribution centers	Proximity / ease of access to interstate
Transportation services	Project cargo - need for vertical/horizontal clearances
Bulk commodity / Agriculture	Rail - dual access
	Synergy - supporting businesses/industries being located near each other i.e. Tranlin, UPS, or connectivity to Bellwood
	Reliable/predictable/cost competitive
	Workforce mobility, accessibility
Retail distribution	Access to a highway network with good capacity and operations
	Access to rail/airport facilities (receipt of goods into the center)
Health / pharmaceutical	Intermodal systems and network
	Clearance and interchange improvements for trucks
	Dual rail access (CSX, NS)
	Dredging?

Activity 6: Defining the Future of the Corridor

Considering the answers from the group on the above, the future of economic opportunities in the corridor and the transportation systems in the corridor, please complete the following statement:

In 2040 the Commerce Corridor will . . .

Statements
Serve as an example of an effectively, well executed, redesigned transportation corridor. Supporting fluid access to Richmond and the greater Richmond region.
Be a vibrant intermodal node that fosters jobs, taxes, and continued investment.
Be an example of comprehensive land use, economic development and transportation planning that has become the blueprint for future redevelopment.
Serve as the freight gateway to the Richmond region.
Function in harmony with additional arterials within the transportation network to provide access to employment and cargo distribution centers.
To be the engine of Greater Richmond's 21st century economy and a model inland hub of logistics activity nationally.
Move people and goods safely and efficiently while providing economic benefits to the region.
Catalyst for growth.
Example of environmental stewardship.
Contributing to the quality of life in the region.
Serve as a successful example on how a community can integrate business and economic strategies into a transportation system that serves citizens and businesses.
Be the manufacturing and logistics hub of Central Virginia.
Be a vibrant economic engine for the City of Richmond and the greater Richmond region.

Statements
Allows for the competitive, safe movement of goods and services through Richmond.
Become a location of choice and provide sustainable multimodal transportation opportunities to industries that generate new investment and well-paying jobs in the area.

Site Connectivity & Operations Assessment

Paul Prideaux presented the candidate sites for connectivity and operations assessment. There was discussion to combine the DuPont property and Altria parcels as one site for assessment. Attendees were asked to choose their top 3 candidate sites by placing dots on a map showing the candidate sites.

Discussion

- We should combine the DuPont property and Altria parcels as one site for assessment
- The Tranlin site should be renamed the James River Industrial Park

The votes for the candidate sites were as follows:

Candidate Site	# of Weighted Votes
Commerce Road / Ingram St. area	4
Alleghany Warehouse site	31
DuPont property near Commerce Road / Trenton Ave.	30
Altria parcels near Commerce Road / Walmsley Blvd.	
Tranlin property near Willis Road (i.e. James River Industrial Park)	6
Route 10 Industrial Corridor near I-95	0
Route 1 / I-295 Industrial corridor in Hanover County	5
RIC / White Oak area	8
Meadowville Technology Park area	6

Industry Growth Input Review

Scudder Wagg reviewed the input regarding the priority industries in the corridor. A majority of the responses identified the following industries to target growth in the corridor: distribution centers/warehousing, advanced manufacturing, and businesses that bring in more jobs.

Site Selection

The sites with the most votes were: #1 – Alleghany, #2 – Altria/DuPont, and #3 – RIC/White Oak. There was a tie for the 4th site between the Tranlin property and Meadowville Technology Park.

Discussion:

- Which one has the biggest hill to climb for transportation deficiencies, the Tranlin site or the Meadowville site? There is already an IMR at the Willis Road Interchange
- The Meadowville site is a bit of a greenfield and is right off of I-295, there are more employment anchors there
- After discussion, the group agreed to choose Meadowville Technology Park as the 4th site

Draft Statement of the Future

Using the input received during the activities, Scudder Wagg presented a draft statement for the Future of the Corridor.

Discussion

- For fourth bullet, consider adding “workforce development” opportunities, skills gap
- In first bullet, noticed that it says “freight gateway” – consider changing it to “commerce gateway”

The draft future statement confirmed by attendees is:

In 2040 the Commerce Corridor will...

- *Be a dynamic, economic engine for the region that serves as its gateway for commerce.*
- *Be a vibrant, intermodal corridor that provides sustainable, multimodal transportation opportunities.*
- *Be recognized nationally for its integrated economic and transportation systems development.*
- *Foster continued growth in quality, well-paying jobs and ladders of opportunity for the community.*
- *Catalyze investment and redevelopment in the corridor and around the region.*

Additional Outreach Activities

- Should consider stakeholder interviews with shippers and heavy rail
- Potential focus groups with the Chamber Port Task Force and workforce development/local community members

Next Steps

Paul Prideaux gave a brief overview of next steps:

- Post / circulate materials from today’s workshop
- Continue stakeholder interviews
- Conduct focus group discussions
- Develop Market Opportunity Scenarios
- Perform Future Needs Assessment & Prioritization
- Hold next meetings with PAC & TAC in early November



Target Industries

- Distribution Centers ✓✓✓✓
- e.g. pharm, retail
- Agricultural
- Database centers
- Advanced manufacturing ✓✓✓
- *Agribusiness / Food & Beverage*
- Midsize Manufacturing
- Those that create jobs ✓✓✓
- Those that support DGSC & Ft Lee
- Bolster what we already have

Greatest Economic Strength

- ✓✓✓ Location Lack of local congestion
- Labor availability ✓ Land Availability
- ✓ Intermodal ability
↳ provided diverse customer choices
- Demand in rough

Weakness

- ✓✓ Port access ✓ Perception/image of area
- Environmental clearance EJ/multimodal
- ✓ Connecting people to jobs ← Outdated buildings
- Threat from residential encroachment
- Glass ceiling due to transit? Need national marketing

Opportunity

- ✓ Land availability Workforce available
- Route 1 investment Smartscale collaboration Port expansion
- Enterprise Zones ✓ Dual rail access
- Plants aligning - PDV, VaPS Brownfield opportunities

High priority Industry / mode

Rail - Bulk commodity. Rehab mainline project

Retail likely has different needs for import vs export

Synergy between supporting industries
e.g. Bellwood → Willis

Shift changes at employers like
(TDM) Amazon, UPS

Transportation needs (Reliable/Predictable/
(Multimodal) to be Cost competitive

River constraints - modern vehicles
Safety

Supply chain breakage/reliability

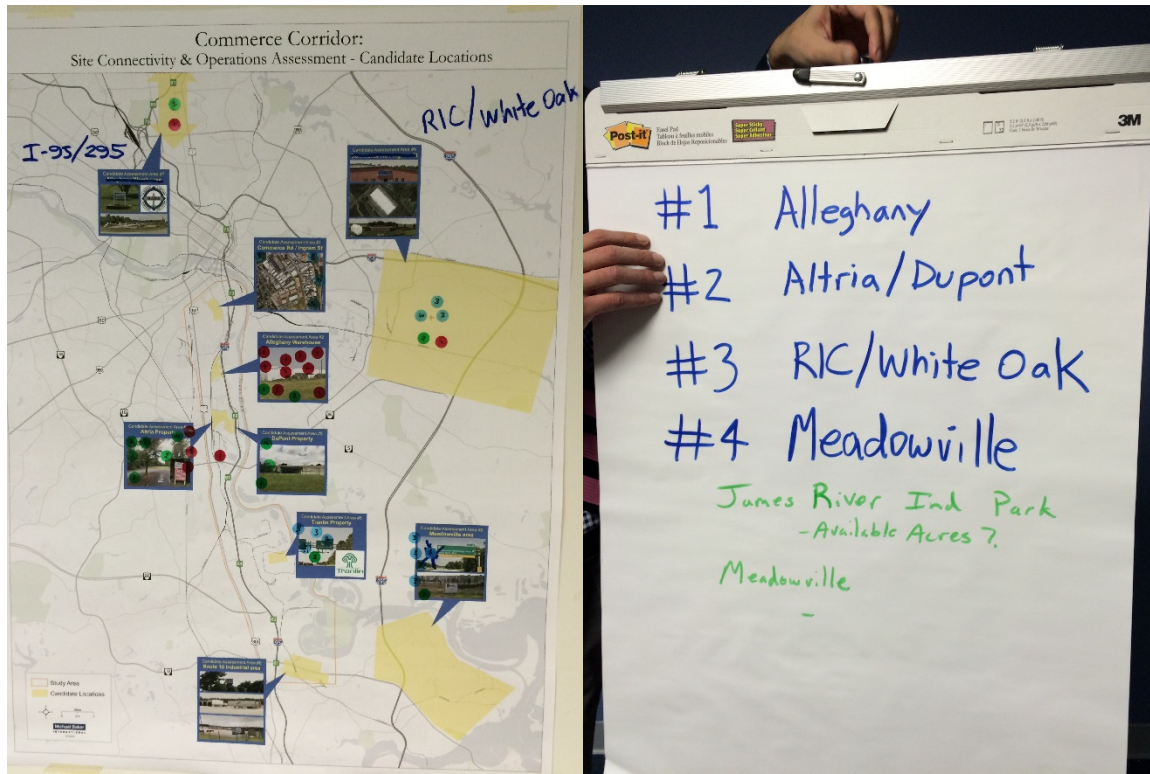
Transportation Discussion

Strengths
Need full documentation of multimodal ^(rail) _{access} ^{access}
Capacity of deep water access - opportunity
Rail - Can take volume off highway system
21' Goode Street

I-95 could/will still fail as growth occurs

Opportunities

Increasing low clearance
Better access to jobs / transit planning



ATTENDEES

Last Name	First Name	Affiliation
Smolnik	Matthew	New Kent County
Loftus	John	VEDP
Chieppa	Rachel	Charles City County
Aylward	Karen	Chesterfield County
Deusebio	Susan	Hanover County
Ferrara	Jane	City of Richmond
Wichman	Chris	RRTPO
Gammel	Billy	RRPDC
Prideaux	Paul	Michael Baker
Goodin	Krista	CDM Smith

MEETING SUMMARY

Chris Wichman with the Richmond Regional Transportation Planning Organization (RRTPO) welcomed the group and thanked the attendees for attending. Paul Prideaux with Michael Baker led a round of introductions and briefly described the Commerce Corridor study. Krista Goodin with CDM Smith then facilitated a series of questions with the attendees. A summary of the questions and responses follows.

QUESTIONS/RESPONSES

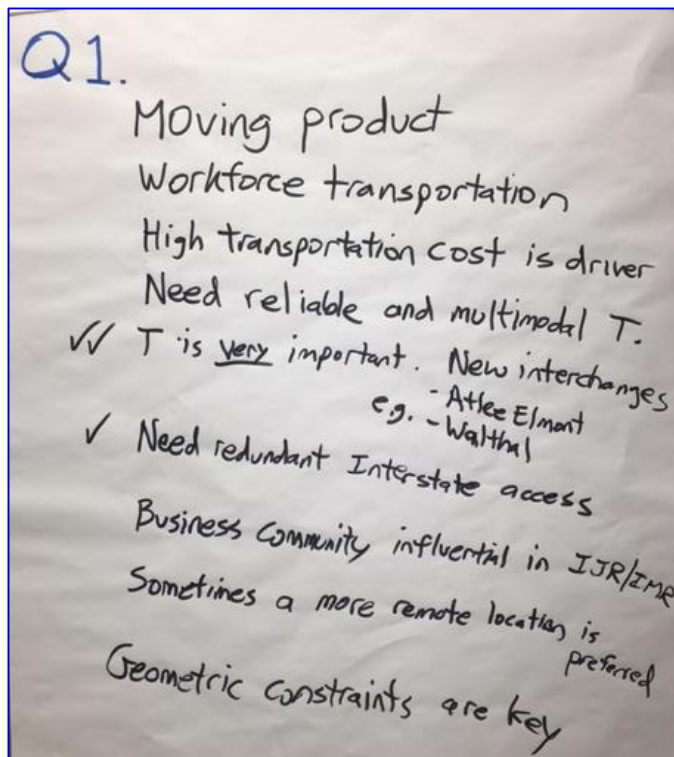
Question 1A: From your experience, how much of a role does transportation play in the decision-making process among supply chain management / advanced manufacturing businesses when considering the Richmond region as a new location or growth opportunity? Please cite specific examples of where this has been a determining factor.

Responses

- Transportation is critical, especially with distribution networks. Some examples: North/South (I-95/I-85), East/West (I-64 or rail lines), Norfolk Southern to Chicago (Heartland Corridor)
- There is an importance of having a trained workforce and understanding where are they coming from and how are they going to get here. Logistics companies consider not only logistics for company operations but also commuting requirements for workers to the facilities
- The transportation network was also cited for workforce for two major manufacturers for New Kent County
- Multimodal transportation has played an important role in the decision-making process for supply chain and advanced manufacturing businesses. The cost of transportation is often the highest cost incurred by these industries. Not only is the transportation network important, but also the accessibility and reliability of the various transportation modes
- Transportation in terms of connecting workforce to jobs is also key. Regional public transportation is becoming a more important consideration
- Roads and rail must accommodate changing transportation vehicles overpass heights, roads need to withstand increasing weights
- There has been tremendous growth in supply chain manufacturing near the Walthall Interchange possibly due to the multiple access points and secondary road access. Another example is how Amazon chose its site due to access to both I-295 and I-95. The secondary road

network is critical in providing access, redundancy in network. Need to prevent industrial cul de sac. Willis Road is a concern

- There is a relationship between vacancy rate and interchange development. Some examples are old diamond interchanges such as Lewistown Road in Hanover that is very similar to Willis Road. The interchange is obsolete but densely developed for commercial growth. The champion for infrastructure projects often comes through the business community. For example, the Walthall interchange was championed by the business community pushing for infrastructure investment
- Transportation is a huge issue especially I-95 to serve the East Coast. Some examples of businesses are Amazon, Stone Brewing, Aldi, and Lidl. Companies want greater interstate access in every proposal. This Richmond Area is a great location. I-64 and US 460 provide redundancy with two ways into the port in Hampton Roads
- Transportation plays a huge role in many sectors and proximity is key to location/ease of transportation network. The lack of complexity in traffic can be good in some locations on the outskirts of populated areas. The ease of the transportation network in the outskirts has been helpful in recruiting businesses, especially the agriculture industry. The ag-related businesses are preferring the outskirts and less intensive volumes on the roadways
- Need to accommodate the larger double stacks of trains
- Looking out into the future, it is about efficiency – loading more product in bigger vehicles and double-stack rail cars. But there is currently no infrastructure to accommodate this. Need to embrace new transportation technology and vehicles – but there are problems with radii, vertical clearance, rail bridges, weight restrictions of vehicles. Some of our roads are not built to accommodate movement of freight. Examples are the delivery of the Ballast Point brewing tanks, RMT example



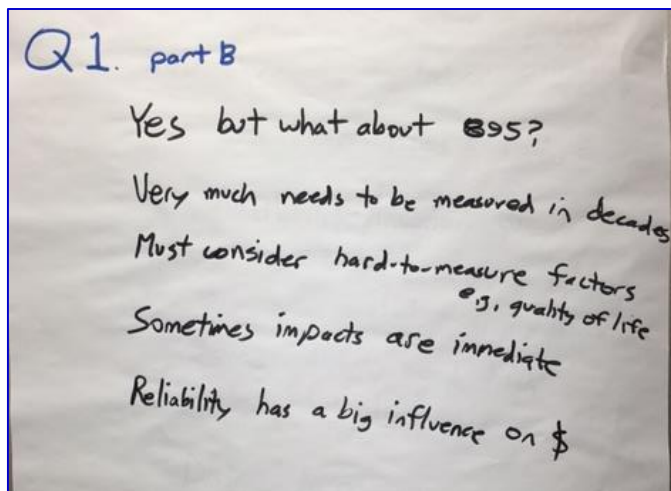
Shorthand Explanations:

- 'driver' means it is a key driver in the decision process
- 'T' is shorthand for Transportation
- IJR/IMR refer to process of getting new or improved interchanges approved and funded
- Check-marks mean that comments was heard multiple times

Question 1B: Do you feel that transportation infrastructure expenditures create a positive return on investment and is it always necessary that they do?

Responses

- Time is money
- Quality of life for citizens should also be a factor
- The I-895 is expensive and not many people are using it
- For Charles City County, the I-895 is a critical corridor but for a cost
- A majority of the time they do, however there are some projects that do not
- ROI has to have a long term investment and could be several decades before realized, expectations need to be managed
- ROI should be measured in terms of dollars and other factors such as enhanced experiences
- There has been immediate investment/absorption of commercial space when nearby infrastructure has been improved
- Need a connector road between Bellwood Road and Willis Road, it is currently a safety issue and reliability issue
- Other examples are James River Logistics and Waco businesses accessing via Wathall Road at the railroad crossing. When maintenance occurs it can shut down businesses as there is no redundancy



Shorthand Explanations:

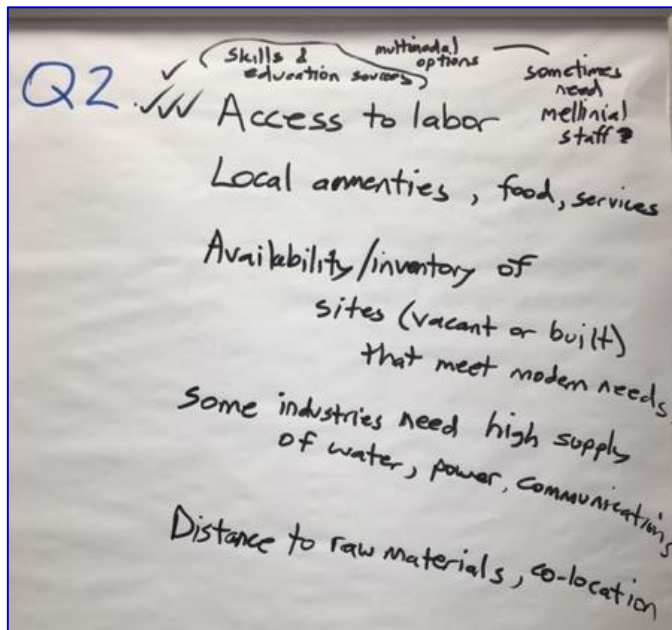
- Check-marks mean that comments was heard multiple times
- 'modern needs' refers to items such as high supply of water, power, communication and existing buildings that have sufficient layout / ceiling heights, etc.

Question 2: Other than transportation, what are other factors that play a significant part in go / no-go decisions among these freight-related industry / manufacturing businesses in terms of locating or expanding in the Richmond Region?

Responses

- Trained workforce and available workforce
- Access to Labor
- Access to suppliers, raw materials
- Available product, existing modern buildings

- Availability of ready sites/certified sites, industrial vacancy rates are at an all time low
- Dual rail access
- Quality of life
- The ability to pull workforce across multiple jurisdictions. The transportation network allows the workforce to move through counties/jurisdictions. Other considerations: are the workforce skills present? Are they present in reasonable travel time? Combination of proximity and accessibility
- The challenge for New Kent is providing basic amenities such as places for employees to get lunch and other everyday services. There is also a challenge in recruiting businesses to “Pioneer Communities”
- There needs to be access to restaurants, services, grocery stores
- Another problem is availability of product (i.e. assembled, pad-ready sites) to meet the needs of modern industries. The City of Richmond struggles to have adequate sites required for modern buildings
- Access to built-out infrastructure (water, power, sewer, gas). Some target sectors such as food processing, technology, and advanced manufacturing are big consumers of electricity, water, and sewer. Our access to water in region is big asset
- There are three recent examples of companies wanting to locate close to the millennial workforce. This seems to be a new trend in how businesses are making location decision, how far will it go?
- Businesses want to locate in proximity to where their suppliers and raw materials are. There is a need to ensure they can get what they need at the least possible transportation costs
- Education, skilled labor and training
- The higher-ed community college network is an asset in the Richmond region



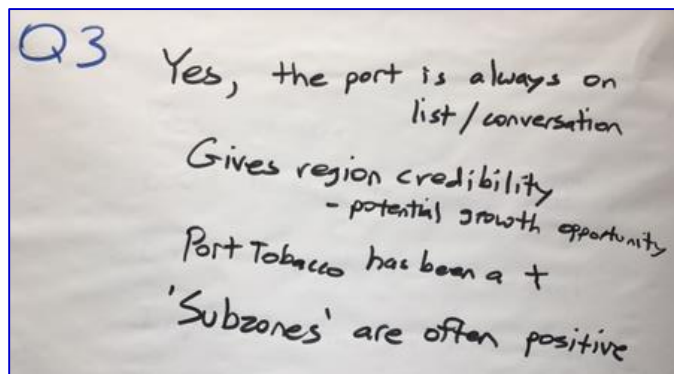
Shorthand Explanations:

- Check-marks mean that comments was heard multiple times
- ‘modern needs’ refers to items such as high supply of water, power, communication and existing buildings that have sufficient layout / ceiling heights, etc.

Question 3A: Do you see the Richmond Marine Terminal as a regional asset in terms of attracting related businesses to not only the City but also to neighboring counties? Please explain.

Responses

- The city is a built environment, there are no big sites available. The counties have more access to land and sites
- Connectivity is key, we are in a global marketplace and international business is important to RVA strategy. Some South American companies are showing interest in locating in the region who want to make products here to export to Europe. The port is moving products and services from every direction, this region is truly a global marketplace. Most prospects we see are from foreign countries with foreign investment. The port comes up in every conversation. Even if a company doesn't need the port, it can make a difference that we have one in the region. The port can add to the list of available transportation modes and can validate the economic viability of the region. Some companies may want to come in small and then expand later
- Yes, the counties have larger sites that are not available in the cities
- Yes I think we need to market the asset more effectively. From a state perspective the RMT is a good asset, even if companies are using POV in Hampton Roads
- Volume will have an impact on using the Richmond Port versus the Norfolk Port and trucking it to warehouses. What is the value or tonnage coming through RMT vs Hampton Roads? Hampton Roads has a much higher volume and value of freight than the RMT.
- Port Tobacco is an opportunity for Charles City, need to fix the Benjamin Harrison bridge
- Creating foreign trade subzones in concert with the port may be an opportunity. By establishing subzones at greenfield sites away from the port in connection with the Port may be able to minimize bureaucracy hurdles to the business
- Having an operational port adds to credibility of region, some prospects have considered building their own barge facility on James River and the RMT service proves viability



Shorthand Explanations:

- '+' is shorthand for 'plus'

Question 3B: Do you use the presence of the Richmond Marine Terminal to help existing businesses grow and market / recruit new businesses? Please explain.

Responses

- Yes, again time is key to how long a company is willing to wait to import/export materials
- Yes we use the Port of Richmond/VA to market the region. The POV umbrella is a much stronger message for upgrades to infrastructure and consistent marketing

- Export education is key such as the Metro Richmond Exports initiative which is a focused effort regionally with long-term strategy. Exporting can be an intimidating process. There is an opportunity to focus on a strategy to be more proactive than reactive. This aspect of business outreach has been neglected in the past
- Yes, we use the export opportunity for global industry, connection to global marketplace, education & resources pulling those together. The RMT can sometimes be a differentiator
- The POV has expertise in marketing. We have a great relationship with POV, their doors are open and only a phone call away
- The Virginia Economic Development Partnership's international trade division offers events and training for businesses
- New Kent County prepared a marketing video that markets the access to the deepwater port in Hampton Roads vs. RMT

Q3. b.
Yes, always
Could leverage it more / "sell" it
Can realize the global market
Impressed with POV staff & strategy
EDP offers export training
Eastern localities look more to NIT, etc.

Shorthand Explanations:

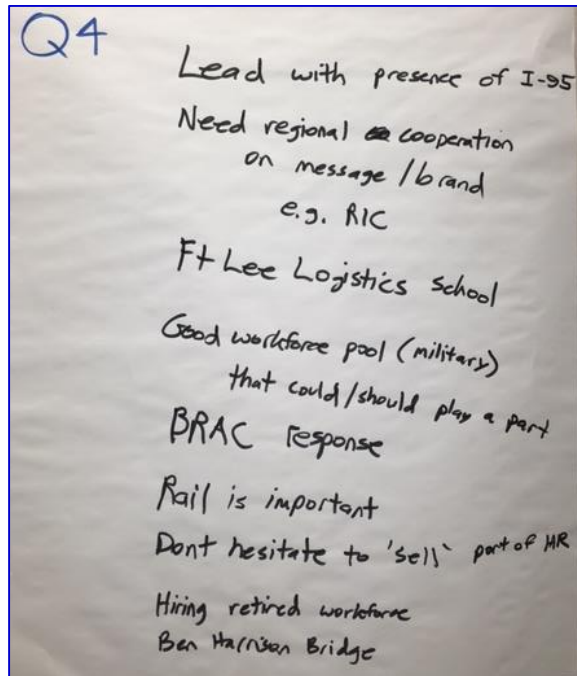
- 'NIT, etc.' refers to Norfolk International Terminal and other port facilities in Hampton Roads

Question 4: What do you think a regional marketing strategy should emphasize to attract industry and freight-related businesses specifically to the Commerce Corridor or to surrounding counties where synergies can be formed with the Commerce Corridor / Richmond Marine Terminal?

Responses

- Need to push the I-95 significance
- Our region is bisected by I-95 with access to markets in the North and South
- Rail/Interstate/Ports
- Logistics expertise/history
- Conversations need to happen with established brands (i.e. Chamber, GRP) to stay on message, there should be a coordinated brand/message
- The marketing should all be working together to eliminate confusion, don't recreate the wheel
- Access, visibility, multimodal, regional transportation hub
- Consider branding similar to how we brand the airport as a regional asset
- Emphasize trained workforce on logistics. Ft. Lee conducts logistic training and this skilled workforce isn't necessarily tapped into

- Ft. Lee has data that shows what percentage of students would like to stay in the region. They produce a good, strong, workforce pool. There is opportunity for businesses to recruit
- How will you engage NS & CSX? There is a reluctance to move goods between Hampton Roads and Richmond by rail
- Consider expanding the Commerce Corridor brand from Richmond all the way down to Norfolk-Hampton Roads – don't hesitate to bring in Hampton Roads



Shorthand Explanations:

- 'BRAC' refers to the Base Realignment And Closure program
- 'Sell port of HR' refers to promoting the Richmond area as reasonably close to the Port of Hampton Roads

Additional Comments

- The Virginia Conference on World Trade will be held October 4-5, 2016 in Norfolk, <http://www.vacwt.org/>
- The VCU Real Estate Trends Conference will be held October 13, 2016 in Richmond at the Convention Center, <http://www.realestate.vcu.edu/>
- The Virginia Governor's Conference on Agricultural Trade is held annually in March. Information on the previous conference held March 7-8, 2016 can be found here: <https://www.signup4.net/Public/ap.aspx?EID=GOVE85E>

ATTENDEES

Last Name	First Name	Affiliation
Client Attendees		
Aryal	Sulabh	RRTPO
Bray	Catie	RRTPO
Gammell	Billy	RRTPO
Nelson	Barbara	RRTPO
Wichman	Chris	RRTPO
TAC & PAC Attendees		
Amanin	Jasmine	VDOT Richmond District
Brown	Carlos	CTB
Deemer	Rosemary	Henrico County
Detmer	Chris	VDOT Central Office
Eure	Todd	Henrico County
Faulkner	Chessa	Chesterfield County
Ferrara	Jane	City of Richmond
Gullickson	Chris	POV
Loftus	John	VEDP
Mannell	Ben	VDOT Central Office
White	Whitney	Chamber RVA Port Task Force
Consultant Team Attendees		
Harris	Zach	Baker
Michiels	Paul	Baker
Prideaux	Paul	Baker
Thomas	Bill	Baker
Goodin	Krista	CDM Smith
Bingham	Paul	EDRG
Stein	Naomi	EDRG

MEETING AGENDA

- Welcome and roll call – Barbara Nelson, Director of Transportation RRTPO
- Introduction to Webinar – Paul Prideaux, P.E., Michael Baker International
- Methodology & Process – Paul Prideaux, MBI & Paul Bingham, EDRG
- Input & Concurrence from TAC & PAC on growth Alternatives – Paul Bingham, EDRG
- Next Steps / Wrap Up – Paul Prideaux / Barbara Nelson

MEETING SUMMARY

INTRODUCTION AND OPENING REMARKS

Barbara Nelson with the Richmond Regional Transportation Planning Organization (RRTPO) welcomed the attendees on the webinar and led a roll call of participants. Paul Prideaux with Michael Baker International gave a brief introduction and explained the purpose of the webinar.

PRESENTATION

Paul Prideaux started the presentation by giving a status update on where the project team was in the study, including accomplishments since the August 11 meeting of the TAC & PAC. Paul Prideaux and Paul Bingham then described the scenario planning / growth scenario methodology and process. Paul Bingham next reviewed the options for the attendees to discuss and choose for analysis. The decision to be made during this Nov 9 Web Conference is two-fold. One decision pertains to the **type** of development to be used as a future scenario and the second decision relates to the development **level**, or intensity level, to be assumed for the four selected geographic areas of concentration. Below there is reference to development types and levels. Please refer to the slideshow from the Nov 9 Web Conference to better understand these items.

Discussion on Development Types

- Chesterfield County mentioned that they are leaning towards the development Types B and C but will need to coordinate with Barb Smith. Type C is what they would like to see in the corridor and Type B would be an expansion of what is trending currently.
- The City of Richmond mentioned that the City is definitely in it for the long haul and the Richmond Marine Terminal is a differentiating asset for the city. They would like to stay on course with a port-oriented strategy. Type C is their priority as they see this as a long term strategy for the city and want to leverage the opportunity with the port.
- The Port of Virginia acknowledges that the Richmond Marine Terminal will benefit from the projects.
- The City said we do not want to turn our back on the tobacco industry and will need to continue to nurture that existing industry but don't necessarily want to focus on expansion in the future.
- Barb Nelson reiterated that we want to support the existing industries as viable businesses, but we want to explore opportunities for alternative futures.
- Chesterfield County mentioned that if we were to go with Types B and C to go down this path to identify infrastructure projects, wouldn't those projects also benefit Type A? Group said yes.
- VDOT Central Office mentioned they would echo that Types B and C are the two we would like to focus on for next 25 years but it's up to the localities of where they want to take the vision. Is this something that should be bounced off the local Planning Commission members? Barb Nelson mentioned that they have researched existing comprehensive plans and zoning for the area but it would be a good idea to hear from the localities on this subject. The City and both Counties both agreed that our approach is consistent with their expectations and they don't see the need to involve the Planning Commissions at this stage in the process.
- The VDOT Richmond District mentioned they also agree with Type B and C for future analysis. For the duration of the plan, the horizon year is 2040, is there thought for an interim analysis somewhere between? Paul Prideaux responded that due to time and resources that will not be feasible for this iteration of the study. However, Barb Nelson mentioned that the study could make a recommendation for an interim year analysis to be conducted in a follow-on study.
- Paul Prideaux mentioned that there seems to be a consensus for Development Types B and C. The remaining question is at what intensity do we want to apply to Sites 3 and 4?

Discussion on Intensity

- Chesterfield County mentioned they want to be conservative and by 2040 would see White Oak and Meadowville fully developed (Sites 3 and 4).
- Henrico County discussed that they concur to look at full build out for sites 3 and 4.
- Barb Nelson asked to confirm that all 4 sites will be analyzed for full build out 100%. Group said yes.

- VDOT Central Office asked what the medium growth scenario would provide. Does it mean that we won't see as much infrastructure growth or is it the localities don't want to see that kind of growth? What does the medium growth scenario get us? Barb Nelson explained that the medium growth scenario would give a point of comparison against the full development scenario.
- VDOT Central Office stated they are comfortable with testing scenarios that involve full build out of the sites.

NEXT STEPS

- Post / Circulate materials from today's Webinar, including recording
- Test growth scenarios in available models and perform needs assessment
- Discuss draft needs assessment in December in-person meeting of TAC / PAC. Begin discussion of potential solutions
- Assess effectiveness of solutions

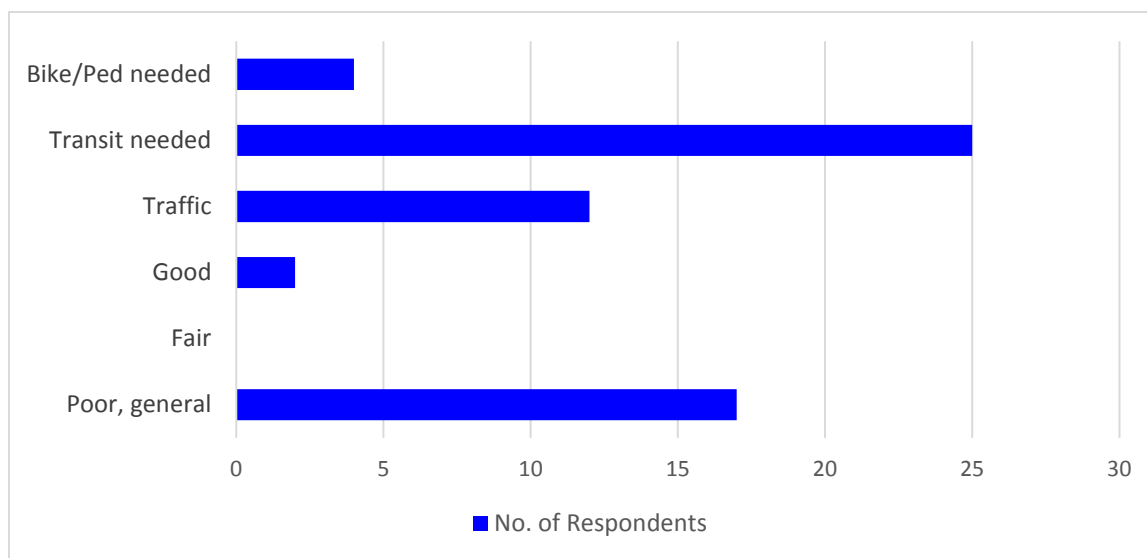
COMMUNITY SURVEY SUMMARY

A series of questions were prepared to solicit feedback from community members within the Commerce Corridor area as part of the Commerce Corridor Study. The questions were related to the quality of the transportation system, employment opportunities, and quality of life of neighborhoods in and around the Commerce Road Corridor. Written survey responses were solicited from A Place of Miracle's Café on October X and the Bellemeade Community Civic Association meeting on October X. An online format of the survey was also made available to Bellemeade Civic Association members as well as the Jefferson Davis Association board members. A total of 48 survey responses were received.

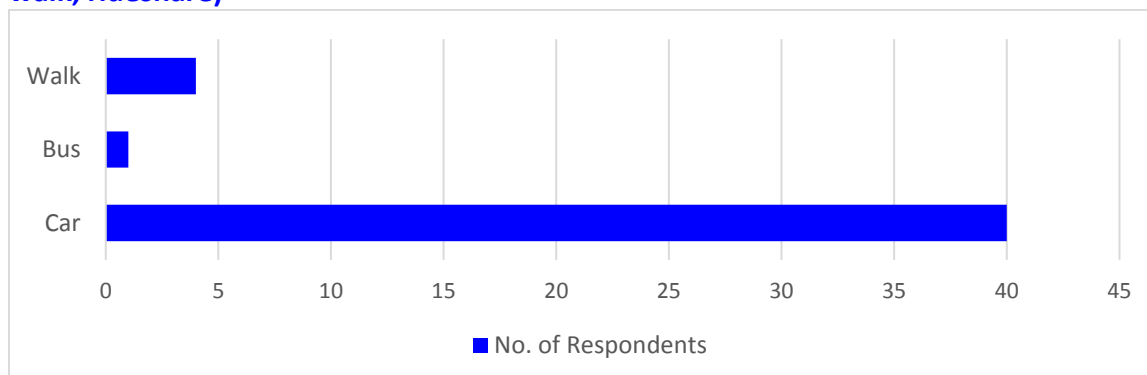
RESPONSE ANALYSIS

Responses to each question were summarized into categories for the purpose of visualizing the results of the survey. The individual responses for each question are included in totality below.

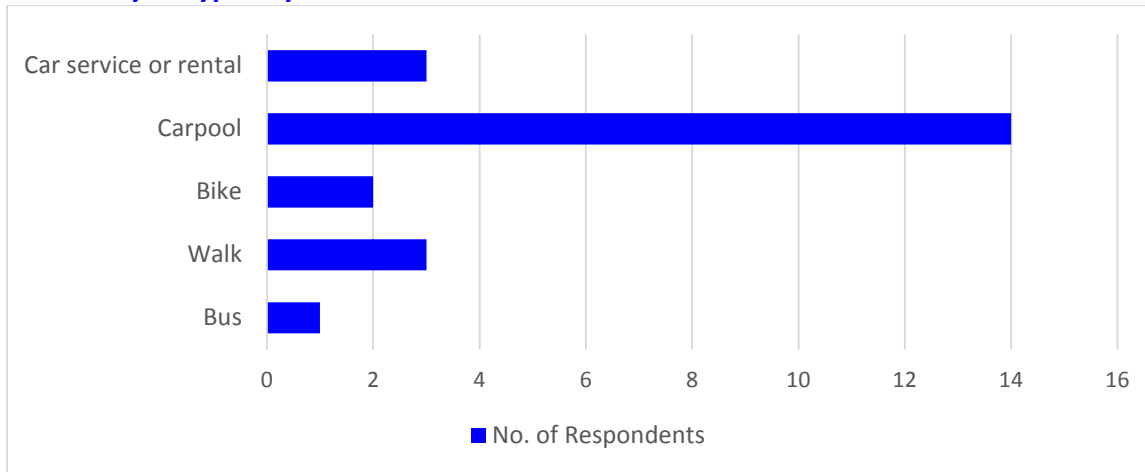
Question 1: What is your overall perception of the quality of the transportation system in and around the Commerce Corridor, including your feelings about congestion and transit?



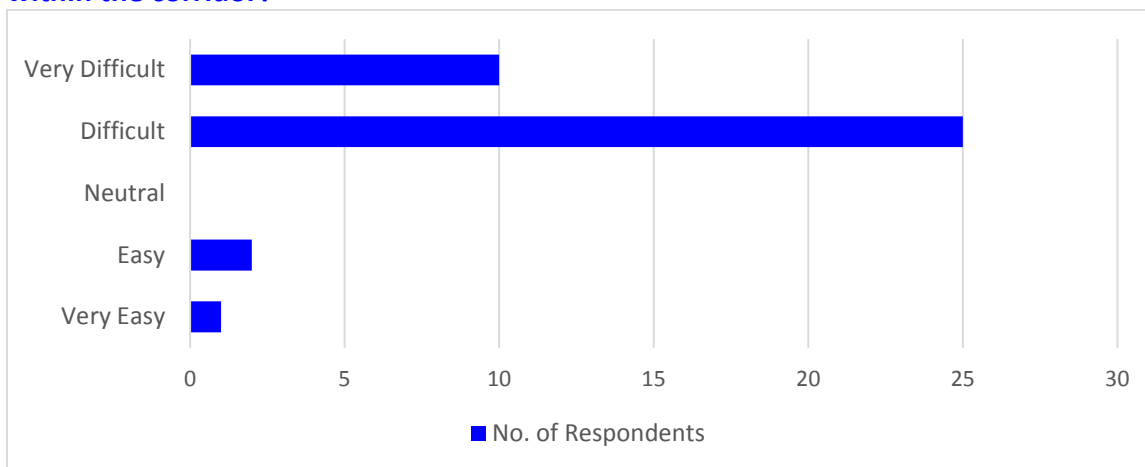
Question 2: What is your primary method of commuting? (personal car, carpool, bus, bike, walk, rideshare)



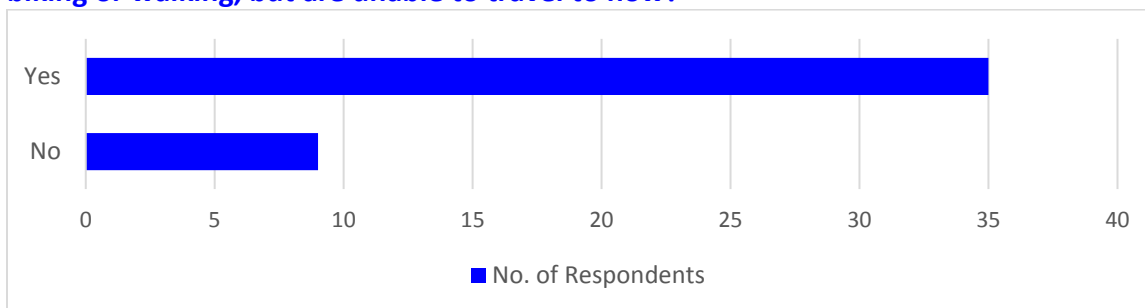
What do you typically do when that method is unavailable?



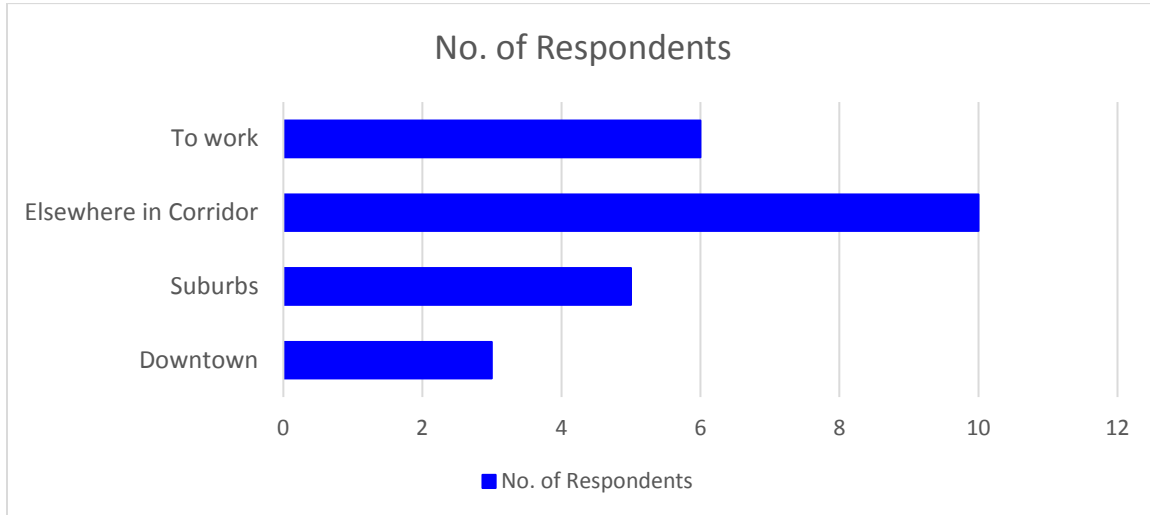
Question 3. Do you think it is easy or difficult to walk, bike, or take transit to businesses within the corridor?



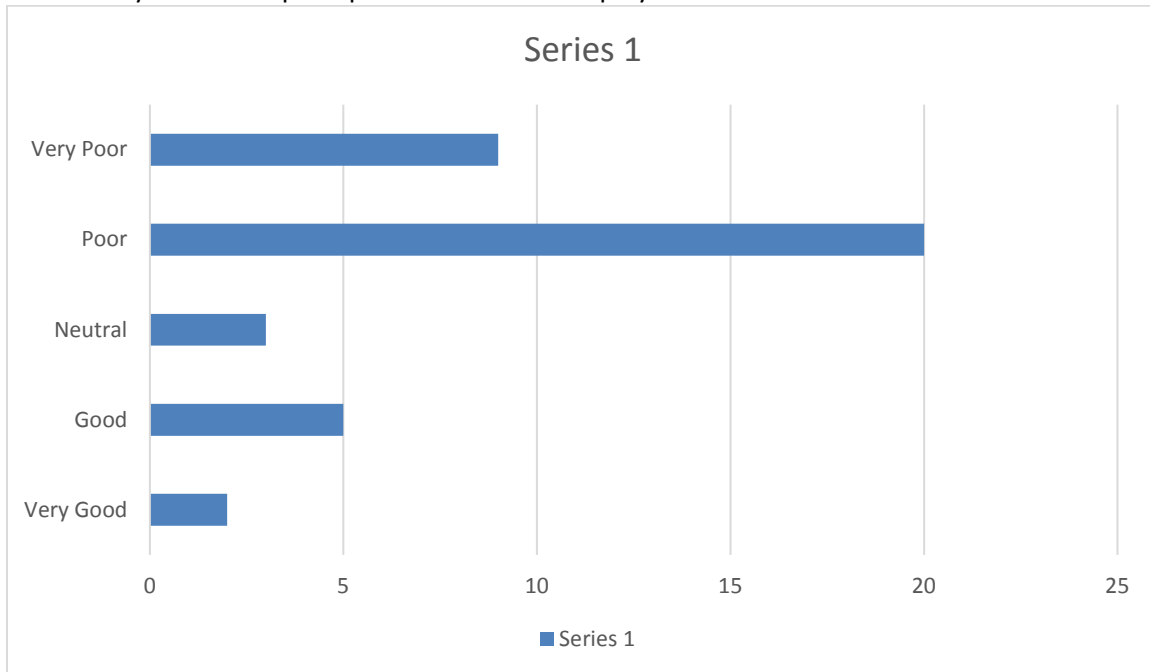
Question 4a. Are there specific places in the corridor you would like to go by public transit, biking or walking, but are unable to travel to now?



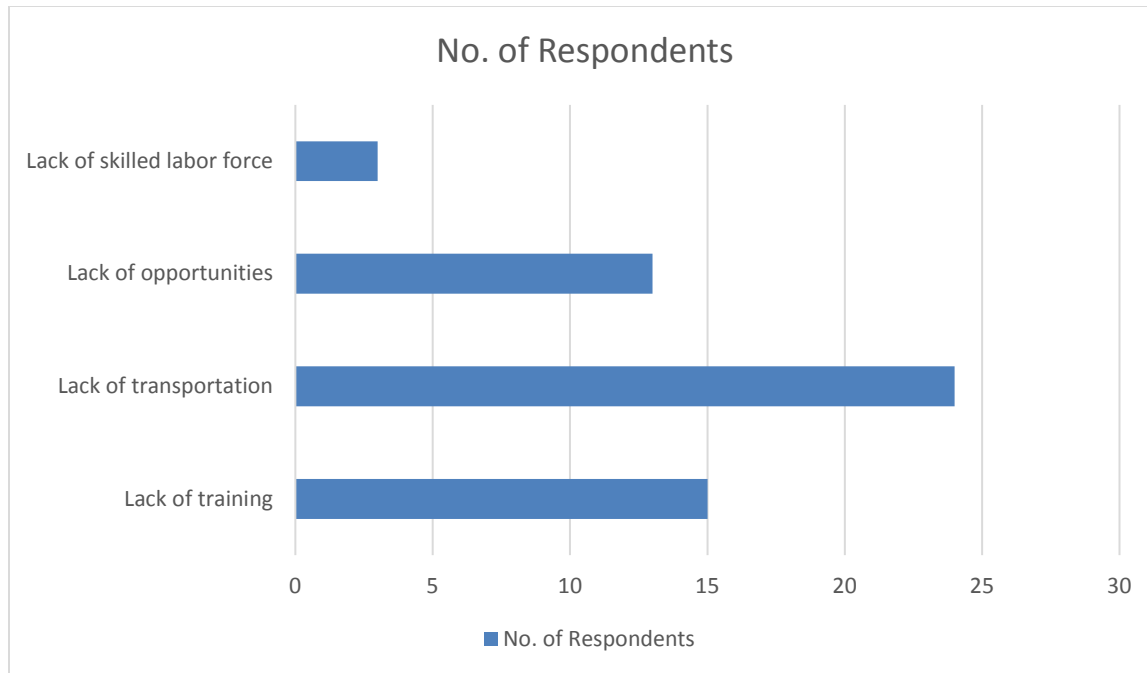
4b. Are there specific places in the corridor you would like to go by public transit, biking or walking, but are unable to travel to now?



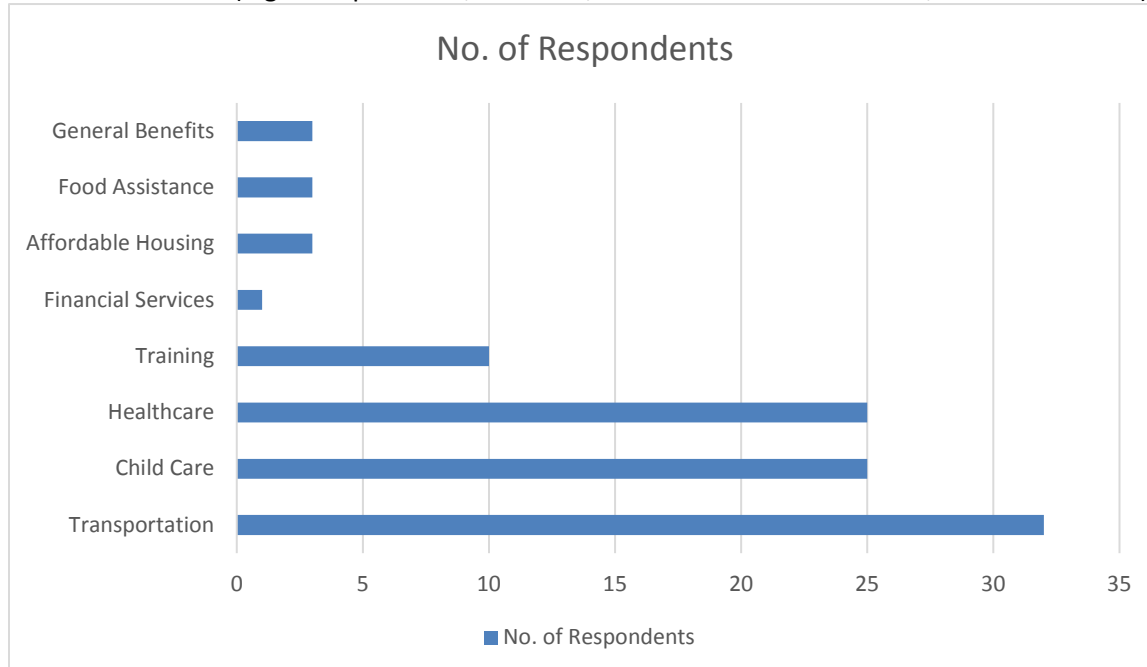
5. What is your overall perception of available employment within the corridor?



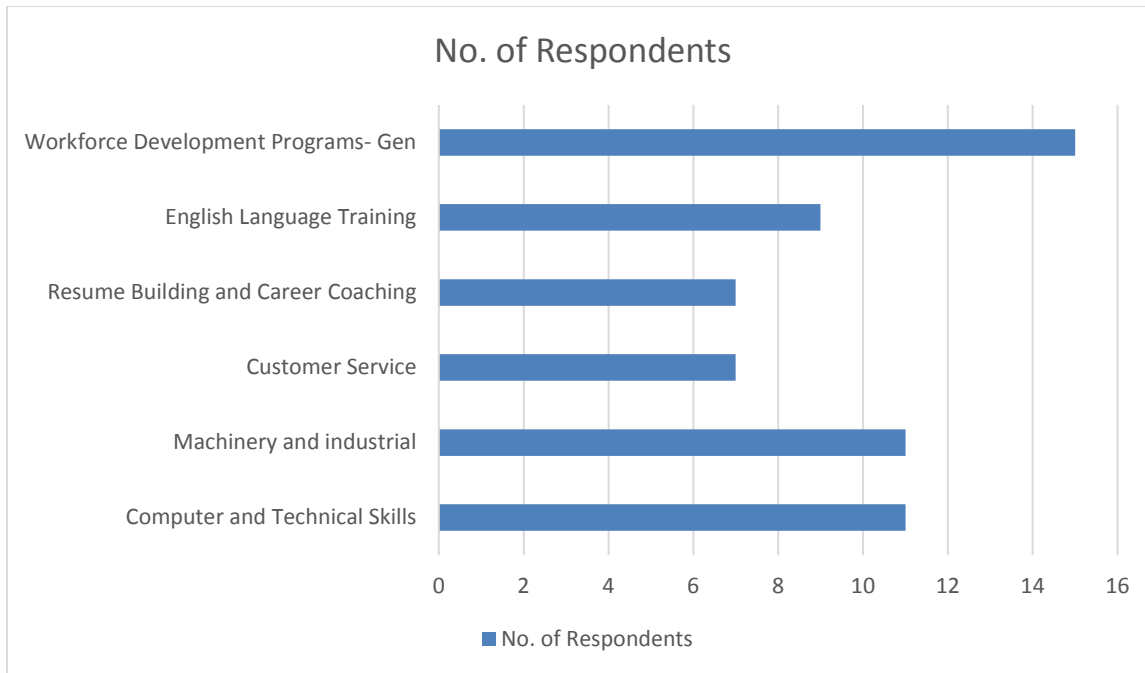
6. What do you think are barriers to finding jobs at companies within the corridor?



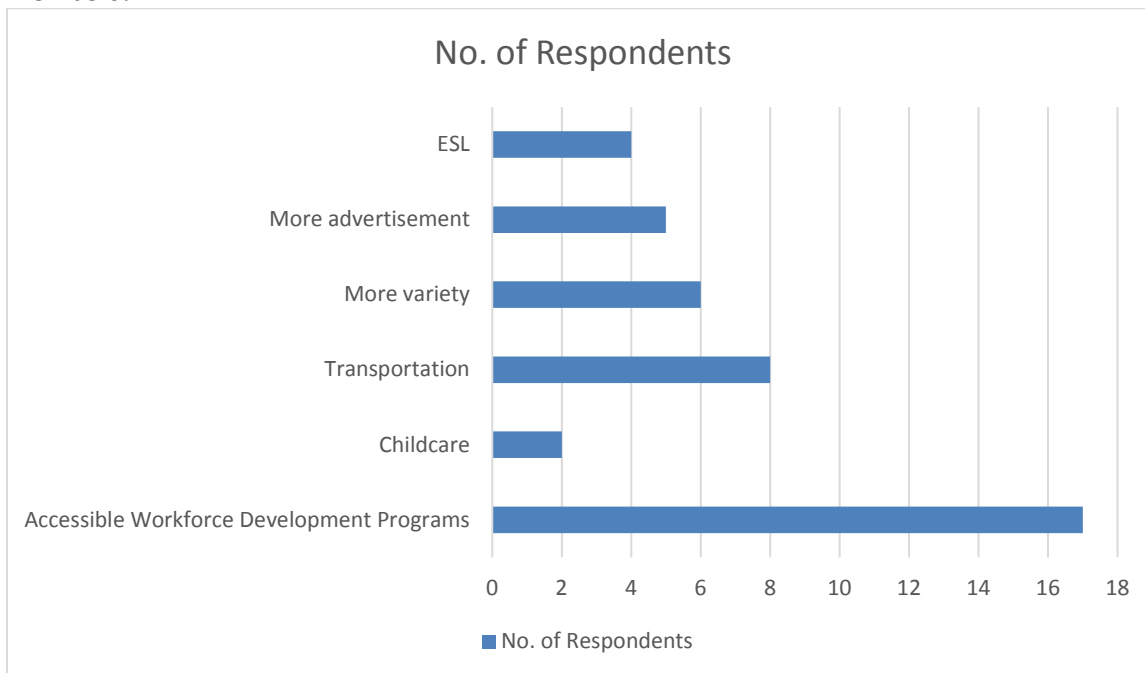
7. What kinds of employer-based supportive services would be beneficial to potential employees living near the corridor? (e.g. transportation, childcare, substance abuse treatment, or other services)



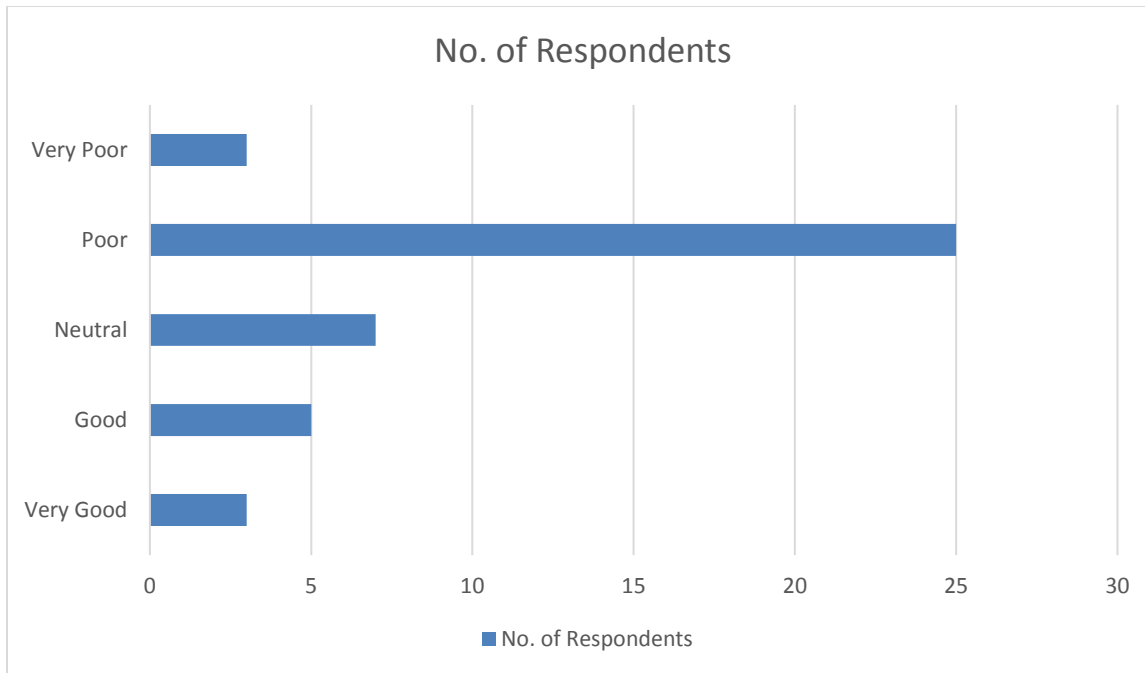
8. What type of skills, training, or knowledge may be lacking within the community that are needed for jobs within the corridor?



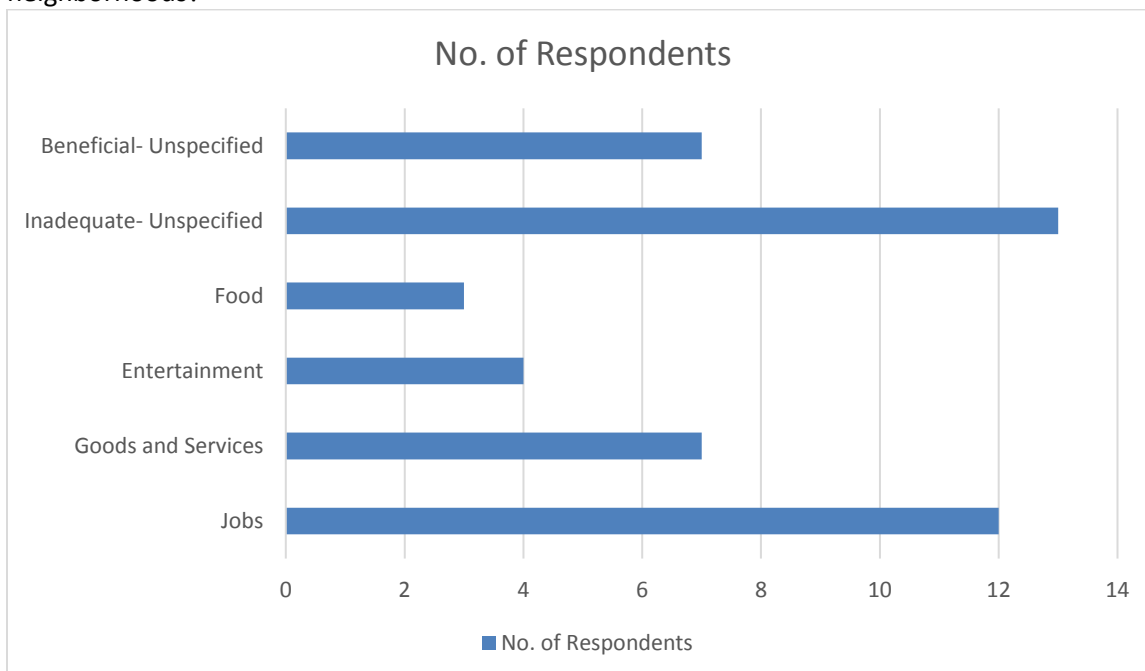
9. What kinds of programs or assistance may be needed to connect job training with community members?



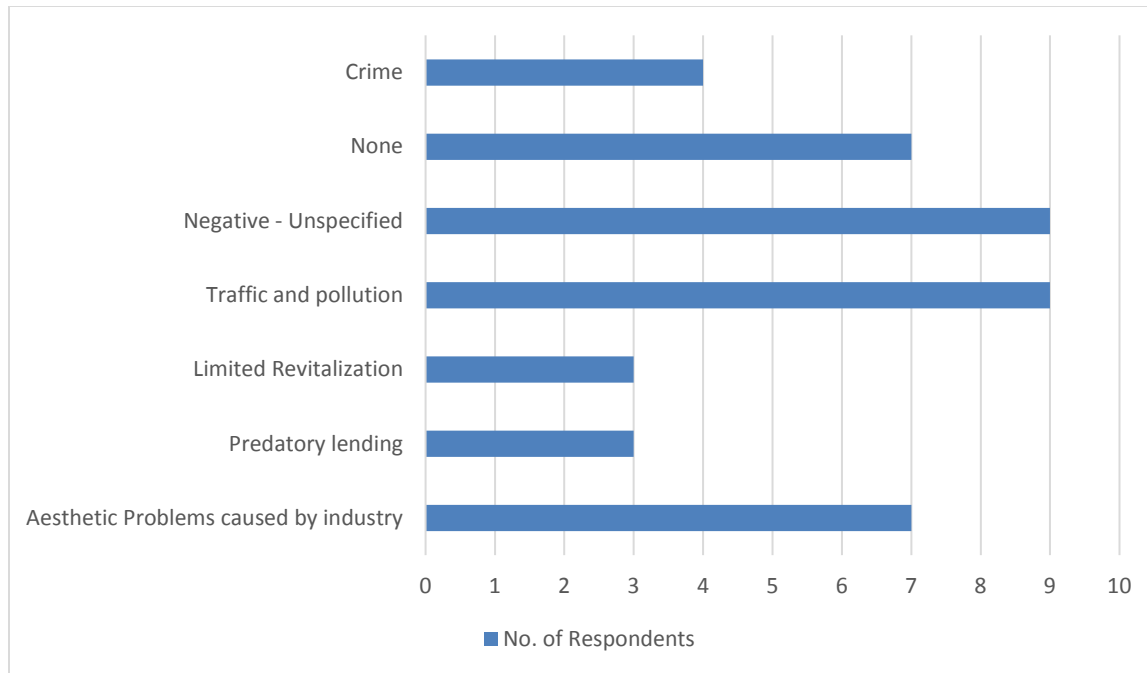
10. What is your overall perception of the quality of life of the neighborhoods surrounding the corridor?



11. What kinds of positive benefits do you think corridor businesses contribute to the surrounding neighborhoods?



12. What kinds of negative impacts do you think corridor businesses have on the surrounding neighborhoods?



QUESTIONS/RESPONSES

Question 1: What is your overall perception of the quality of the transportation system in and around the Commerce Corridor, including your feelings about congestion and transit?

Responses

- An arterial road parallel to an interstate highway provides superior road facilities. Transit service, bicycle and pedestrian infrastructure is very poor
- Transit lacking south of Chippenham Pkwy along route 1
- Public transportation is non-existent – Route 1 is dangerous for pedestrians, and there are lots of walkers in this area – On Route 1 many car dealerships and sprawl like development, especially at Route 10 – from Food Lion to Route 10 no public transportation – trying to have this addressed in North Jeff Davis Special Area Plan underway by Chesterfield – there are no sidewalks, no amenities – Don't see a lot of congestion, except can be some congestion at Route 10 and Route 1 during peak hours
- There is quite a bit of congestion on Commerce Road, Maury Street, and Gordon Avenue at the stoplight on Commerce Road (Near Ester Trucking Company)
- Needs improvement
- Around our neighborhood, the busiest times are when people are going to work and school
- Congestion would increase to the detriment of the community (noise, getting to and from jobs, children more exposed to the possibility of accident, safety)
- Congestion from (illegible) is high. Very difficult to navigate
- Not knowledgeable to give a complete answer to complete this survey. Need more information
- Public transportation is virtually missing and needs immediate attention. Congestion is more prominent at JD and Rt. 10 and transit would help to somewhat cut that down. But the need for

public transportation is more about moving those underprivileged residents/workers to jobs in industrial areas along the corridor

- I-95 is always congested. Transit is minimal
- Much needed in our area. Families that have no transportation. They can't get to the store
- Not enough public transportation around the area for people to get to work or to doctors or even to the grocery store
- Current quality of transportation system and public transit is very poor along the Jeff Davis Corridor. Public Transit is needed
- You own transportation is needed if live in Chester or Chesterfield area. Congestion on Jeff Davis Corridor is horrible especially around rush hour. There is no public transportation in this area
- To avoid congestion take some vehicles off the road, don't get stressed out in traffic
- it will help those that are less fortunate to get around
- So people who don't have transportation don't have to walk to get somewhere
- Too congested!
- Very minimal
- It appears to be good
- Do not see any
- There is no transportation system! Desperately needed
- Very limited and not sufficient to meet the needs of the community and the businesses
- Class bias plays a part in the lack of local transportation
- The area is tremendously underserved. Due to the lack of public transportation many residents remain economically depressed, being unable to transfer to good jobs
- Interstate 95 takes a great deal of the traffic that would normally have to travel up and down the Commerce Corridor. Rush hour is just that anywhere. As long as traffic lights are set long enough to clear intersections, traffic usually flows well
- Quality is bad and needs transit
- My area has no public transportation
- We could use some public transit. I see families with little babies on foot all the time. Their hands are full plus they're trying to lug their pitiful groceries
- Horrendous for public transit. Congestion not bad
- 1) There is no public transit on Rt. 1 in Chesterfield. Buses may or may not be the answer. Many residents own no cars. Many walk or ride bikes. There are no sidewalks and no bike paths on most of Rt. 1. I often see amputees in wheelchairs going up and down Jeff Davis Hwy. I also see parents holding the hands of young children and often pushing strollers walking along Jeff Davis Highway
- 2) With additional industry and additional population comes more stress on hot spots like the I-95 / I-64 interchange. Although not directly on the Commerce Corridor map, there is often much congestion at the crossroads area of North bound I-95 and Eastbound I-64. It can be a dangerous area. There is often stopped traffic in the right lane and often the middle lane. Add aggressive reckless drivers and speeding drivers in the left lane and you have a very dangerous situation. I drive from Bensley to Mechanicsville via that interchange several times per week and never see State Troopers anymore whose presence could help slow down racing drivers and help mitigate the situation. Hopefully one day, redesign of parts of that interchange could help reduce some of the hazards. One short term solution would be to make the I-895 Bridge free or reduce the cost dramatically. (I understand that this is currently privately owned). This could divert some traffic. Our family of 3 drivers (soon to be 4) would take that option much more often if it were more

affordable. Another solution would be to reduce (and enforce) speed limits (even more) through that section. A more visible State Trooper presence would also definitely help. It is so dangerous we decided to delay letting our kids get their licenses till they were older and still don't permit them to drive through that area till they have more experience under their belt

- 3) The interchange at Rt. 1 and Chippenham could be redesigned to allow safer walking to the Food Lion grocery store...or relocate a grocery store in front of Winchester Greens (they have a lot set aside for that purpose). Also Southbound on Rt. 1, the 3 lanes in front of Food Lion need to merge left into 2 lanes, allowing for those coming up the ramp from 1-95/Chippenham to safely merge from the acceleration lane onto Southbound Rt. 1
- Poor
- Very poor, many families on foot
- The roads are good, if you have a car. Walking, biking or buses are dangerous or don't exist.
- Public transportation is dangerous.
- There is no public transportation (i.e. buses) in the Chesterfield County part of the corridor.
- "The transportation system is pretty poor. I taught for around 15 years in the area. Many times parents couldn't make it to IEP meetings due to transportation. Few parents attend back-to-school night or other events. One year, not a single parent came.
- Graduates couldn't work due to transportation issues. Many couldn't get to John Tyler to become more employable. People without transportation can't get jobs that pay enough for them to purchase their own transportation -- Catch 22.
- Also those who live in the hotels can't get to a grocery store to buy fresh fruits and veggies for their own health or the health of their children. They end up wasting their few resources and/or SNAP money at high priced small businesses like fast food and gas station markets.
- Those with medical needs, whether doctor visits or emergency room services have difficulty getting those medical resources. This can lead to increased medical problems. Some sort of dependable, affordable public transit is necessary.
- Very Poor. As for Chesterfield, virtually non-existent
- Transportation system along the Jefferson Davis Corridor does not exist for anyone who don't own a personal car.
- On a normal commute, the intersection at Hopkins and Beulah is always congested. The lanes on Beulah, approaching Hopkins should be widened.
- We need to have a better transportation system.
- What transportation system? LOL! We need transportation and more available bus stops especially in Chester
- I feel there is not enough transportation for the people at all. They can't go shopping or
- New here. Lots of traffic. Both commuter and truck traffic
- Should have transportation - spending \$ on cabs now to get to appointments. Not much congestion. No transit that I know of

Question 2: What is your primary method of commuting? (personal car, carpool, bus, bike, walk, rideshare) What do you typically do when that method is unavailable?

Responses

- Personal car. No other choice

- Personal car, ask a friend
- I use my personal car. I will rent a car if my car is not available
- Car
- Bus, walk, and carpool
- Personal car, alternative: car service, taxi
- Car. Hard because of limited transportation
- I drive a car to work. I find a ride with someone else
- Personal vehicle. No one who lives near me works where I do, so I always use a personal vehicle to commute to work
- Personal car
- Personal vehicle. Ask a friend or just cancel the appointment
- Walk or try to find a ride or I don't go
- Personal car or work. When not available, borrow a car or bum a ride
- Save on fuel, wear and tear on my van
- Personal car or carpool
- Walk. I walk everywhere or ride with my fiancé
- My car
- Bike, walk
- Personal car
- Have own car
- Car, bike, walk
- Personal car
- We use both personal cars and the bus
- Car
- Personal car. If this method is unavailable, I borrow or use resources of friends and family members.
- Personal car
- Car
- Car
- Car
- Personal car
- We primarily use our personal cars and business work van. We also bicycle but there is no safe place to bicycle from our home in Bensley. We pack up our bikes and ride on the Capital trail for exercise, but would prefer to be able to bicycle from home. When our cars are unavailable, we just stay home
- N/A
- Personal car
- Personal car
- Car. n/a
- Personal car. Contact a friend for ride.
- Personal car
- Personal car. Family member.
- Personal car. When not available, need to rely on friends or cancel my appointment. Taxi do not come here and Uber is not popular in this area.
- Personal car
- My primary method of commuting is with a personal car. If this is not available, I am able to ride with a co-worker.

- Car
- Walk; carpool. Walk! They need to make buses and cabs more accessible
- Car. Nothing - Can't get to work
- Driving. Rent a car
- Walking - live nearby, no access to car or bus

Question 3: Do you think it is easy or difficult to walk, bike, or take transit to businesses within the corridor?

Responses

- Very difficult
- difficult for all above, lack safe sidewalks, crosswalks, transit, bike lanes, etc
- Difficult, GRTC only goes to Food Lion on Route 1 would have to ride bike or walk to extend trip further south – but no sidewalks, and no crosswalks – with more heavy trucks, as fast as the cars go this will be even more dangerous – people walk from the communities to Route 1 to get to businesses, must ensure community receives some benefits from this
- I believe that walking or biking would be difficult because of the traffic
- Yes
- No
- Unable to comment
- Difficult to walk and take transit
- Difficult. Sidewalks are sporadic at best and walking for residents and possible workers is dangerous
- Difficult, for all
- Elderly have issues walking, biking, buses would be better
- Not at all
- Difficult
- Can be difficult if have physical limitations or haven't ridden the bus system in long time or never
- Take transit
- Walking is easier but it's nice to have transportation
- Long waits for transit
- Easy
- Difficult to walk
- Yes
- Very difficult to walk. A huge number of pedestrian deaths in region. Happy that County is moving forward on trails
- Difficult on all. There is not a safe way to walk or to bike and as stated earlier, bus transportation is limited and can be very lengthy
- Difficult by design
- It is nearly impossible without extreme risk to life and safety. There is a lack of sidewalks or safe non-auto travel lanes
- Walking and biking have always been dangerous on the corridor. I served as a firefighter on the Chesterfield County portion of the corridor from 1976-2010. Pedestrians struck by vehicles were always an issue

- Difficult
- Very Difficult
- Is wanting bike lanes and small public busses asking for the moon lol? The moon would be great
- Very, very difficult
- It is very dangerous to walk or bike along Jeff Davis, particularly in Chesterfield. There is no access to public transportation here. There are very few sidewalks and no bike lane
- It is not easy, heavy traffic no sidewalks in places
- Very difficult
- Dangerous and difficult
- No way. The roads are not friendly in that manner.
- Putting your life at risk.
- Difficult to do all three
- There is NO transit to businesses that I am aware of. Lack of sidewalks and bike lanes make those modes of transportation dangerous.
- Very difficult, no public transportation, bike lanes are not that safe because culturally they are not that accepted and there are no sidewalks or paths for walkers. Also nature of the communities and locations of work would make for very long walks and areas where one could not walk.
- Difficult to walk along the highway because sidewalks are very much needed.
- It would be greatly difficult to walk or bike within the corridor due to lack of sidewalks and lack of transit options. Many persons in this area would greatly benefit from public transportation.
- Difficult
- Yes, and even if you do walk that's easy 2 mile min walk
- Difficult
- Difficult. Everything is spread apart
- It depends on the person. May be easy or difficult to walk or bike depending on disability

Question 4: Are there specific places in the corridor you would like to go by public transit, biking or walking, but are unable to travel to now?

Responses

- Winchester Greens
- 10/1 area, downtown, Manchester area
- 1 to 2 miles down Route 1 from Chippenham at the last GRTC stop – should be extended 2 or 3 miles to help all the neighborhoods as an interim step, eventually should extend all the way to Route 10 – also East and West, Tranlin and other companies should have shuttle that extends over to Route 1 to shuttle workers back and forth – RVA Rapid Transit conducted a survey of local residents, found that some worked all the way out in Short Pump –willing to share the results of this survey
- Yes
- I walk, ride bus, and car pool. It's hard when you are trying to be on time.
- No
- Dupont
- Depending on how far off the corridor transit would run, I would take transit every day for work. There are some undeveloped trail that should be accessible. Sidewalks have become more

prominent in our area, Chester, and some bike lanes have been put on Rt. 10, but they are unusable because they are dangerous and were down on the cheap

- I think tourism in the Jeff Davis corridor would be good to have accessible by walking, biking, public transit
- Jefferson Davis Corridor; Rt 10
- Doctors, grocery store, or work
- Yes. Grocery store, doctor, church, work, other places as needed
- Not sure
- Doctor's, shopping
- Walking unless I can get a ride
- A Place of Miracles Cafe
- No
- No
- Have own car
- The whole corridor needs to be revitalized! Some citizens are literally stuck in poverty, physically speaking.
- Apartment complexes such as Falling Creek Apartments, Jefferson Davis Highway from Richmond city to Chesterfield County
- City to suburbs, shopping without giving up an entire day!
- Yes, I would like to be able to move from Colonial Heights to Richmond to patronize various commercial stores, restaurants, jobs, or family members house
- Again, my primary mode of transport is a privately-owned vehicle. For those that would want to travel by any of the three modes listed, safety changes would need to be made
- The Chesterfield side on Jeff Davis has lots of residents and need sidewalks
- To grocery store & library, local shopping
- Currently I'm blessed to have my own transportation. I think that the Ironworks and Henricus and John Tyler are some of Chesterfield 's valuable jewels that are under used and enjoyed
- Route 1 for commuting, public transit
- We would like public transit from Food Lion down to John Tyler Community College. We would like to be able to walk or bike the entire Corridor and be able to access the Capital trail and other major safe bike trails in the vicinity. We would also like to be able to bike along Falling Creek and the James River for recreation. Though it is in the long range plan, we are in great need of safe recreational places to walk and bike for current residents, and in order to attract Millennials and families
- N/A
- The corridor should have sidewalks for pedestrians safety
- Very little space in median or on roadside that is paved for pedestrian traffic
- I would love to be able to bike the whole route. If I could get to Maury Street by bike, I could easily connect to all of the city biking.
- No
- No, because I have my own car and commute from Midlothian to Bensley ES to work.
- The biggest needs seem to be transportation to John Tyler, grocery stores, any kind of medical services and places of employment.
- Parks, historical events, shops, etc. I am retired or I would add work locations.
- Public transit is needed from Richmond City Line to Route 10 in Chester.

- I am able to have a personal car for transportation, but many students are unable to make it to school unless it is via school bus. If public transit was available, attendance and parent participation in schools could increase.
- I would like to see transportation out to Chester, Virginia
- Yes, Chester & Chesterfield
- Groceries. Job
- Unable to take public transit. Door-to-businesses
- Would like to get to some doctors' offices

Question 5: What is your overall perception of available employment within the corridor?

Responses

- Many jobs
- Does not match with skills of area residents
- Some retail off of Route 10/Route 1 – and Dupont – but this area is not a jobs center, wouldn't expect people to move here if they needed a job
- It appears that there are several industries located in the area but employment has not been available for many of the residents in the area
- Very low
- Non-existent with no personal contact in the business
- Limited
- The industrial area between the river and Jeff Davis and east on Rt. 10 to Meadowville bears a lot of opportunity but access for lower income folks is not available
- Depends. There are jobs off the corridor at auto dealerships and manufacturing hubs. But some places, like the Jeff Davis corridor, could use more small business opportunities
- Bus system for certification, job training system develop to further employment
- I think that people will be able to find and keep more jobs if transportation was available
- There are jobs along the corridor if public transit was available more employment opportunities would be available
- Have seen lots of help wanted signs but most places are Hispanic, Latino places. Language could be a barrier
- I'm retired
- Fair- jobs are available
- Good
- Not very good
- Employment is slim
- My perception is that there are a lack of jobs that the area residents can access
- Available and diverse
- More employment if residents could easily get to the locations
- The Corridor presents an economic desert. Due to various factors, many businesses and jobs remain unavailable. More businesses need to be brought into the Corridor, but that would only happen if transportation is conducive
- I think that there are more open and functioning businesses than not. I am not sure about the availability of jobs
- Need more development no jobs

- There are some, more during holidays but no transportation to get to them
- I feel there seems to be a mix of job types along the corridor but I do feel that "rides" (lack of) are holding people back
- Not great for people of the area. Ok for region but not growing at the pace I would like to see. Need more interconnection between small business
- Though there are many employment opportunities, not many are desirable. Those who work in industry tend to have dangerous jobs, long hours, shift work, produce undesirable products, work in undesirable work environments, often with marginal pay and benefits, are not valued by the corporation, have little opportunity for advancement, and work for companies that are not viewed as contributing to the beauty and vitality of the surrounding community. Most don't work at companies they can be proud of. There are many small businesses along the corridor. Most are also undesirable places to work and many (with a few notable exceptions) prey upon the poor. Many who live along the Corridor do not currently possess the training, work readiness skills, life stability, and transportation necessary to get and maintain the good paying jobs available on the Corridor. I believe with meaningful collaborative planning and well-funded initiatives, this can change
- Few opportunities for the poor with no transportation and I am not aware of any substantial opportunities
- Very limited
- Very poor
- Lower middle class to under the table to exploitation with a few large industry jobs.
- Service industry. Big business jobs are disappearing. One week in 2008, the corridor lost 1,000 jobs at 4 companies in the time of one week.
- There is little.
- Low paying jobs requiring few skills.
- Low paying jobs for the most part or jobs that local citizens cannot fill because of job requirements and lack of skills, or skills that need updating.
- Very little employment is available.
- Besides the local schools and a few local businesses, I am unaware of other employment options within the corridor.
- 0 percent
- Not easy the only thing available is fast food and Amazon
- A bus system for training and certification so we can get a job
- Limited. Scarce
- Don't think there is any available employment

Question 6: What do you think are barriers to finding jobs at companies within the corridor?

Responses

- Transportation, job training
- No public transportation, not know how you're going to get to job – Along Route 1 from Chippenham to Route 10, nothing along the corridor – no jobs, no one hiring – in comparison at least on Midlothian Turnpike there are some jobs, currently nothing along Route 1
- Lack of training

- Longtime residuals from racism
- Transportation is a serious issue. No public transportation along the commerce road corridor
- Transportation. Most businesses want you to have a license so you can get to work, but if there is appropriate transportation that would allow more people work opportunities, which in hand would create better income and more taxes coming from the corridor
- The area could benefit from revitalization so it was a more attractive and appealing place to live and work.
- Not enough education for jobs presently. Not enough transportation
- Not having ample transportation
- Lack of transportation
- Language and transportation
- It would be very helpful to get to/from job
- Disabilities
- Training for computers
- I don't know
- They want online applications and screen people hard to get a job
- No transportation
- The lack of transportation or safe walkways is a huge impediment to jobs
- Transportation
- Transportation and job retraining. Companies should be provided incentives to retrain for positions on the job
- As I stated in other areas of the survey, Transportation remains the number one issue and barrier to jobs coming in and residents being able to reach the jobs that exist
- Transportation, education and the fact that many jobs are probably temporary/part-time, with no benefits
- There are none south of Bells Road
- Transportation
- Computer applications. I tried to apply for a job at Panera one time and I couldn't navigate the computer/web! It made me feel hopeless. Maybe church groups could help the poor average person get a job these days, like go with them to the library to use the computer and sit beside them while they pray for favor with cyberspace lol
- Language, communication, skills and training
- Lack of communication network. There needs to be community development along the Corridor to help establish neighborhood associations/civic groups to help facilitate two-way communication to and from citizens about needs and opportunities. Most residents have no idea of what jobs and training are available
- Lack of coordinated services. The Jeff Davis Association could be empowered to hire staff to help coordinate services along the Corridor to help obtain info on needs and inform citizens of training and job opportunities
- Transportation. Either public transportation or shuttles could help transport employees to and from Corridor jobs
- Need for comprehensive citizen and neighborhood empowerment initiatives. Many want a better life for themselves and their families and don't know where to start. Support networks are also necessary. Initiates are necessary to help individuals and families stabilize, develop workforce readiness skills, independent living skills, and receive specialized training

- Education
- Lack of transportation and/or businesses that do not pay a decent wage
- Transportation, passive racism
- I think people can find them. Because the jobs are not good, they may not want them. The people that would want them would need public teams.
- Jobs went outside the country.
- Education and transportation
- Transportation, training
- Transportation, housing, better skills set
- Some people do not have transportation to get to a job.
- The Bensley community has a dominant Hispanic population. Language is a barrier when finding jobs within the corridor.
- Transportation and the lack of businesses
- Racism and only wanting mostly all white crew
- No transportation. No training
- Transportation
- Pay rate, company may say its hiring but are not. Hours are not flexible

Question 7: What kinds of employer-based supportive services would be beneficial to potential employees living near the corridor? (e.g. transportation, childcare, substance abuse treatment, or other services)

Responses

- Sidewalks- both along Route 1 and local routes connecting jobs and housing - and public transit
- Transportation, child care, housing assistance
- All of the above – Community Center, Child Care – Branch of a hospital, no hospital services in close proximity – No grocery store between Food Lion at Chippenham down to Route 10.
- Transportation and care
- Substance abuse treatment, typical employment training
- Transportation, childcare
- Much of what is mentioned in the question, but just as important is possible the business could help pay for the transportation services. Also, if one is working the chance of abuse treatment, availability of child care can lift up the workers so they can be contributing members of the area and support retail/restaurant establishment along Jeff Davis.
- Also banks that would offer programs to allow day workers a pathway to a steady acct. and get them away from the predatory check cashing businesses.
- Transportation, affordable housing, childcare
- Transportation, substance abuse
- Substance abuse treatment; child care; working; getting to wherever you need to go
- Transportation, child care, medical care, food assistance/bank if needed
- Transportation and childcare
- Substance abuse treatment, child care service
- Transportation
- Treatment
- Substance abuse treatment

- All of the above
- Transportation
- Childcare and substance abuse treatment
- All of the above!
- Transportation, childcare, language, and affordable and clean housing
- Transportation and safe childcare services.
- Additional services clearly needed include childcare, substance-abuse and treatment, professional interview and job search Coaching, Job apparel availability and educational and vocational assistance.
- Transportation, job centers, childcare, since there is such a large heroin and alcohol problem then there needs to be substance abuse treatment, English as a Second Language training.
- SUBSTANCE ABUSE TREATMENT, CHILDCARE, EDUCATION. THERE ARE NO SCHOOL OF JEFF DAVIS.
- All of the above
- All. Fight hard for all forms of addiction help to be available close by....close cause of the need for transportation. Sometimes I think that more addiction help groups would spring up and come to the corridor, but many of the good hearted helpers are afraid to come if there is not a safe building or meeting place to meet in, and someone to walk them to their car afterwards. Addictions are a horrible stronghold holding the whole community back and locking people into crime.
- Transportation transportation transportation
- Transportation, flexible hours, good pay, weekly paychecks, parental leave time, generous vacation time corresponding with school holidays, seasonal employment for some Moms whose kids are home in the summers, hours that correspond with school hours. It would be great if corporations measured success by the quality of life of their employees, customer satisfaction, positive community impact, good stewardship of natural resources, and impact on future generations along with their bottom lines.
- All the services listed are needed.
- Transportation, recreational and family wrap around services
- Transportation, Childcare, substance abuse education, prevention, treatment, job readiness programs
- All of the above originating from a corporate philosophy that saw themselves as the leader in following the golden rule
- Health care, drug stores and supermarkets needed.
- Transportation, childcare, adult education
- Training, transpiration, child care, substance abuse treatment
- Transportation is number one. Job training that could include GED but also skills needed for new jobs. Work with employers, especially those coming to county, to determine skill set and certify workers in those skills, not just child care but pre K types of programs to help prepare them for kindergarten and community centers and daycare for older children. Develop safe communities and a community focus sheriff or police dept. Encourage volunteerism.
- Transportation and job training
- Persons within the area may not have access to education to help assist them in acquiring better jobs. A Community center that provided ESL classes and basic job training would be a great asset.
- Substance Abuse Treatment and Transportation
- Option 2 carpool or every job after 3-6 month offer health care and benefits
- Make traveling arrangements

- Health benefits. 401K, yes to all supportive services

Question 8: What type of skills, training, or knowledge may be lacking within the community that are needed for jobs within the corridor?

Responses

- Computers, automated machinery technician, ESL
- Job-training for manufacturing and public transportation to get there – without training people can't keep the job – also need public transportation to get to job-training
- Technical skills
- Specific job training requirements represented by employers
- Targeted training- for example Commercial Driver's License training, logistical training, workforce centers are not accessible
- Need to be more informed, to meet with the neighbors close by
- Basic training programs, including what is offered at John Tyler CC. Local HS focus on college degrees, I believe a focus on training that gets students ready for the work force is needed. The Chesterfield PS system is too worried about the number of students ready for college that they forget about student who won't qualify for college, don't think it's right for them or after college don't have a degree to work in their degree field. Focusing on a non-college workforce through secondary school, including training for a job after HS, help employers get trained workers without training themselves.
- Chesterfield County school just off the corridor have only one vocational/technical school. We need to find out just how many students would better qualify for immediate employment right out of high school or be prepared for a two year college of training through that community college."
- Training for customer service and industrial jobs
- Counseling, life coaching, education resources
- Resume building; computer skills
- Immigrants or those from other countries may experience language barriers, no skills at all, no driving experience
- Night school, going to library
- Workshops to help others learn different skills
- Computer for older folks
- Nothing
- That they hire people that do not have computers or computer skills
- Unknown. But, in general, more vocational & on-the-job training are great.
- Computer skills, professional/interpersonal soft skills, resume writing, mock interviews
- Technology
- Customer service and interpersonal communication skills, computing skills, driver training, and professional appearance coaching.
- How to apply for and interview for a job, English as a Second Language, education levels are predominantly high school or less, on the corridor itself.
- SCHOOLS, JOB TRAINING
- On the job training would be great

- I've said this before. "The pike is waiting to bloom into its blue collar glory." Simple low tech jobs can put food on the table and it's noble work. Sheet rock, barbering, landscaping, sewing and tailoring....and always computer help so you can live in the world in general lol. Adult education. Oh and there is a need for truck drivers.
- Not positive, but technical and computer might be important
- Money management, budgeting, nutrition, health and wellness, independent living skills, workforce readiness, civic training in how local government works. Also character building and spiritual development (provided by churches), skills and personality assessments, GED training, ESL, parenting strategies, child development, specific job training, internships, apprenticeships, life coaching, job coaching and support, along with partial scholarships.
- Basic reading and writing skills
- Communicative skills
- English, PC
- Life skills including how to work finance career counseling /aptitude assessments
- High school graduation rates in District 8 of RVA are terrible.
- English language classes, technical education programs
- The area has many good people with a decent work ethic. Some parents worked 2-3 jobs to make ends meet. Transportation / tuition assistance to Chesterfield Technical Centers or John Tyler would be helpful. Some people can learn valuable skills through apprenticeship programs if transportation is available. There is need for certified nursing assistants, nurses, barbers, beauticians, and all kinds of skilled labor. Work Force is a good resource, but it is out of reach to many due to transportation issues.
- Basic skills like math and English, work practices like attendance, attire, things like answering phones, basic trade skills like those needed for apprenticeships.
- Higher education
- Language is a huge barrier. Most of our current students have to translate for their parents. Basic ESL classes/training would benefit the community. Also, skilled professions such as electrician, plumbing, landscaping, etc. would be great areas for learning. Basic secretarial skills would also be a benefit.
- They are not lacking the skills. They need to opportunities within the businesses when the companies decide to bring the business to the corridor
- Typing & grammar lessons. Etiquette
- Basic job training
- People don't want to learn or train new skills. Some employers want college degrees but some people who do not have a college degree could still do the job

Question 9: What kinds of programs or assistance may be needed to connect job training with community members?

Responses

- Offer more programs at convenient locations and times within community
- Must reach out into these neighborhoods – may need translator in certain areas with high populations of Hispanics – someone needs to go into the neighborhood and build trust that your there to help them – it takes relationship building, bridge building – For example, RVA rapid transit

has done outreach into the Bellwood Apartments – ongoing conversation with them – Recommend us looking at regional transit vision plan inputs from an outreach meeting that took place in this community

- Entrance-level programs for many of the residents
- Employment training and childcare assistance
- Transportation accessible training
- More kinds of jobs
- Surveying and meeting with groups of students to see how they feel about their future vocation and then offer the training they need to be successful. Get HS and JTCC involved.
- Funding/scholarships, working with civic and business groups to get the word out about available opportunities
- More training centers
- Career training; career seeking; transportation to programs
- Transportation, interpreters
- Service, transit
- Workshops
- Programs for the disabled
- Television ads
- I don't know
- Communication face to face, not on computer
- Perhaps a mobile unit would be helpful. (like a bookmobile)
- Mentors and business people who can assist potential employees with soft skills as well as computer skills such as word, excel, quick books, etc.
- Take the training to all area schools. \ Taxpayers are already paying for them.
- Computer training
- Job fairs, easy access and user-friendliness of online applications, companies need to work with local schools to educate students about job requirements and prerequisites.
- NA
- Venues, communication lines, assessment
- Community Development. There needs to be funding for staff to do Community Development in the neighborhoods, trailer courts, apartments and for those living in the motels along the Corridor in order to develop neighborhood associations and civic groups and thus vital two-way communication with residents of the Corridor.
- Coordination. There also needs to be funding for staffing for Coordination of services along the Corridor to connect various supporting agencies and organizations with the neighborhood. It is possible these positions could come under the supervision of the Jefferson Davis Association, or a similar community advocacy organization.
- Partnership. A partnership needs to be developed between the jurisdictions of Chesterfield and Richmond with regard to the Rt. 1 Corridor. Revitalization and empowerment must become a priority for these Corridor, and resources must be allocated in order to bring about meaningful change.
- Collaboration. Tiger teams from various local government departments such as education, social services, planning, code enforcement, police, economic development, etc., should be developed assigning specific personnel within those department to research best practices and work together on targeted issues. These government employees should collaborate with other organizations,

businesses and churches, the JDA, and neighborhood associations to identify assets, strategize solutions and implement those strategies. It is important to apply an empowerment model such as Asset Based Community Development to empower individuals and neighborhoods to take personal responsibility for success with the help of the community.

- Supervision. Some entity needs to be established as the centerpiece and supervising entity which would be responsible for spearheading collaboration, strategy, implementation, and also analyzing and reporting on progress both to the community and to the collaborating partners.
- I'm not sure, that's a question for the community businesses.
- Job trainings that lead to higher income
- ESOL
- Central team of individuals canvassing to connect different small communities that are all bringing the same message and services.
- Basic fundamentals of literacy.
- Transportation, financial assistance
- Transportation. Apprenticeship, technical training, John Tyler, Chesterfield Technical Center, on-the-job, Work Force.
- Job fairs and training in local elementary schools, using, local schools as community centers (for child care) while adults learn. Job training must be accessible and most poorer people do not have transportation. Community outreach to get people to believe in programs. Safe housing.
- Better businesses with job training.
- Child care and public transportation would help the community and its members.
- I honestly don't know
- Temp agencies
- Help us get the training we need, or help get the community college assistance to get the training needed

Question 10: What is your overall perception of the quality of life of the neighborhoods surrounding the corridor?

Responses

- Many good quality homes, some decent mobile homes and many dilapidated mobile homes. The corridor needs significant redevelopment.
- Good, but neglected - lack amenities of newer neighborhoods, need reinvestment
- Lack of options, lack of resources – not enough people willing to bring positive impact
- The neighborhood is depressed and could use industry that would provide jobs
- Needs improvement
- Not good. I try to stay in the house. There's a lot of crime.
- Quiet, retired seniors
- Needs improvement, limits employment opportunities
- My house is located just behind Commerce Road. I already hear the noises from trains, the traffic of trucks and motor bikes, a lot of noise.
- Not good. There are not many amenities offered along the corridor that appeal to the population that lives there. Their sport are different, they have no grocery shopping accessible without a car and predatory landlords have to be dealt with in some way. Those who are able to work pay most of their paychecks in weekly rent.

- As stated, revitalization and redevelopment would make the area more attractive to people as a place to live and work. Also a focus on schools (including renovating older schools so they are more attractive) and a focus on public safety.
- Many are run down areas needing improvement. Many families live in old motels and trailer parks.
- Fair
- Not very good
- Very good area to live in
- Fair
- Fair- need for starter residences
- Good
- See a lot of poor people and people begging for money
- Poor people need help
- Poor, unsafe, lack of hope.
- Poor. Winchester Green would be the exception. Dilapidated housing, slum lords. This could be another way for business to support and to help families living in the corridor. If we can volunteer time to causes, we can provide materials to fix up these dwellings.
- Areas reflect the values
- My overall perception is not positive. There is a great feeling of economic depression and social forgetting, meaning it appears many of the residents have been forgotten as important contributors to this community.
- One extreme to the other. In Chesterfield County, there are nice neighborhoods within close proximity of the corridor. Directly on the corridor are predominantly mobile home parks and apartment complexes.
- NEED TO BE REBUILT, QUALITY IS HORRIBLE
- Poor
- Because one of my friends lives on the corridor and I visit her in her cute little house all the time, I have developed a love for that place. The corridor seems to have a funky and pleasant mixing of several cultures. I feel that there is a peaceful live and let live attitude amongst the citizens. Now on the negative side, I find the unity in the culture groups spreads completely over to the crime side of things. All kinds of people seem to be unfortunately bound together by their sins and addictions and criminal activities.
- Good but could be easier with better development and commerce
- It is generally a place to avoid if you can. As a resident of the Corridor for 25 years, I would say there are many good hard working people who live modest lives on the Corridor. Many folks live in entrenched poverty and find themselves in survival mode most of the time. Most of us would choose to live somewhere else if we could. Personally, we tried unsuccessfully to sell our home from 2008-2012.
- It is unpleasant, unhealthy and depressing to live near industry, pollution, noise, and poverty in transient, crime infested and declining neighborhoods. It is unjust, immoral, irresponsible and ineffective economic policy to continue to spend massive amounts of money to continue to develop more and more industry without first considering and sufficiently investing in the people who live in the neighborhoods located along commerce corridors who bear the brunt of the environmental and socio-economic impact. It is also incredibly important to consider the types of industries we would like to have here -- not just the ones we would chose for their bottom line tax revenues or quick startup date although those issues are important. We could instead design the commerce with a win/win/win approach. "

- Poor quality of life, poor housing
- Not what it should be. Substandard trailer parks breeds dysfunction
- Poor
- It feels like a dump in Haiti where conditions are vastly different from the adjoining areas but people learn to do what they need to survive.
- Dismal.
- Poor
- Poor. It is unconscionable that this area of the county contributes more tax money to the rest of the county, yet receives the least amount of money spent. The county appears to be catering to the interests of those with monetary influence.
- For some communities there is a feeling of family and belonging, but for many housing is poor, poverty and getting food on the table is a problem, work and safety for self and family is an issue.
- A lot of residents have lived in the older neighborhoods all their lives and they are working with associations and Chesterfield County officials to improve the area. In the mobile parks some people are transit, and some people are not able to get jobs because there are not enough good businesses to help provide employment.
- The overall perception of the quality of life of the neighborhood surrounding the corridor is fair. More than likely, persons are living from pay check to pay check and may be lacking in some needs.
- It's a great quality of life. We need jobs so that the people can have some where to work.
- They have to make my affordable in Chester. African Americans mostly live in Hopewell & Petersburg. I don't think it's fair. Everyone deserves equal treatment.
- Poverty
- High in this neighborhood
- Roads need to be fixed, potholes

Question 11: What kinds of positive benefits do you think corridor businesses contribute to the surrounding neighborhoods?

Responses

- Many good jobs, some good services and shops
- Provide needed goods and services, some are locally involved in JDA - need more
- People have somewhere to go besides their home, their neighborhood
- At present none
- At current time, the corridor business contribution to the communities is very negligible
- Some jobs, not enough
- Not really sure.
- There are a number of bodega style groceries selling ethnic foods and a couple of flea markets for buying cheap goods. But I think that the industrial businesses seem to be afraid of hiring those who live locally.
- Corridor businesses, especially small business, work to revitalize and improve the neighborhoods for all.
- Provide jobs
- Not sure but fair wages, healthcare should be offered
- Location is great for highways and business easy access

- Taking people to stores, apartments, family friends for handicapped people also
- Jobs.
- Jobs
- Food to eat, place to get out of weather
- Easy shopping, i.e. groceries and such.
- Endless positive benefits.
- We need more grocery stores. However, businesses provide economic benefits as well as needed work for residents. Businesses are one of the best way to help facilitate the changes needed.
- Improved quality of life
- Given the limited availability of Corridor businesses, the social impact upon the community is negligent. The businesses that are available, do not offer well to high-paying jobs and opportunities are limited.
- It depends on the business and what the business brings to the community. Jobs, services, needed commodities are some of the benefits.
- **NEED MORE BIG COMPANIES IN THE AREA**
- Dollar General & a few Latino stores are the only places accessible
- I appreciate business.
- Don't quite understand the question
- What IS and what COULD BE are two very different scenarios.
- Most people would assume there would be ample access to jobs and easy access to interstate travel (assuming one has a car) here. Most people who live here don't work here. It would be interesting to research what percentage of people who live on the Corridor actually work here. Many people who live here retired from one of the big industries nearby (DuPont or Phillip Morris or Reynolds Metals), work in construction trades serving wealthier parts of the region, or are on assistance. Most people who have the better paying local industry jobs can afford to live someplace more desirable-- and do so. Generally speaking, the further one lives from industry, especially if it produces some sort of pollution, the more stable and desirable the neighborhood.
- That being said, nearby jobs could be an asset for residents of the Corridor if we consider the quality of life of the residents on the front end and if we design /redesign communities, supportive businesses and industries simultaneously recognizing that the success of neighbors / neighborhoods goes hand in hand with the success of commerce.
- It is incredibly important to consider the types of industries we would DESIRE to have here -- not just the ones we would chose for their bottom line tax revenues or quick startup date although those issues are important. We should seek out industries that produce products we want here, that are a delight to make, and of which we can be proud. Work environment is important. Chesterfield County currently has a 33% cancer rate. People want to build or make something that contributes to the wellbeing of people, the land, their employer, and themselves. We can design the Commerce Corridor with a win/win/win approach: thriving neighbors/neighborhoods, thriving business and industry, thriving local governments.
- We have the opportunity to do something amazing here by setting a standard of excellence which can be replicated in other localities: community-minded economic development. The question is, will we rise to the occasion?
- We could envision and design, with the help of existing neighbors, a revitalized Corridor. Such a plan would include addressing deep issues of poverty and also incorporate redevelopment of targeted properties for mixed use. With the simultaneous support and development of parks, green spaces and green buffers between living spaces and industrial tracts, the Corridor could become a desirable

place to live and work and could attract Millennials. While it may never become the abode of the well-to-do, it can become a thriving place for those who appreciate a good, pleasant, family-oriented, largely blue collar, modest and affordable living not far from the city and easily accessible to interstates for travel beyond.

- Industry in the New World began here at the Falling Creek Ironworks site in the early 1600's. A few of us on the Corridor have been praying for a second ""Industrial Revolution"" to be birthed here in this very same place. We envision this Corridor as a place where business, industry, and government will measure success not only by their bottom line, but also by the quality of life of employees and residents, by their stewardship of natural resources, by the beauty and vitality of adjacent neighborhoods, and by their positive impact on future generations.
- There are signs of hope. Words like Corporate Citizenship and Environmental Justice are beginning to emerge in conversations between grass roots organizations and local industry and local governments. There are lots of sharp, energetic, innovative, and community-minded people out there and a few of them are beginning to focus on this Corridor. I am hopeful that... if genuine collaborative partnerships are forged with a long-range view and big-picture perspective...if commerce is developed as a means to an end and not as an end in itself...if the real goal is a thriving community... then the Historic Route One Corridor will again be making history...a history of which we can all be proud.
- In our fast paced society we can easily become too short sighted, too compartmentalized, too image oriented, too focused on immediate ROI, too focused on ""landing the big one"" or impressing an imaginary audience. In doing so we can trade true sustainable success-- our individual and corporate wellbeing -- for marginal short lived accomplishments. We trade our birthright for a bowl of soup.
- We have the opportunity to repair some of the faulty stones in the foundation of Richmond. Along with our many successes, regrettably our history includes the shame of sometimes trading the wellbeing of people for temporary monetary gain: in our conflicts with and conquests of Native Americans in order to gain their land, in becoming a major port for the slave trade, and in oppressive racial segregation. May we never be guilty of such self-serving greed at the expense of others again.
- Humbled by our history and learning from our mistakes, it now falls to us to change the reputation of Richmond. It is time to redeem our history by becoming honorably known as a place where the dignity and wellbeing of our people, individually and corporately, is partially accomplished by good, clean, meaningful, mutually beneficial work (commerce)."
- Very little, if any
- Limited jobs
- Serve the niche items desired by direct population
- Their scraps keep the rats alive. Most only take. Many exploit.
- If I could sell my beautiful home here for what it would cost to replace it somewhere else, I would. This is a forgotten place. The needs are great and used by do gooders to make themselves feel good about their charity.
- Limited services for daily needs.
- Jobs
- OTJ training, experience, financial inflow into the area, training, etc.
- I have spent much time and energy trying to develop a community garden
- As the residents of the hotels have no access to fresh fruits and vegetables. A good, affordable grocery store would contribute to the overall health and well-being of the corridor. Also, I am not aware of any area hospitals, satellite hospitals, Patient First (or similar facility) or even a health clinic in the area. These are the first businesses that should be developed.

- But the corridor needs to be selective in those businesses. Those businesses need to enhance the area not trash natural resources and make it look ugly. I do not want to see the corridor residents taken advantage of because they have no resources to fight unwanted industrialization.
- I would love to see an area with brightly colored small businesses and good restaurants. There are many foreign born people who could serve authentic cuisine, lovely crafts, tailor made clothes, etc. The ethnic diversity of the corridor could be used to make an attractive area to shop and eat. Add some sidewalks with lovely landscaping (even fruit and nut trees). Include a farmer's market ethnic markets, a microbrewery, and a medical facility. Develop it near a gateway to the corridor from I-95. This could be a focus of festivals like the Asian Festival at the Richmond Center, a harvest festival (apple event, perhaps?) etc. It would bring in tourism, highlight the historic corridor, and be a fun place for area families to gather.
- Not much. We need supermarkets with fresh food, small shops, cafes, and businesses that take a sense of pride in the community. Big conglomerates like car dealerships add nothing to the community, few jobs and not much money going into the local economy.
- To have better businesses in the area will not only make the area look better, but it will give other people a better feeling about coming to the area and feel safer while shopping, etc.
- A positive benefit from having businesses in the surrounding neighborhoods would be the creating of jobs for those who may be close enough to walk that would usually be unable to work due to the lack of transportation, and it would set a great example for the children of the area. Local businesses could form partnerships with surrounding schools.
- Cash flow
- Keeps people off street
- Jobs. Training
- Unknown
- You have more people trying to do better than going to jail for stupid things. More violence now but having the opportunity to learn new things and stay out of trouble

Question 12: What kinds of negative impacts do you think corridor businesses have on the surrounding neighborhoods?

Responses

- Many low quality businesses with junky appearance
- Disconnect between major employers and area neighborhoods - businesses should be doing more to revitalize corridor as partner with city/county/public
- So few businesses down there, traffic not coming from the businesses it's the cut through traffic that causes congestion – not enough businesses for people to stop at – Route 1 is a highway with Section 8 housing that you have to walk up, that's the problem – The area has been cast aside, neglected – left for the resource deprived to live on this corridor
- Very little
- Poor
- (illegible) congestion, pollution
- Predatory business such as payday lenders or vehicle title lenders and through the way businesses run, other than the ethnic ones seem to be unfriendly.

- Certain business - payday lenders, cheap motels, businesses with absentee ownership that aren't maintained - give the corridor a "rundown" feel that casts a negative impression.
- Not supporting community events and nonprofits that try and connect business and life improvement
- None known
- Very great idea, need service very bad in our area
- Mostly good impacts, jobs are scares but there are some. Older folks need help.
- None
- It is hard to get around without a vehicle
- Crime, noise, traffic.
- Depending on the business, it can cause pollution, negative impacts on youth such as vape stores, adult clubs, etc.
- Depend on the business and its values. This should be considered before permitting certain businesses in the area.
- Some of the businesses create an environment conducive to various crimes and moral failures. Some of these include the lower scale motels which may aid in prostitution and drug use.
- More traffic, roads have had to be widened in what used to be small towns. Then the decision is made to make them walker and bike safe. The temporary nature of the work brings in transitory people who reside in motels or rented spaces, more than long-term residents.
- NONE
- Ask and you will receive. Let's brain storm and know what we want of them. I want technical schools and community gardens and I want them to be networking friends with each other (the businesses or representatives from their businesses) I want a friendship core of the business people. I want the churches to commit to pray for the businesses and their health and prosperity. It's all about relationships between everybody and building fruitful relationships.
- Same
- Again, what IS and what COULD BE are two different scenarios.
- At the moment I don't think most area businesses and industries along the Corridor are very good neighbors. Some local businesses who are attracted to commercial corridors even prey upon the poor. Most have no sense of shared responsibility for the wellbeing of their customers, employees, or neighbors. Most landlords of apartment complexes, mobile home parks, or motels are basically slumlords. Many take advantage of the fact that people who live there or do business there have urgent needs, have nowhere else to go, or have a checkered past and would not ""report them"" for their unethical business practices for fear of retribution. Thankfully, there are a few notable exceptions of community-minded businesses.
- It must be stated that there are some very detrimental ""businesses"" that tend to flourish in commercial corridors which include prostitution, drug dealing, lottery sales, pornography and alcohol sales.
- Beyond these negative impacts, many industries have made billions of dollars here but local citizens past, present, and future, have paid dearly for that success. Many front line workers have paid the ultimate price in working strenuous or dangerous jobs, by being exposed to toxic chemicals or heavy machinery, and by working long hours or shiftwork that damages their circadian rhythms and disrupts family life. Most did so for moderate pay and few days off while executives and shareholders became wealthy and even pushed for a more favorable bottom line.
- The Corridor currently suffers from major air pollution, water pollution, noise pollution, areas of blight, reduced property values, aging and declining neighborhoods, blowing trash, entrenched

poverty, fractured families, health problems, more than its share of crime, and perhaps, worst of all a damaged sense of self-worth and a lack of hope for lasting change. Our human and natural resources are not being stewarded well or even efficiently, and current and future generations are paying the price. We can do much better and we must.

- Most businesses are not business that require more than several employees.
- Cultural competency is lacking
- Lack of diversity of services offered
- Feed failure by short sites philosophy of success that does not include the surrounding environment or local employees
- Too many auto lots. Toll road business with high toll limits commerce.
- Traffic, pollution
- The Chinese factory near the Defense General Supply Center defies any logic, especially since tax payer money was given as in incentive to locate here. The fact that it seems to be kept very quiet bothers me. I seriously hope that this survey will not in any way be manipulated to show public support.
- The area has potential for beauty. The natural soil is rich and would support landscaping along the corridor. I'd hate to see that soil removed, it's tall, old trees cut down and the area replaced with asphalt and factories that area not green or have ugly designs. The James River is lovely and largely unspoiled. I'd hate to see it lined with factories, polluted, or deprived of its natural beauty."
- Many are polluting, unattractive an almost industrial in a residential area. Better zoning laws are needed. As I have heard over and over about the corridor, if we want butterflies we must plant flowers.
- Some small business owners speak very little English and have run down buildings. In order to shop at a grocery store and go to a nice restaurant, we have to go to the Chester area. These are two type of businesses that are very much needed in North Chesterfield area. Nicer type of businesses in the area will help with employment and help to revitalize the area.
- Not sure.
- They do not have a negative impact. Everyone want to work but the lack of transportation for the public and the lack of individual transportation will not allow the constituents to travel out of the Richmond area to seek employment.
- None. We need more jobs
- Not enough information on what is needed in communities
- Peer pressure. If they aren't being trained at home the right way, they will follow what they see. The way the employers talk to the employees - discipline but don't appreciate the good work. Some businesses don't appreciate their employees

ATTENDEES

Last Name	First Name	Affiliation
Client Attendees		
Nelson	Barbara	RRTPO
Wichman	Chris	RRTPO
TAC & PAC Attendees		
Amanin	Jasmine	VDOT Richmond District
Burrus	Pete	DRPT
Eure	Todd	Henrico County
Faulkner	Chessa	Chesterfield County
Florin	Jeff	Port of Virginia
Godbolt	Laura	Port of Virginia
Inman	Amy	City of Richmond
Loftus	John	VEDP
Mannell	Ben	VDOT
McCoy	Sarah	Port of Virginia
Rucker	Ivan	FHWA
Svejkovsky	Ron	VDOT
Stock	Emily	DRPT
Todd	Mike	DRPT
Additional Attendees		
Aryal	Sulabh	RRTPO
Bingham	Paul	EDRG
Bray	Catherine	RRTPO
Ferrara	Jane	City of Richmond
Jacocks	Barbara	RRPDC
Gammel	Billy	RRPDC
Lantz	Ken	RRTPO
Goodin	Krista	CDM Smith
Harris	Zach	Baker
Michiels	Paul	Baker
Prideaux	Paul	Baker

AGENDA

- Welcome and Introductions
- Workshop Objectives
 - Review of progress since last meeting
 - Review and discussion of preliminary needs and potential solutions
 - A look forward to next steps
- Wrap Up

MEETING SUMMARY

Paul Prideaux welcomed the group and led a round of introductions. He then reviewed the agenda.

Progress Since Last Meeting

Paul Bingham and Paul Prideaux reviewed the methodology and process for the development of the growth scenarios and targeted development sites previously discussed at the November 2016 webinar. Paul B. then reviewed the alternative development futures.

Discussion

- Can you review the first scenario again? Do the characteristics in the corridor attract a certain type of jobs? It's related to the existing access to transportation modes and regional demand currently.
- For the freight-related industries in Alternative 2, do they skew it toward the heavier types of industry? Is there a difference between the two for distribution? Alt. 1 is much higher on distribution businesses.
- Do you think the difference in the type of uses in the alternatives will drive different solutions? Would it benefit understanding which transportation improvements are a priority for Sites 1 and 2 within the Commerce Corridor study area versus Sites 3 and 4 that are outside the study area? The team will consider this.
- In terms of calibration, this plan will be a 40-year plan but some of the solutions are 100 years away. We need to scale down the proposed solutions and prioritize those projects. We should be identifying near term solutions to help scale this down.

Demands on the Transportation

Paul P. presented the development-generated freight demand and future highway volumes. Zach Harris presented the future highway operations.

Discussion

- Does the 2040 Baseline include the Tranlin development? Yes.

Preliminary Needs and Potential Solutions

Paul P. reviewed the full list of needs by mode then went through each of the initial solutions associated with the needs.

Discussion

- For projects fully funded in Six-Year program, were those built into the baseline? They were built into the E+C for 2022. We need to keep in mind that those projects may not get us to 2040 needs.
- These needs and solutions should include the grade separations identified in the RVA to DC Highspeed Rail project as well as the City of Richmond priority overpasses. We should work with Emily Stock at DRPT to make sure we have the correct locations for grade separated crossings needed.
- There will be increased transit access within the City of Richmond portion of the Commerce Corridor study area.
- Add broadband connectivity as a need in the miscellaneous category to be considered with road improvements.
- Add Port of Richmond Rail Improvements project to R2.1 in Comments section.

Paul B. described the next steps for the travel demand modeling that incorporates the alternative investment packages and economic modeling. The models will track economic impacts on industry and household responses to cost savings.

Next Steps

- TAC and PAC members to send any comments on needs and/or solutions to Chris Wichman.
- Chris Wichman to email meeting summary and list of needs and solutions to TAC and PAC members.
- Chris Wichman to schedule a webinar to discuss further the needs and solutions.

ATTENDEES

Last Name	First Name	Affiliation
Client Attendees		
Nelson	Barbara	RRTPO
Wichman	Chris	RRTPO
TAC & PAC Attendees		
Burress	Pete	DRPT
Day	Ronique	Secretary of Transportation's Office
Detmer	Chris	VDOT
Faulkner	Chessa	Chesterfield County
Godbolt	Laura	Port of Virginia
Inman	Amy	City of Richmond
Mannell	Ben	VDOT
McCoy	Sarah	Port of Virginia
Riblett	Mark	VDOT
Rucker	Ivan	FHWA
Smith	Barbara	Chesterfield County
Stock	Emily	DRPT
Svejkovsky	Ron	VDOT
Additional Attendees		
Amanin	Jasmine	VDOT Richmond District
Aryal	Sulabh	RRTPO
Bingham	Paul	EDRG
Ferrara	Jane	City of Richmond
Goodin	Krista	CDM Smith
Harris	Zach	Baker
Hudgins	William	Panattoni Development Co., Inc.
Michiels	Paul	Baker
Prideaux	Paul	Baker
Van Derzee	Jim	CSX

AGENDA

- Welcome and Roll Call – Barbara Nelson
- Webinar Objectives – Paul Prideaux, P.E., Michael Baker International
 - Summary of comments received since Jan 31 workshop – Prideaux
 - A look back at Vision and Stated Goals – Goodin
 - Description of meaningful bundles – Prideaux & Bingham
 - Bundling the Solutions – Approach & Results – Prideaux
 - Looking ahead to assessment – Harris & Bingham
 - Study timeline – Prideaux
- Wrap Up –Paul Prideaux / Barbara Nelson

MEETING SUMMARY

Barbara Nelson with the Richmond Regional Transportation Planning Organization (RRTPO) welcomed the attendees and led a roll call of participants. Paul Prideaux with Michael Baker International gave a brief introduction and reviewed the agenda for the webinar.

PRESENTATION

Paul Prideaux kicked off the presentation by reviewing the comments received on the recommendations since the January 31st workshop. Krista Goodin with CDM Smith reviewed the Statement of the Future developed during the August 2016 workshop as well as the TPO's plan2040 Goals. Paul P. and Paul Bingham with EDRG then described the four bundles and the approach to assessing them. Paul P. then presented the results of bundling. Zach Harris with Michael Baker International reviewed the transportation process for assessing the bundles while Paul B. described the economic development process for assessing the bundles. Paul P. ended with reviewing the Study timeline. A summary of the discussion follows.

DISCUSSION

- Chris Detmer suggested adding a SMART Scale project from Round 2 for widening Enon Church Road from Meadowville Technology Parkway to Route 10. The project was not selected for funding but should be added to the list of recommendations.
- There was discussion about the proposed closing of the at-grade rail crossing at Dale Avenue in R7. Barb Nelson suggested reviewing the RVA to DC High Speed Rail EIS again to confirm the recommendations.
- Amy Inman asked if each individual project in the third bundle will be evaluated separately. Paul P. explained that the project logistics will not allow that level of incremental detail. She further asked if the rail projects will be analyzed separately from the highway projects. Paul P. mentioned that the team does not have the rail modeling capabilities for this contract but they could be evaluated qualitatively. Amy Inman and Emily Stock suggested the results of the rail modeling for the RVA to DC High Speed Rail may be helpful for our analysis. Emily and Paul P. will coordinate on this.
- Jasmine Amanin asked how many assessments will be done for the bundles? Paul P. explained that the team will propose to use the most intensive scenario Alternative 2 for the assessments.
- Ivan Rucker asked for clarification of the bundle 2 and bundle 3. He suggested there may be confusion of the various phases of a project such as preliminary engineering and construction and how they fit in the bundles. He suggested providing a clear description of each.
- There was discussion about the bundles and concerns for how relevant the results of the assessments could be. Paul P. and Chris Wichman explained that the bundles define a what-if analysis of transportation and economic impact: for group 1, what-if we go no further than funded projects; for group 2, what-if we go no further than projects already conceived for the area in the TPO's plan2040; and for group 3, what-if we go all the way and implement the vision list of projects as conceived by this study. The assessment will provide results, but Paul mentioned he does not anticipate the final implementation plan being constrained to selecting one of the three bundles.

NEXT STEPS

- TAC and PAC members to send any comments on project recommendations to Chris Wichman by March 8th COB.
- Chris Wichman to email today's meeting summary to TAC and PAC members.
- The consultant team will begin the bundling assessment task next week once all comments have been received.

ATTENDEES

Last Name	First Name	Affiliation
Client Attendees		
Aryal	Sulabh	RRPDC
Nelson	Barbara	RRTPO
Wichman	Chris	RRTPO
TAC & PAC Attendees		
Deemer	Rosemary	Henrico County
Detmer	Chris	VDOT
Eure	Todd	Henrico County
Faulkner	Chessa	Chesterfield County
Ferrara	Jane	City of Richmond
Florin	Jeff	Port of Virginia
Godbolt	Laura	Port of Virginia
Inman	Amy	City of Richmond
Mannell	Ben	VDOT
McCoy	Sarah	Port of Virginia
Rucker	Ivan	FHWA
Schwartz	Rick	Henrico County
Selleck	Randy	DRPT
Smith	Barbara	Chesterfield County
Stock	Emily	DRPT
Svejkovsky	Ron	VDOT
Todd	Mike	DRPT
Additional Attendees		
Bingham	Paul	EDRG
Goodin	Krista	CDM Smith
Graham	Kathy	VDOT
Grier	Robin	VDOT
Harris	Zach	Baker
Hudgins	William	Panattoni Development Co., Inc.
Prideaux	Paul	Baker
Shelton	Brad	Baker
Thomas	Bill	Baker

AGENDA

- Welcome and Roll Call – Paul Prideaux, P.E., Michael Baker International
- Webinar Objectives – Prideaux
 - Summary Bundled Solutions – Prideaux
 - Transportation Assessment – Prideaux & Zach Harris, Michael Baker Int'l
 - Economic Assessment – Paul Bingham, EDR Group
 - Short-, Medium-, & Long-Term grouping and cost estimates – Prideaux
 - Shortlisting of solutions – Prideaux
 - Solution profile sheets – Krista Goodin, CDM Smith
- Next Steps / Homework –Prideaux

MEETING SUMMARY

Paul Prideaux with Michael Baker welcomed the attendees and led a roll call of participants. He then gave a brief introduction and reviewed the agenda for the webinar.

PRESENTATION

Paul Prideaux kicked off the presentation by summarizing the solution bundling. He described the qualitative transportation assessment conducted for each individual solution to report anticipated multimodal benefits in the following areas of:

- Congestion relief and travel time improvement
- Transportation network connectivity improvements
- Enhancements to intermodal performance
- Improve last mile access to or transportation function of RMT
- Improve travel safety
- Improve workforce or image / marketability of corridor

Zach Harris with Michael Baker presented the quantitative transportation assessment conducted for the multimodal solutions using the regional model and operational models at spot locations to report anticipated travel impacts. This analysis was performed for each of the three bundles of improvements compared to the future baseline scenario.

Paul Bingham with EDRG then presented the economic assessment. To quantify improvement economic impacts, the bundles of improvements were assessed for how the projected changes in transportation activity and improvement expenditures affect the economy.

Paul Prideaux next described the Short-, Medium-, & Long-Term grouping of the solutions and mentioned that preliminary cost estimates were developed for each of them. Krista Goodin with CDM Smith reviewed the solution profile sheets example.

DISCUSSION

- Transportation Assessment
 - What are the yellow shaded items? We picked 5 of the solutions to highlight.
 - Does bundle 3 include bundles 1 and 2? Do they build on each other? Yes.
- Economic Assessment
 - In the jobs impact pie chart, is the split amongst the different sectors similar across the bundles? The reason jobs are focused on because it is the easiest for the public to understand.
 - It might be best for attendees to submit questions on the economic assessment and determine how best to explain the economic assessment in the Implementation Plan. Can questions be sent in and the internal team figure out the best way to address those questions for the report? Yes
 - In terms of the bundles and how they relate to economic impact, for bundle 2 are you building on the impacts from bundle 1? Yes, these are additive.
 - For the improvements, how can you break down the benefit of a specific rail improvement if you only see the benefit in bundle 3? How do we get to the level of detail by project or will we get to the level of detail by project? The model does not do that. It shows improvement network wide, in terms of performance of network.

- Is there a list of the individual projects by bundle? The projects by bundle are shown in the earlier slides of the presentation.
- How do you want to handle the review of the factsheets? Right now we want to hear if the template is ok and if there are any edits, is it comprehensive enough, etc. Then we will prepare drafts for all of the solutions and submit to the TAC and PAC for comments.
- It was suggested to add the additional rail funding sources including IPROC, Rail Enhancement Fund, and the potential for bonding to the solution template. It was also suggested to add “regional” organization to the project champion options.
- How will you handle public involvement? Chris Wichman mentioned that earlier in the process, we met with property owners in the corridor, conducted an online survey, conducted an economic focus group, and spoke with the Bellemeade and Jefferson Davis Civic Associations. Staff of RRTPO intends to reach out the two civic associations once the plan is complete and present what we’ve done.
- Barb Nelson stated that they anticipate presenting the Commerce Corridor plan to the RRTPO Board once this initial phase of planning effort is complete and is approved by the TAC and PAC. The plan will then undergo a public review process with the TPO in the next 2 or 3 months.

NEXT STEPS/HOMEWORK

- Two week TAC / PAC comment period
 - We welcome any follow-up questions or comments you may have regarding the material presented today
 - We also want to know your thoughts about solutions that could be eliminated based on your perspective or judgment
 - Please let us know your thoughts about the draft grouping of short-, medium-, and long-term solutions
 - We ask for your feedback on identification of project champions
 - Please direct all communications through Chris Wichman by June 8
- Where do we go from here?
 - Today’s slideshow will be posted on the project webpage in addition to the audio recording of the Webinar
 - After the two-week comment period we will make revisions to the material based on comments received and circulate a summary of changes
 - All of this information will be used to inform the Implementation Plan / roadmap and study documentation which are the final steps of the study
 - One final in-person meeting with the TAC/PAC in late June / early July to review the draft implementation plan / roadmap
 - Draft study documentation will be distributed for comment before the report is finalized.

ATTENDEES

Last Name	First Name	Affiliation
Client Attendees		
Aryal	Sulabh	RRTPO
Bray	Catherine	RRTPO
Nelson	Barbara	RRTPO
Wichman	Chris	RRTPO
TAC & PAC Attendees		
Amanin	Jasmine	VDOT
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Svejkovsky	Ron	VDOT
Todd	Mike	DRPT
Additional Attendees		
Prideaux	Paul	Baker
Goodin	Krista	CDM Smith
Grier	Robin	VDOT

AGENDA

- Welcome and Roll Call – Paul Prideaux, P.E., Michael Baker International
- Meeting Objectives – Prideaux
 - Review of study process and major milestones
 - Review of Draft Implementation Plan Document
 - Looking forward in context of regional process
- Wrap Up –Prideaux

MEETING SUMMARY

Paul Prideaux with Michael Baker welcomed the attendees and led a round of introductions. He then gave a brief introduction and reviewed the agenda for the meeting.

PRESENTATION

Paul Prideaux kicked off the presentation by summarizing the tasks completed during the study process and briefly reviewing the draft Implementation Plan.

DISCUSSION

- Are the one pagers organized by locality? Response: The one pagers can be organized by locality. Right now they are organized by mode within the short-, medium-, and long-term categories in the Implementation Plan. The one pagers will be made available online with options to select by jurisdiction; mode, or short-, medium-, and long-term category.

- How can we ensure that these projects can continue to move forward? Should we consider having a quarterly or semi-annually freight advisory committee type meeting? Response: The RRTPO may be forming a freight and intermodal working group in the next few months. The RRTPO also regularly reviews all projects within their programs.
- Jane Ferrara with the City of Richmond mentioned that the City regularly meets with the property owners along the Commerce Road as an example of continuing having discussions about project implementation. The City has suggested that the property owners organize themselves in a more formal way. The Richmond Chamber of Commerce is also still discussing branding the Commerce Corridor.
- Jane Ferrara shared a recent success story that two of the vacant properties within the Commerce Corridor are now under contract. The City of Richmond will be partnering with Virginia Commonwealth University to track the changes in the market through public investments and activity within the Commerce Corridor and Richmond Marine Terminal. They will be identifying economic metrics and will start to measure change in the corridor due to investments.

WRAP UP

Barbara Nelson wrapped up the meeting with a few remarks on the Commerce Corridor Study and next steps. Ms. Nelson noted that freight and opportunities associated with goods movement are not constrained to the geopolitical boundaries of individual localities or the Richmond region. She noted that freight is a part of a larger mega-regional, national and global system from which the Port of Virginia offers the opportunity to capture direct and indirect economic impact across the Commonwealth. She expressed that the Richmond Marine Terminal offers a unique opportunity for the region to link to the mid-Atlantic's international gateway for global commerce. She noted that the Commerce Corridor Study and similar efforts are identifying what the region can do to be a catalyst for new development, expansion of existing businesses, redevelopment of brownfields and underutilized areas with existing infrastructure.

Ms. Nelson noted that the Commerce Corridor Study builds on past efforts by the RRTPO, regional partners, and the private sector. She said that the study effectively blended quantitative analysis and stakeholder engagement, a balanced approach where innovative planning techniques led to pragmatic solutions. She noted that the scenario planning process and stress testing of possible economic futures against our transportation network will help make the case for future infrastructure investments. She emphasized that the 'Implementation Plan' positions project to compete in the next round of Smart Scale, for local or private investment, and all other funding programs.

Ms. Nelson thanked the members of the Technical Advisory Committee and Policy Advisory Committee for their participation in the study development. She noted that this plan will not just sit on the shelf – the RRTPO has dedicated resources in the FY 18 work program to see projects through and continue to work with 'project champions' to advance implementation plan recommendations. She went on to explain that this meeting concludes formal engagement with the study TAC and PAC, and outlined a series of next step meetings toward anticipated formal adoption of the plan by the RRTPO Board in October 2017. Future meetings include briefings to the ChamberVA Port Task Force, the OIPI Multimodal Working Group on July 26, and other meetings with localities and other stakeholders as directed by the RRTPO Board. The TAC and PAC members were asked to review the draft Technical Report and Implementation Plan and provide comments back to Chris Wichman by August 18.

NEXT STEPS

- TAC and PAC members to provide comments on the Technical Report and Implementation Plan to Chris Wichman by August 18

Upcoming Meetings/Coordination for RRTPO

- June 30: ChamberRVA Port Task Force
- July 6: RRTPO presentation and request for input on local and regional engagement before action on October 5
- July 11: TAC presentation
- July 26: OIPI Multimodal Working Group
- August 18: PAC/TAC comments due
- September 7: Update to TPO on comments/activities from July 6
- September 12: TAC review and request for recommendation
- September TBD: Stakeholder and interested parties open meeting
- September 20: Close public comment

APPENDIX B – PROJECT COST ESTIMATES

Ref #	Need Description	Solution Description	Source Document of Project	Web/server link to Source Document	Project UPC	Estimated Cost from Plan (in \$1000s)	Year of Plan Estimate (YYYY)	Estimated Cost (\$1000s)	Year of Estimate If Not 2017	Notes	Estimated 2017 Total (in \$1000s)
H1.1	Improved connection from Commerce Corridor to I-64 east corridor and RIC / White Oak area	Construct missing SB to EB movement at I-95 / Rte 895		http://www.roadstothefuture.com/Route_895_Connector.html				16,000	1998	Ramp F originally included in the design until project ran overbudget. As of 2002 there are no plans to build ramp. Movement provide by Bells Road/I-95 Interchange.	\$23,309
H1.2	Improved connection from Commerce Corridor to I-64 east corridor and RIC / White Oak area	Increase capacity of the existing two lane section of New Market Road between South Laburnum Avenue and Osborne Turnpike; improvements could take form as a three-lane or four-lane divided roadway section to be defined by Henrico County.	VDOT SYIP	http://www.richmondregional.org/plan2040/plan2040_MTP.pdf		18,400	2017			Timeband 3 2029-2034	\$18,400
H2.1	Improve access from I-95 to industrial corridor within project study area	Improve Interchange function at I-95 / Willis Road. Construct roundabout interchange consistent with preferred alternative in I-95 at Willis Road Interchange Modification Report	HB2 - 2018	https://smartportal.virginiahb2.org/#/public/applications/2016/hb2/view/F2-0000001313R02	T18592			47,621	2023	SYIP \$5 Mil. HB2 \$43 Mil.	\$42,286
H2.2	Improve access from I-95 to industrial corridor within project study area	Improved arterial access to James River Industrial Park from I-95 / Willis Road Interchange. Construct arterial improvements consistent with preferred alternative in I-95 at Willis Road Interchange Modification Report including following intersections: Willis Rd. at US 1, Willis Rd. at Coach Rd, Coach Rd. at Battery Brooke Parkway, and US 1 at Reymet Rd.	HB2-2018	https://smartportal.virginiahb2.org/#/public/applications/2016/hb2/view/F2-0000001753R02				13,440	2025	Constrained Long Range Plan (MPO)	\$11,471
H2.3.1	Improve access from I-95 to industrial corridor within project study area	Phase 1 improvements to interchange function at I-95/Route 10. Improve curve radius on I-95 NB to Route 10 EB off-ramp. Add lane on Route 10 EB from I-95 NB off-ramp to Old Stage Rd to allow free-flow. Add lane on Route 10 EB to I-95 NB ramp. Add 1,800' acceleration lane on I-95 NB.	HB2 - 2017	http://hb2app.virginiahb2.org/#/public/applications/473	T17414			10,000	2022	Phase 1: extra \$500 from Local CIP	\$9,057
H2.3.2	Improve access from I-95 to industrial corridor within project study area	Phase 2 improvements to interchange function at I-95/Route 10. Removal of loops, signalize ramps, NB & SB I-95 auxiliary lanes between Route 10 & Route 288 (accomplished by solution H2.6), construct 249-space Park & Ride lot at Exit 58.	HB2 - 2018	https://smartportal.virginiahb2.org/#/public/applications/2016/hb2/view/F2-0000001323R02				52,543	2028	Constrained Long Range Plan (MPO)	\$42,258
H2.4.1	Improve access from I-95 to industrial corridor within project study area	Phase 1 of the interstate access study would investigate the feasibility and greatest need for new access in Bellemeade area or improved access in Bells Road area. Once preferred solution is established, Phase 2 would deliver either an IMR (Bells Road) or IJR (Bellemeade) to reflect the needed improvement. (see solution H2.4.2 and H2.4.3).	Richmond MTP 2040 Plan	http://www.richmondregional.org/plan2040/plan2040_MTP.pdf				750		New Interchange at I-95 and Port of Richmond - PE Only (pg. 82)	\$750
H2.4.2	Improve access from I-95 to industrial corridor within project study area	Construct interchange modifications at I-95 / Bells Road area to improve operational performance. Address deficient design of identified ramps and ramp termini approaching Commerce Road as defined by the IMR proposed in solution H2.4.1.		http://www.richmondregional.org/TPO/Commerce_Corridor/Materials/Slides_3-01-17.pdf				3,085	2015	Estimate from 2015 Planning Cost Per Mile Worksheet Richmond High (U2x0.5 Miles)+(Improve Signal Phasing)x(RW&Utilities 100%+1)	\$3,210
H2.4.3	Improve access from I-95 to industrial corridor within project study area	Construct I-95 interchange (new access point) in Bellemeade Road / Commerce Road area						250,000		plan2040 Constrained Projects	\$250,000
H2.5.1	Improve access from I-95 to industrial corridor within project study area	Improve interchange function at I-95 / Maury Street. Improve and shift the ramps to Maury Street from I-95 and construct single-lane roundabout at the convergence of the ramps, Maury Street and 4th Street consistent with project fully funded in VDOT SYIP. UPC #109321.	HB2 - 2017	http://hb2app.virginiahb2.org/#/public/applications/447	109321			9,191	2021		\$8,491
H2.5.2	Improve access from I-95 to industrial corridor within project study area	Improve operations along Maury Street corridor by: 1st Street improvements between Maury & Hull (\$5M), Widen Maury between I-95 ramps & Commerce (\$2M), and Concept study for improvements to Maury between Commerce & East 16th St (\$0.03M)						7,030		Project proposals from City	\$7,030
H2.6	Improve access from I-95 to industrial corridor within project study area	The addition of auxiliary lanes on I-95 on both the northbound and southbound travel lanes between Route 288 and Route 10, or for approximately 1.2 miles consistent with project fully funded in VDOT SYIP. UPC #T19435	HB2 - 2017	https://smartportal.virginiahb2.org/#/public/applications/2016/hb2/view/F2-0000001307R02	T19435			28,770	2018	Not selected yet for SYIP	\$28,206
H3.1	Improve ability to bring larger / oversized cargo to RMT via truck	Construct 0.7 mile Deepwater Terminal Road extension to Goodes Street	VDOT SYIP	http://syip.virginiadot.org/Pages/lineitemDetails.aspx?syp_scenario_id=226&line_item_id=1262293	104882 & 104281			3,785			\$3,785

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H3.2	Improve ability to bring larger / oversized cargo to RMT via truck	Increase horizontal and vertical clearance at two I-95 underpass locations that connect Commerce Road to Deepwater Terminal Rd. Vertical (truck) clearance along both Bells Road Access Rd & Commerce Road Access are 14'1".						20,000		estimate	\$20,000
H4.	Address poor pavement condition in key locations in study area	Pavement rehabilitation or resurfacing of Bells Road Access Road, Deepwater Terminal Road, and Commerce Road Access.		http://www.virginiadot.org/projects/richmond/includes_list_of_primary_and_secondary_routes_to_receive_treatment.asp				2,000		estimate	\$2,000
H5.1	Improve function and capacity of Commerce Road	Reconstruct roadway including protected turn lanes, improved entrance curb radii for industrial traffic, bicycle and pedestrian facilities, corridor-wide access management, and a bridge replacement.	VDOT SYIP	http://syip.virginiadot.org/Pages/lineitemDetails.aspx?syp_scenario_id=226&line_item_id=36829	15958			14,460	2019		\$13,899
H5.2	Improve function and capacity of Commerce Road	Additional improvements to the operations and multimodal safety along Commerce Road include: Operational Enhancements at Hull St intersection (\$1.2M), Ped safety curb extensions between McDonough & Hull (\$0.4M), Signal enhancements at Bellemeade (\$1M)						2,600			\$2,600
H6.1	Maintain and enhance I-95 mainline capacity	Conduct operational study of I-95 through the Commerce Corridor Study area to identify improvements that are needed beyond those identified for Need H2. Such solutions can include physical improvements as well as strategies to help divert thru traffic to parallel facilities (I-295) to preserve existing I-95 capacity.		http://www.virginiadot.org/newsroom/richmond/2016/travel_time_signs_campaign107139.asp				250		estimate	\$250
H6.2	Maintain and enhance I-95 mainline capacity	Implement ITS solutions including cameras and variable message signs along I-95 to improve operations, congestion mitigation and incident management. This is a fully funded project in the VDOT FY 17-22 Six-year Improvement Program at a total cost of \$1.65 million.	VDOT SYIP	http://syip.virginiadot.org/Pages/lineitemDetails.aspx?syp_scenario_id=226&line_item_id=1427445	107772	1,650	2017				\$1,650
H6.3	Maintain and enhance I-95 mainline capacity	Widen I-95 between Willis Road (Exit 64) and Route 288 (Exit 62). Improvements include an additional general purpose lane in each direction. Paired with fully funded solution H2.6, the result will be a continuous 4th general purpose lane between Willis Road and Route 10.						14000		Estimate from 2015 Planning Cost Per Mile Worksheet Richmond High for 5.9-miles of interstate lane plus additional cost for ramp work	\$14,000
H7.1	Improve truck / auto capacity into and out of Site 1 (Altria / DuPont)	Upon specific redevelopment details at Site 1, perform necessary traffic study to determine what improvements are needed beyond that included in Need H5. This includes function of Bells Road Access Rd.						500		estimate	\$500
H7.2	Improve truck / auto capacity into and out of Site 1 (Philip Morris / DuPont)	Construct missing link of Walmsley Boulevard with grade separated crossing of CSX Bellwood Subdivision Line.		http://www.murp.vcu.edu/projects761/S10_Jefferson_Davis_Highway_Corridor_Revitalization_Plan.pdf				12,138	2015	Estimate from 2015 Planning Cost Per Mile Worksheet Richmond High (R4Dx0.6 Miles)+(Bridge over CSX)x(RW&Utilities 35%+1)	\$12,628
H8.	Improve truck / auto capacity into and out of Site 2 (Alleghany Warehouse)	Upon specific redevelopment details at Site 2, perform necessary traffic study to determine what improvements are needed beyond that included in Need H5. This includes function of Commerce Access Rd.		http://syip.virginiadot.org/Pages/lineitemDetails.aspx?syp_scenario_id=226&line_item_id=36829				500			\$500
H9.1	Improve truck / auto capacity into and out of Site 3 (RIC / White Oak area)	Upon specific industrial development details at Site 3, perform traffic impact study of the following roadways near the site: East Williamsburg Road, Technology Blvd, Elko Road, Airport Drive.						100			\$100
H9.2	Improve truck / auto capacity into and out of Site 3 (RIC / White Oak area)	Upon specific industrial development details at Site 3, perform traffic impact study of the I-295 facility and four nearby interchanges in close proximity to the RIC/White Oak area						500			\$500
H10.1	Improve truck / auto capacity into and out of Site 4 (Meadowville area)	Construct project to improve safety & operations along Route 10 from Bermuda Triangle Road through Meadowville Road / Old Bermuda Hundred Road. Project UPC #101020 is fully funded in the VDOT SYIP and scheduled for completion in FY 2019.	HB2 - 2017	http://hb2app.virginiahb2.org/#/public/applications/533	101020			50,500	2019	Funding Source GARVEE, Bonds, Match &MPO RSTP	\$48,539

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H10.2	Improve truck / auto capacity into and out of Site 4 (Meadowville area)	Widen Meadowville Technology Parkway to four lanes at the interchange of I-295 to include the construction of a new bridge over I-295. Sidewalk will be built on a portion of the project	HB2 - 2017	http://hb2app.virginiahb2.org/#/public/applications/488	105057			20,000	2021	Timeband 2 2023-2028	\$18,477
H10.3	Improve truck / auto capacity into and out of Site 4 (Meadowville area)	Widen North Enon Church Road to four lanes from Meadowville Technology Parkway to Route 10 / East Hundred Road.	HB2 - 2018	https://smartportal.virginiahb2.org/#/public/applications/2016/hb2/view/F2-0000001095_R02				15,000	2027	Constrained Long Range Plan (MPO)	\$12,305
H10.4	Improve truck / auto capacity into and out of Site 4 (Meadowville area)	Upon specific redevelopment details at Site 4, perform necessary traffic study to determine what area improvements are needed on roadways such as Allied Road, Meadowville Road, and East Hundred Road beyond that included in solution H10.1.						500			\$500
H11	Improve development potential of Site 1	Relocation of Commerce Road to be adjacent to I-95 between Walmsley Blvd and Trenton Avenue to allow for a larger contiguous land mass for development at Site 1.						2,491	2015	Estimate from 2015 Planning Cost Per Mile Worksheet Richmond High (R2x0.50 Miles)x(RW&Utilities 35%+1)	\$2,592
R1.1	Enhance cost-competitiveness of rail access to Richmond Marine Terminal	Implement dual Class I rail access to RMT via short-line service or other legal agreement(s). The rail lead between the RMT and CSX South Yard is owned by the City, which grants operating rights via a service contract. The City is currently contracted with CSX to provide rail service, however, an alternative arrangement could be considered in the future.									TBD
R1.2	Enhance cost-competitiveness of rail access to Richmond Marine Terminal	Extend existing Deepwater Terminal rail lead north of current I-95 underpass connection to CSX South Yard to provide additional rail access to industrial sites as well as connect to the existing Norfolk Southern rail spur (Rocketts Spur) which terminates near the Richmond Wastewater Treatment Plant. Will require roughly 1-mile of new trackage		http://www.vtrans.org/resources/150326DRAFT_Master_Rail_Plan_for_Public_Comment-r1.pdf				1,950		Assume 1.5 million per mile of track based off of ACW Railway Railroad 101 (1.2 Miles of track x \$1.5M / Mile) + (Modifications railroad underpass)	\$1,950
R2.1	Improvements to Deepwater Terminal Industrial Track lead	Further improve physical condition and operational speed of existing Deepwater Terminal Industrial Track lead.		http://www.vtrans.org/resources/150326DRAFT_Master_Rail_Plan_for_Public_Comment-r1.pdf				1,500		estimate	\$1,500
R2.2	Improvements to Deepwater Terminal Industrial Track lead	Extend existing or construct new siding along Deepwater Terminal Industrial Track approximately 1-mile north of Port in vicinity of Kinder Morgan / Richmond Auto Auction / Sims Metal.		http://www.vtrans.org/resources/150326DRAFT_Master_Rail_Plan_for_Public_Comment-r1.pdf				1,500		Assume 1.5 million per mile of track based off of ACW Railway Railroad 101 (1.0 Miles of track x \$1.5M / Mile)	\$1,500
R3.1	Improvements to CSX Bellwood Sub (S-Line)	Construct additional trackage along CSX Bellwood Sub (S-Line) and bridge over James River as contemplated in the Tier II EIS for Richmond-to-Raleigh High Speed Rail and DC2RVA High Speed Rail.						56,250		Assume \$1.5M per mile of track based off of ACW Railway Railroad 101 (25 Miles x \$1.5M/ Mile) + (Modifications railroad underpass) + (Railroad Bridge)	\$56,250
R3.2	Improvements to CSX Bellwood Sub (S-Line)	Construct improvements to CSX South Yard (east of Manchester area) to allow for increased ability to break up long trains and store rail cars and tankers until industrial customers are ready. Current yard is at capacity. These improvements will also allow South Yard to serve as better reliever to Acca (Richmond Yard).						1,800		Assume 1.5 million per mile of track based off of ACW Railway Railroad 101 (0.4 Miles of track x \$1.5M / Mile) x 3 sidings	\$1,800
R3.3	Improvements to CSX Bellwood Sub (S-Line)	Construct sidings and leads as needed to provide rail access to Site 2 (Alleghany Warehouse) and Site 1 (Philip Morris / DuPont) development areas along Commerce Road.						2,690		Assume 1.5 million per mile of track based off of ACW Railway Railroad 101 (1.2 Miles of track x \$1.5M / Mile) x 2 crossings	\$2,690
R4.	Improvements to CSX Peninsula Sub line	Construct sidings and leads as needed to provide rail access to select parcels within Site 3 (RIC/White Oak area).						6,000		1.5 million for 4 miles	\$6,000
R5.	Improvements to CSX Bermuda Hundred Lead	Construct sidings and leads as needed to provide rail access to select parcels within Site 4 (Meadowville area).						3,600		Assume \$1.5M per mile of track based off of ACW Railway Railroad 101 (2.4 Miles of track x \$1.5M / Mile)	\$3,600

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R6.	Improvements to NS Burkeville to West Point line	Construct sidings and leads as needed to provide rail access to select parcels within Site 3 (RIC/White Oak area).						3,000		1.5 million for 2 miles	\$3,000
R7.	Limit at-grade rail crossings along key freight roadways and railways	Grade separate key crossings as they relate to increased usage of the CSX Bellwood Sub (S-line) for both freight & future high-speed rail						90,000		3 locations @ \$30 million each	\$90,000
R8.	Ability to bring larger / oversized cargo to RMT via rail	Increase horizontal and vertical clearance at triple crossing to allow transport of high cube box cars.						50,000		estimate	\$50,000
R9	Increased ability for Class 1 railroads to accommodate future peak demand	Add more 'locals' and crews as needed to serve future rail demand along industrial corridor(s)									TBD
P1.1	Improve access to Richmond Marine Terminal	Increase RMT business hours and/or establish off-hours secure laydown yard(s). This proposal is related to Solutions P1.2 and P1.3 in that vehicular access under I-95 would help facilitate a secure laydown yard just west of I-95 (DuPontproperty). If P1.2 & P1.3 are unsuccessful, it's possible a secure laydown yard could be located on same side of I-95 as RMT									TBD
P1.2	Improve access to Richmond Marine Terminal	Conduct study of proposal to allow vehicle traffic to utilize existing underpass of I-95 adjacent to RMT property. This underpass is currently used as a utility corridor and might be able to support vehicle movement if improved. 'Low-clearance' freight movers may be part of solution here. See Solution H3.1. Solution P1.2 also relates to Solution P1.1.						250			\$250
P1.3	Improve access to Richmond Marine Terminal	Construct vehicle access under I-95 at current utility crossing to allow flow of select traffic from Commerce Road to RMT property. See solutions P1.1 and P1.2.						10,000		estimate	\$10,000
P1.4	Improve access to Richmond Marine Terminal	Conduct study of gate operations with goal of improving gate capacity during times of increased activity via truck and to accommodate future anticipated volumes.						100			\$100
P2.	Increase rail capacity inside the gates of Richmond Marine Terminal	Conduct rail operations study inside the RMT facility to identify most cost-effective investment to improve rail capacity & operations. Study to follow completion of 'Richmond Marine Terminal Rail Improvements' project funded at \$3.24 million in DRPT SYIP.						250			\$250
P3.	Increase port activity via on-site tenants	Develop vacant 14-acres for users that rely on barge, truck, rail. Pursue long-term tenant lease agreements for existing on-site warehouse space.									TBD
P4.	Improve intermodal transfer performance at RMT	Re-pave north wharf area, repair dilapidated at-grade rail crossings, replace fender along wharf wall. UPC #109266			109266			2,050			\$2,050
P5.	Maximize use of Port	Seek more balanced and diversified mix of RMT users / modes (e.g. more rail, customers that keep port busy during slower seasons)									TBD
M1.	Improve image & competitiveness of Commerce Corridor for industrial development	Explore branding Commerce Corridor to improve image, recognition and competitiveness. Consider tax incentives and/or establishment of business association to encourage visual improvements in Corridor. Provide for services vital to businesses, including broadband connectivity, access to restaurants and amenities. Improve signage and wayfinding.		http://www.richmondregional.org/Commerce_Corridor/				4,000		estimate for broadband and signage	\$4,000

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M2.	Increase grant funding	Encourage increased ceiling of Rail Industrial Access Grant program to allow for Class I railroads to respond quickly to development proposals.									TBD
M3.	Facilitate Transload opportunities between truck and rail	Encourage and/or incentivize rail operators to offload at RMT and barge to POV facilities in Hampton Roads									TBD
M4.	Comprehensive Industrial Master Plan for Richmond Marine Terminal & surrounding area	Implement master land use planning process to integrate near-terminal development efforts with on-terminal activities, to inventory rail accessible development and redevelopment sites not currently utilizing rail, and to consider residential development pressures on industrial properties in the area.						300			\$300
M5.1	Improve Multimodal Workforce Access to Jobs	Led by each respective local jurisdiction to plan for housing and / or transit service in proximity to the four sites of future increased job activity: Site 1 (Altria/DuPont), Site 2 (Alleghany Warehouse), Site 3 (RIC/White Oak area), and Site 4 (Meadowville area).									TBD
M5.2	Improve Multimodal Workforce Access to Jobs	Promote the importance of workforce training opportunities in advance of new jobs arriving. Identify champion to spearhead workforce development efforts catered to the needs of businesses in the Commerce Corridor.									TBD
M5.3	Improve Multimodal Workforce Access to Jobs	Improve multimodal connectivity including transit, walking, and biking modes. Focus efforts on high-impact local priority projects linking areas of existing and future employment to residential areas and workforce.						5,000		estimate	\$5,000
M6.1	Reduce community impacts of rail and highway traffic through surrounding residential areas	Truck Routing: Designate by signing and wayfinding preferred truck routes to guide heavy vehicles toward roadways better equipped to accommodate their size and to minimize residential interaction/community impacts.						1,000		estimate for signage only	\$1,000
M6.2	Reduce community impacts of rail and highway traffic through surrounding residential areas	Noise Reduction: Implement strategies to minimize freight-generated noise pollution, including technology improvements at at-grade rail crossings to allow trains to advance without sounding horns in or near residential areas.						9,500		3 miles of sound wall with 12' height @ \$50 per sq ft	\$9,500
M6.3	Reduce community impacts of rail and highway traffic through surrounding residential areas	Community Engagement: Develop Community Impacts Analysis for the Commerce Corridor study area to analyze population characteristics, propose community and health impacts mitigation strategies, and identify public engagement strategies to inform locality outreach efforts as projects advance to implementation									TBD

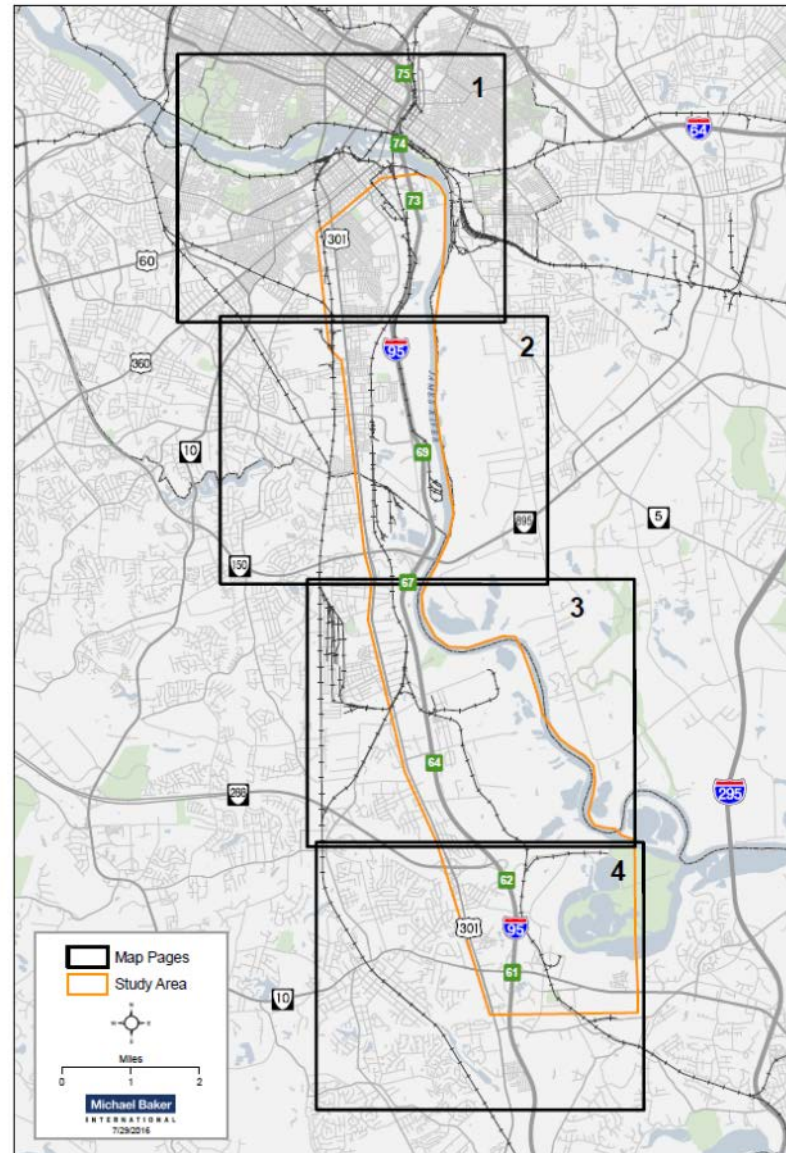
APPENDIX C – TRANSPORTATION CONDITIONS ASSESSMENT

Demands on Transportation Network

Existing Transportation Assets & Deficiencies

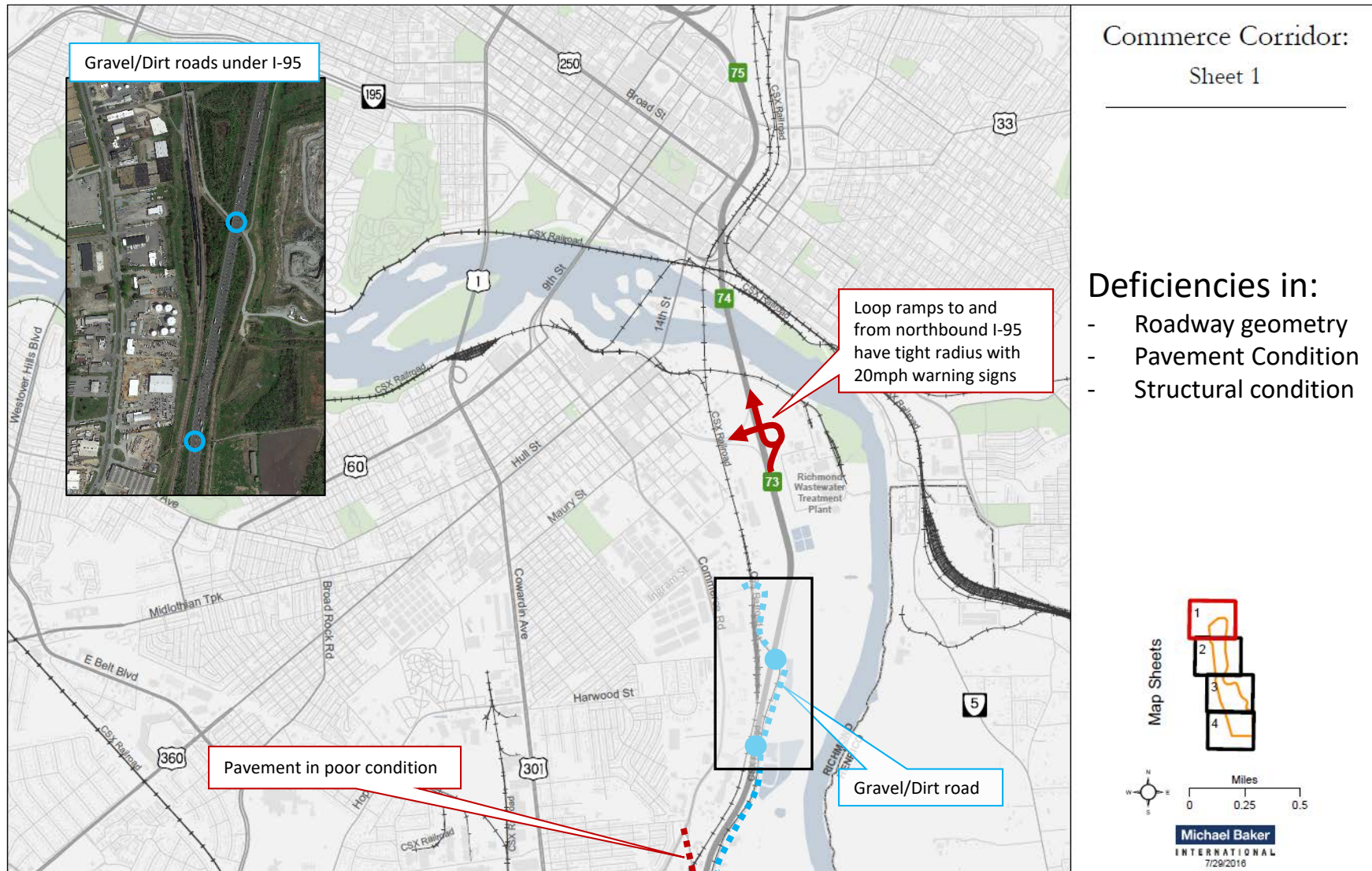
- Transportation Data collected in the following areas:
 - Highways
 - Horizontal Geometrics – e.g. inadequate radii, short transitions
 - Vertical Geometrics – e.g. bridge clearances
 - Congestion hot-spots
 - Pavement condition
 - Bridge condition
 - Heavy Truck Percentages
 - Crash history
 - Transit service in study area
 - Rail network, crossings, and bridge clearances
 - Port operations and constraints

Existing Transportation Assets & Deficiencies



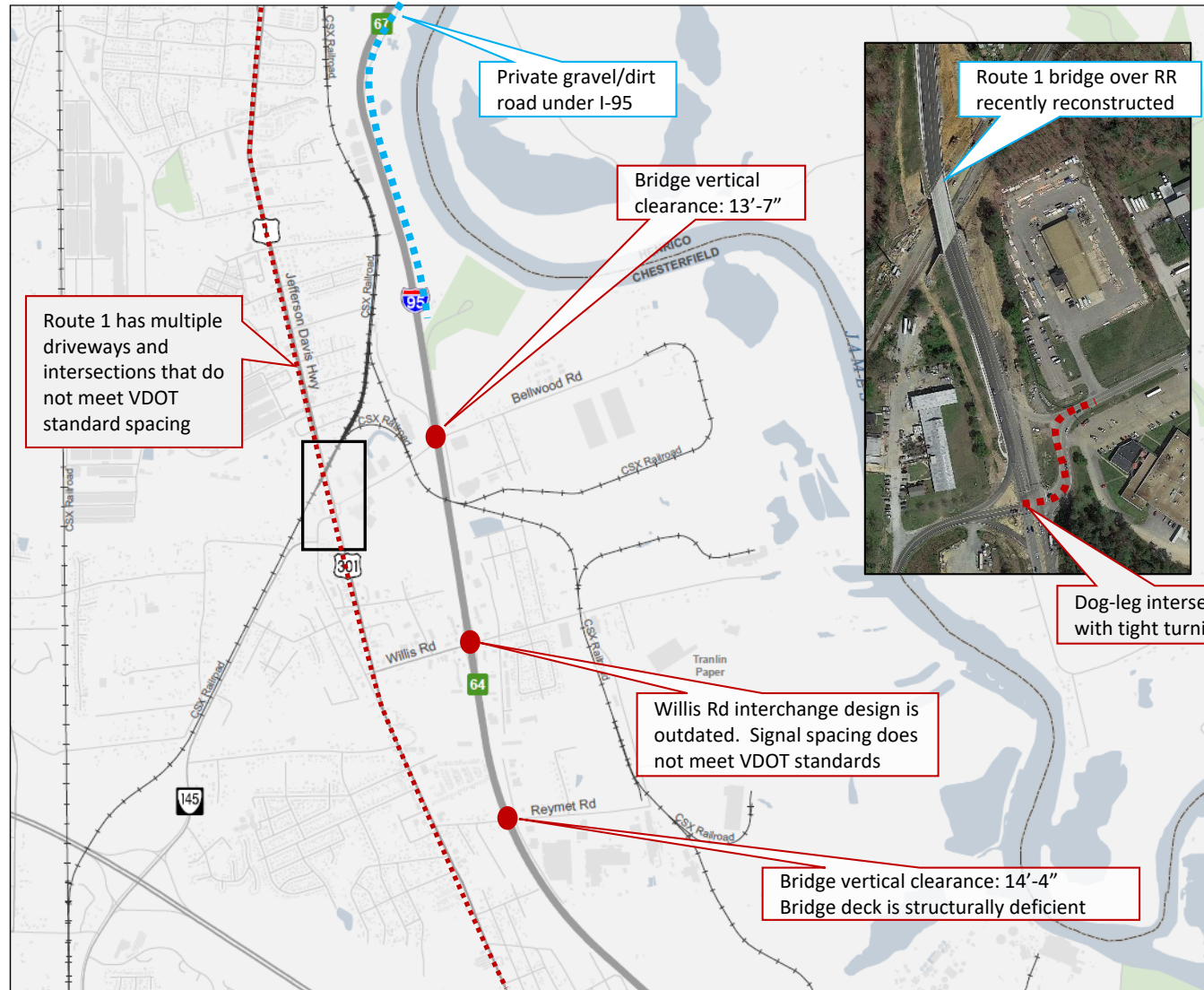
Existing Transportation Assets & Deficiencies

Highway System



Existing Transportation Assets & Deficiencies

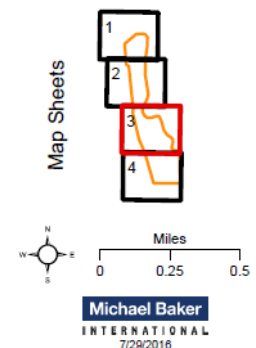
Highway System



Commerce Corridor:
Sheet 3

Deficiencies in:

- Roadway geometry
- Pavement Condition
- Structural condition



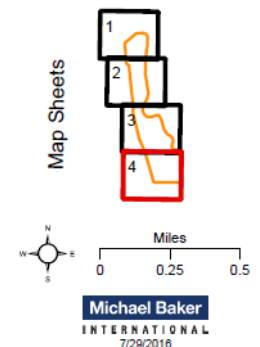
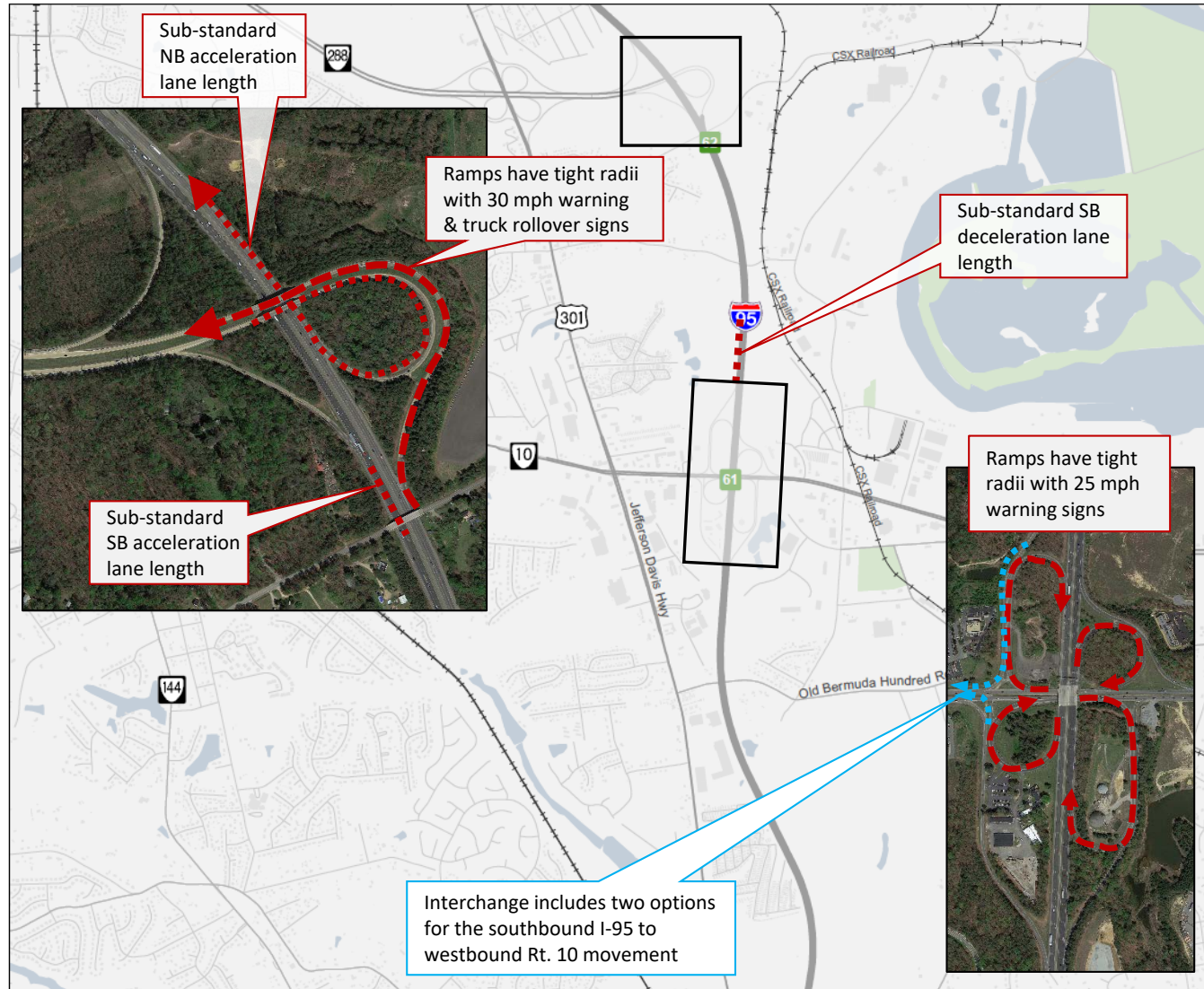
Existing Transportation Assets & Deficiencies

Highway System

Commerce Corridor:
Sheet 4

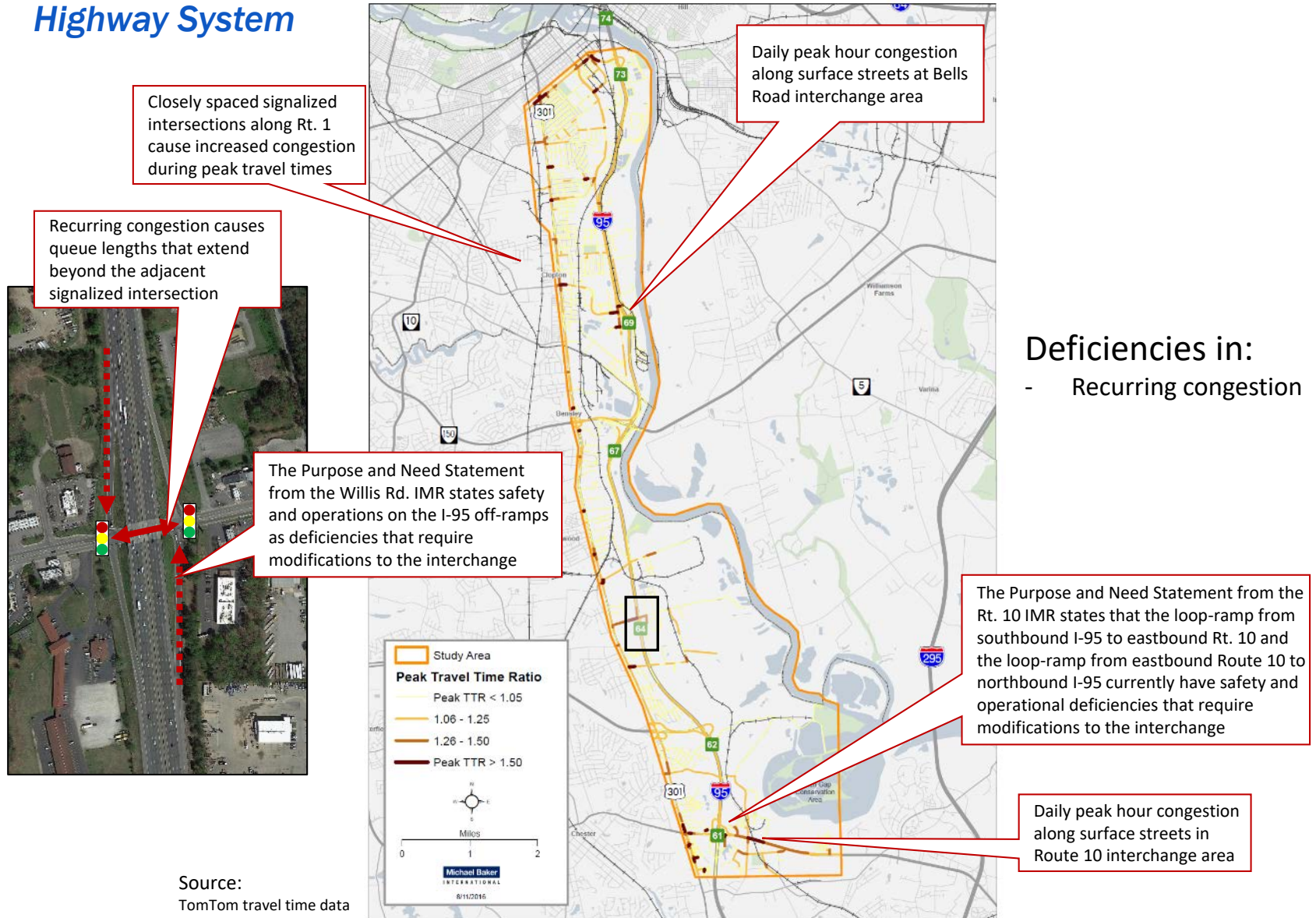
Deficiencies in:

- Roadway geometry
- Pavement Condition
- Structural condition



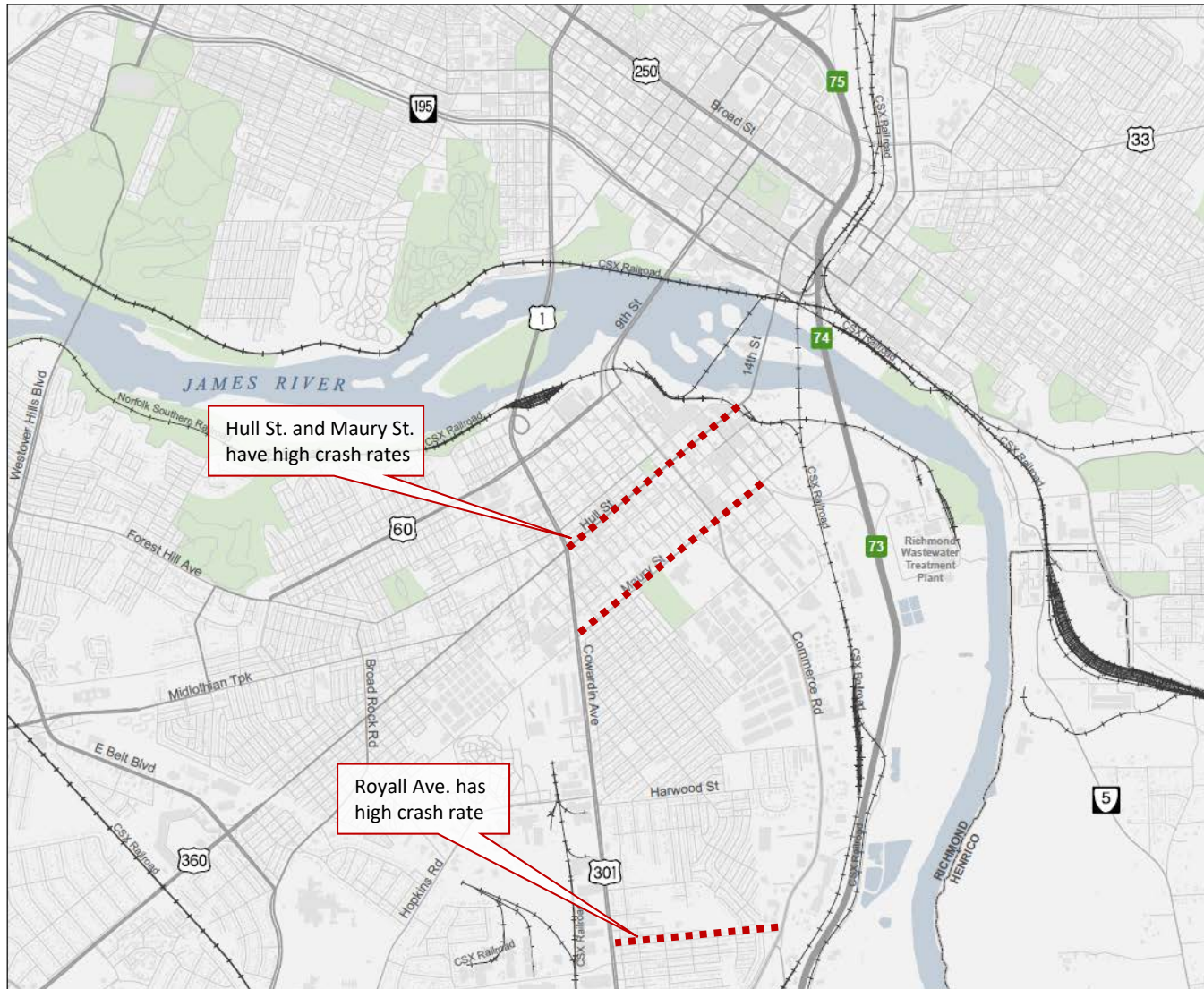
Existing Transportation Assets & Deficiencies

Highway System



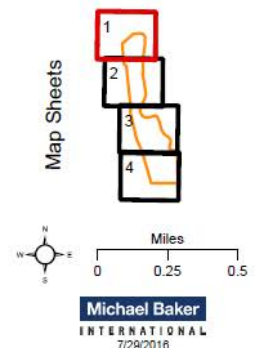
Existing Transportation Assets & Deficiencies

Highway System



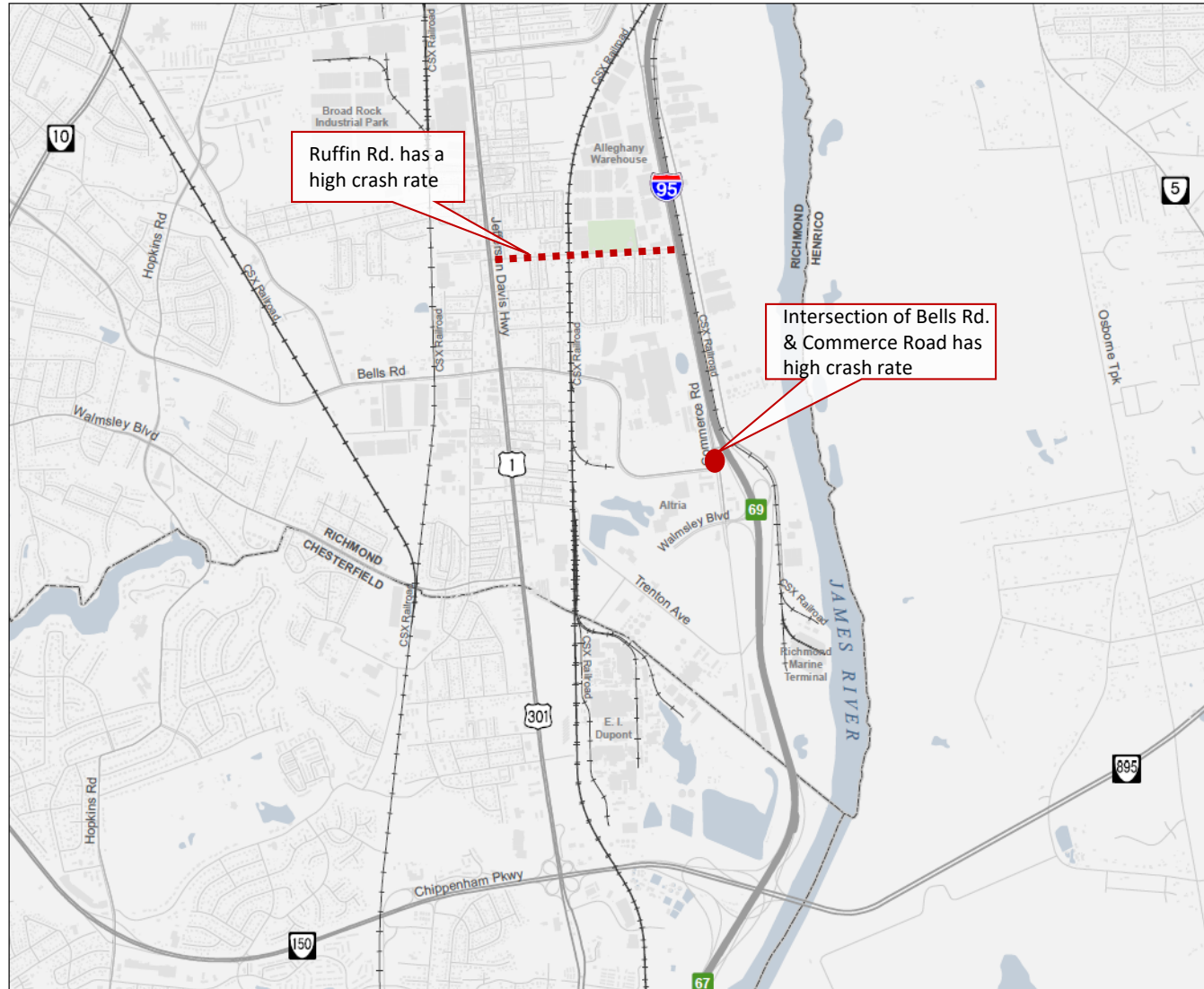
Commerce Corridor:
Sheet 1

Deficiencies in:
- Safety / crash rate



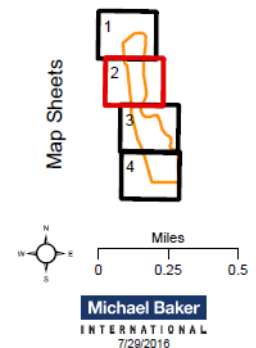
Existing Transportation Assets & Deficiencies

Highway System



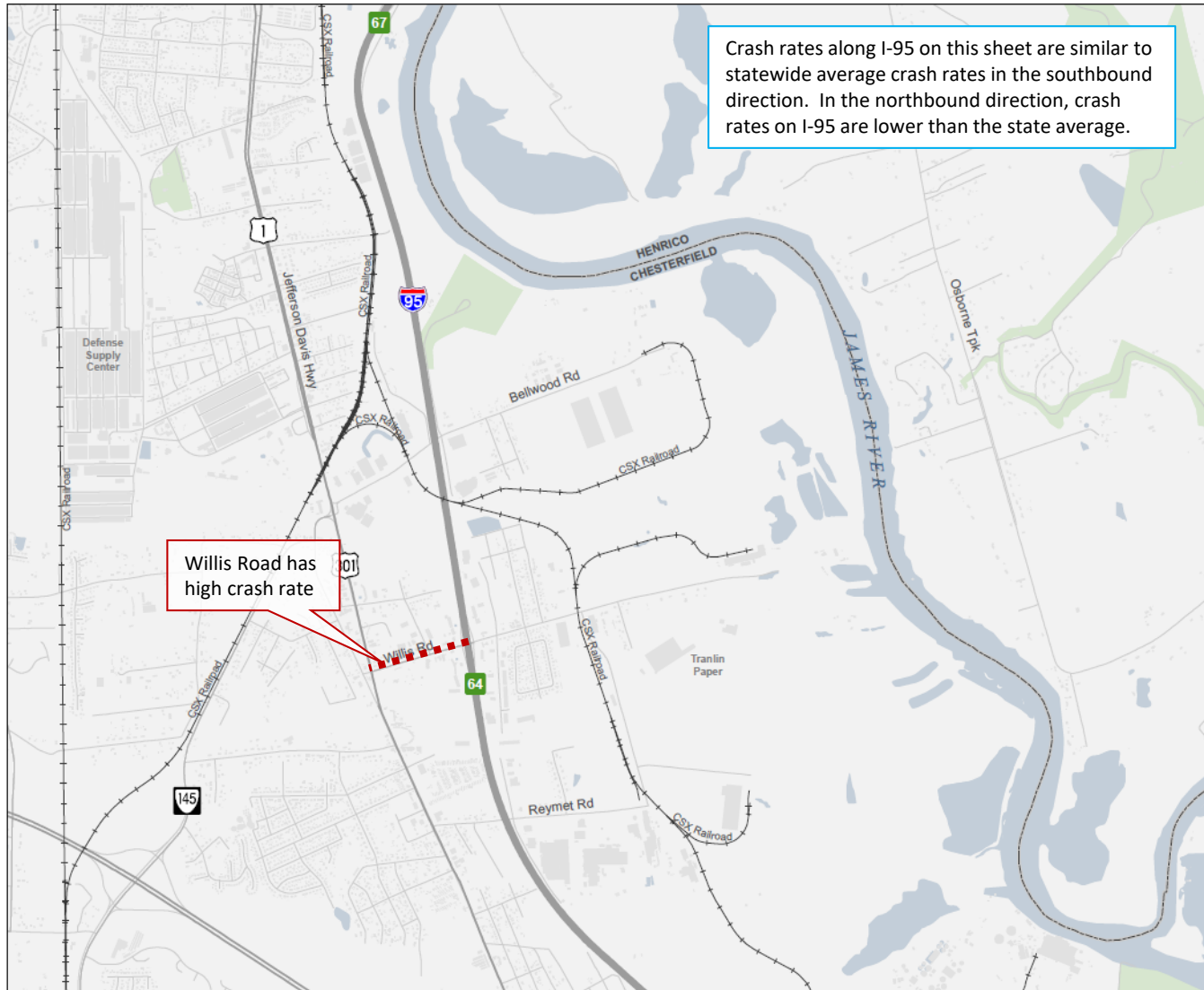
Commerce Corridor:
Sheet 2

Deficiencies in:
- Safety / crash rate



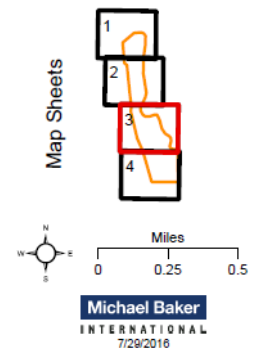
Existing Transportation Assets & Deficiencies

Highway System



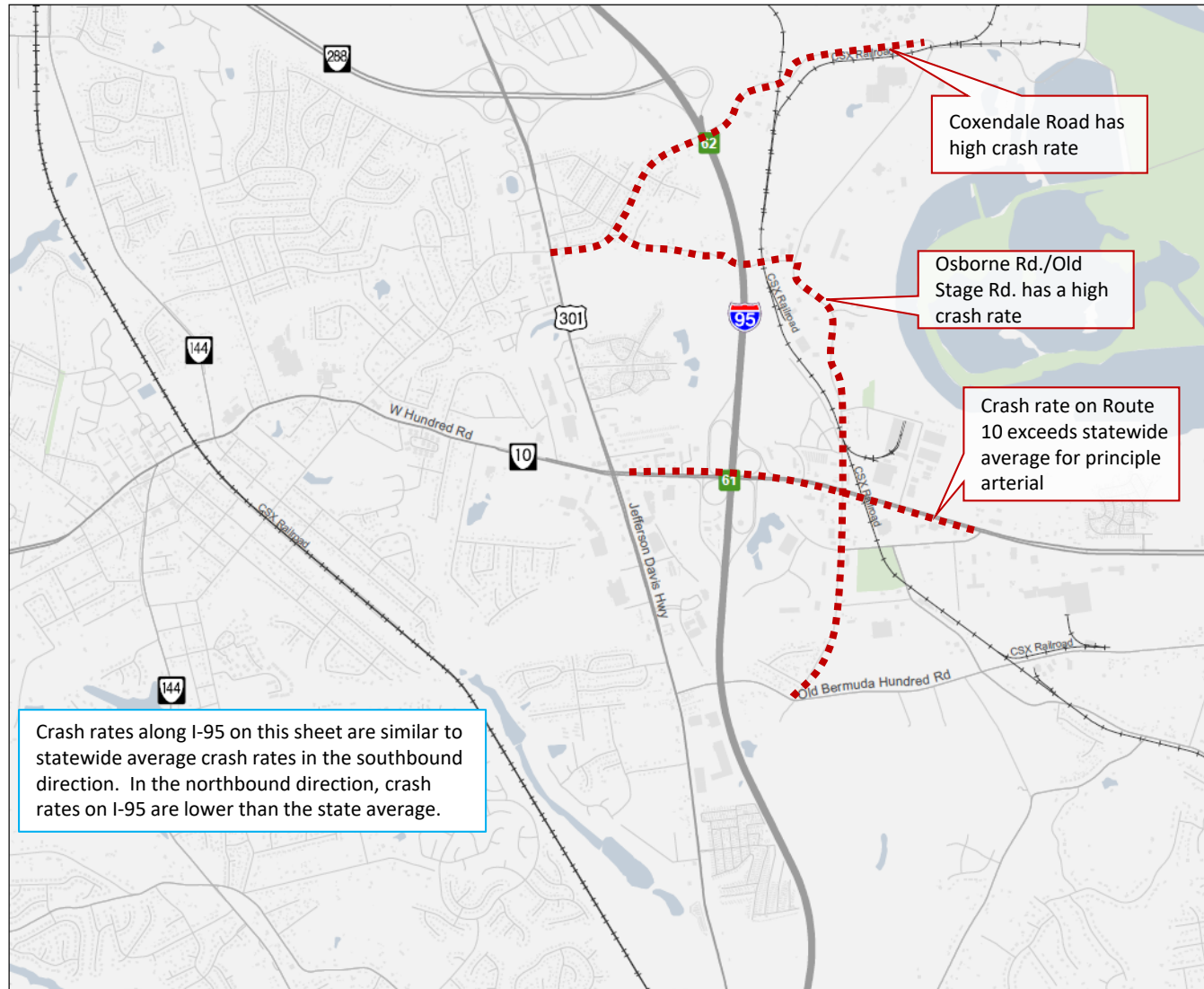
Commerce Corridor:
Sheet 3

Deficiencies in:
- Safety / crash rate



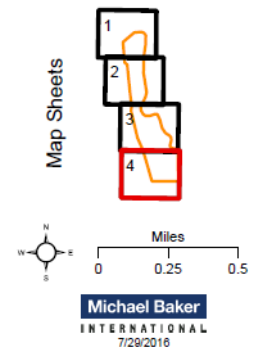
Existing Transportation Assets & Deficiencies

Highway System



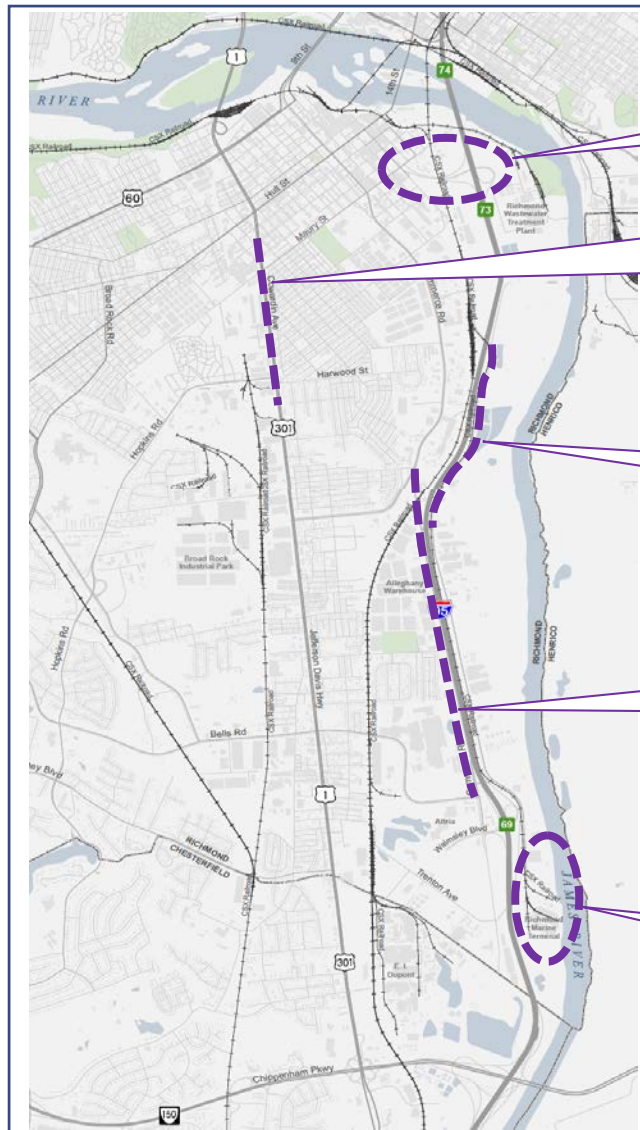
Commerce Corridor:
Sheet 4

Deficiencies in:
- Safety / crash rate



Existing Transportation Assets & Deficiencies

VDOT Six Year Improvement Plan Projects



I-95 and Maury Street Freight Interchange Improvements (Smart Scale):

- Replace signalized intersection with a roundabout
- Re-construct the I-95 ramps

US 1 / US 301 Street Freight Corridor Improvements (Smart Scale):

- Reconstruct roadway to include dedicated turn lanes, new sidewalks, and a bike lane
- Improve access management
- Installation of new traffic signals

Deepwater Terminal Road Extension

- Extension of 0.7 miles to Goodes Street
- Provides second point of access with 21' clearance under I-95 to accommodate oversized cargo

Commerce Road Complete Street

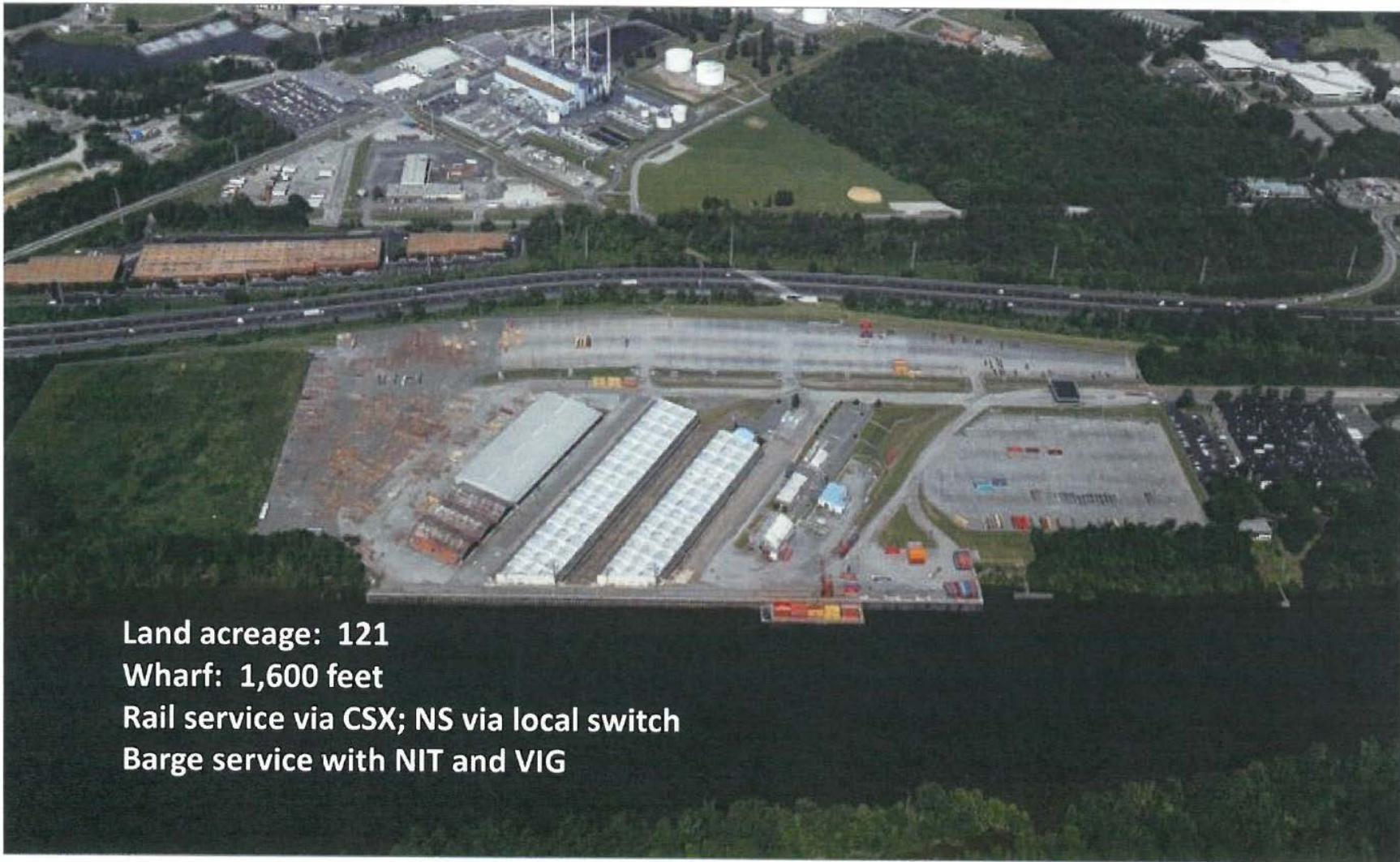
- Reconstruct roadway to include protected turn lanes and segregated bike/ped facilities
- Reconfiguration of entrances to improve access management

Richmond Marine Terminal Intermodal Transfer Improvements:

- Re-pave north wharf area
- Repair dilapidated rail crossings
- Replace fenders along the wharf wall

Existing Transportation Assets & Deficiencies

Richmond Marine Terminal



Land acreage: 121

Wharf: 1,600 feet

Rail service via CSX; NS via local switch

Barge service with NIT and VIG

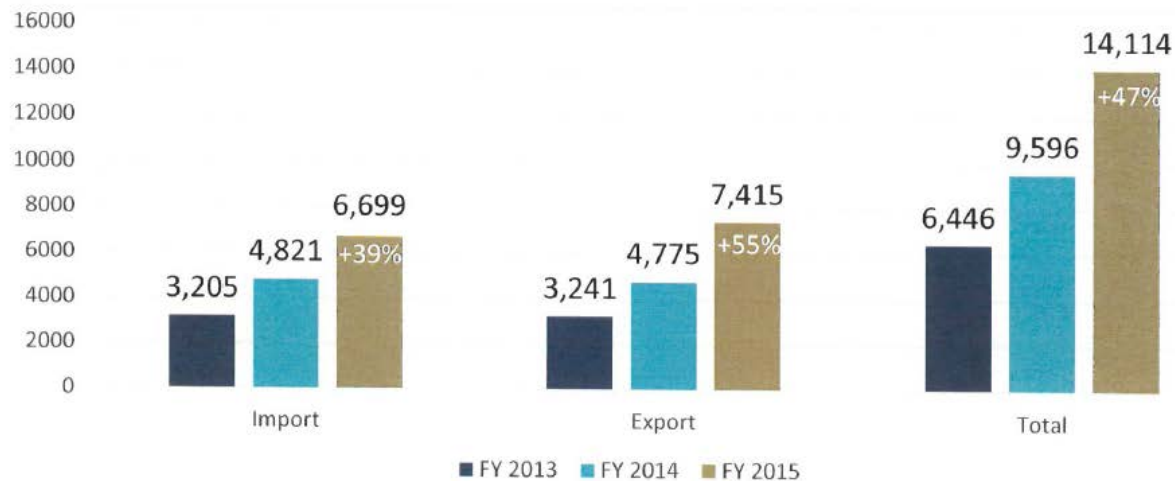
Existing Transportation Assets & Deficiencies

Richmond Marine Terminal



A CLEAR VISION. A PATH FORWARD.

VOLUME GROWTH AT RMT



Stewards of Tomorrow

Existing Transportation Assets & Deficiencies

Richmond Marine Terminal



A CLEAR VISION. A PATH FORWARD.

NEW CUSTOMERS

Precept Medical
RI Rubber
Sabra
Simms Metal
Expeditors
Luck stone
Open Plan Systems
Providence

Ongoing efforts with State, Regional and Local Economic Development Offices to identify port related opportunities, new users, investment strategies for key transportation corridors.



Stewards of Tomorrow

Existing Transportation Assets & Deficiencies

Richmond Marine Terminal

A CLEAR VISION. A PATH FORWARD.

RICHMOND AREA PORT USERS

WestRock
Scoular
Philip Morris
Universal Leaf
Evergreen Enterprises
Lumber Liquidators
Country Vintner
DuPont
Honeywell
Alcoa
Ashland Chemical

Carpenter
AMF
Evonik
Bondioli and Pavesi
Southern States
Amsted Rail
Marva Marble
Maruchan
American Signature
Reynolds
Alfa-Laval



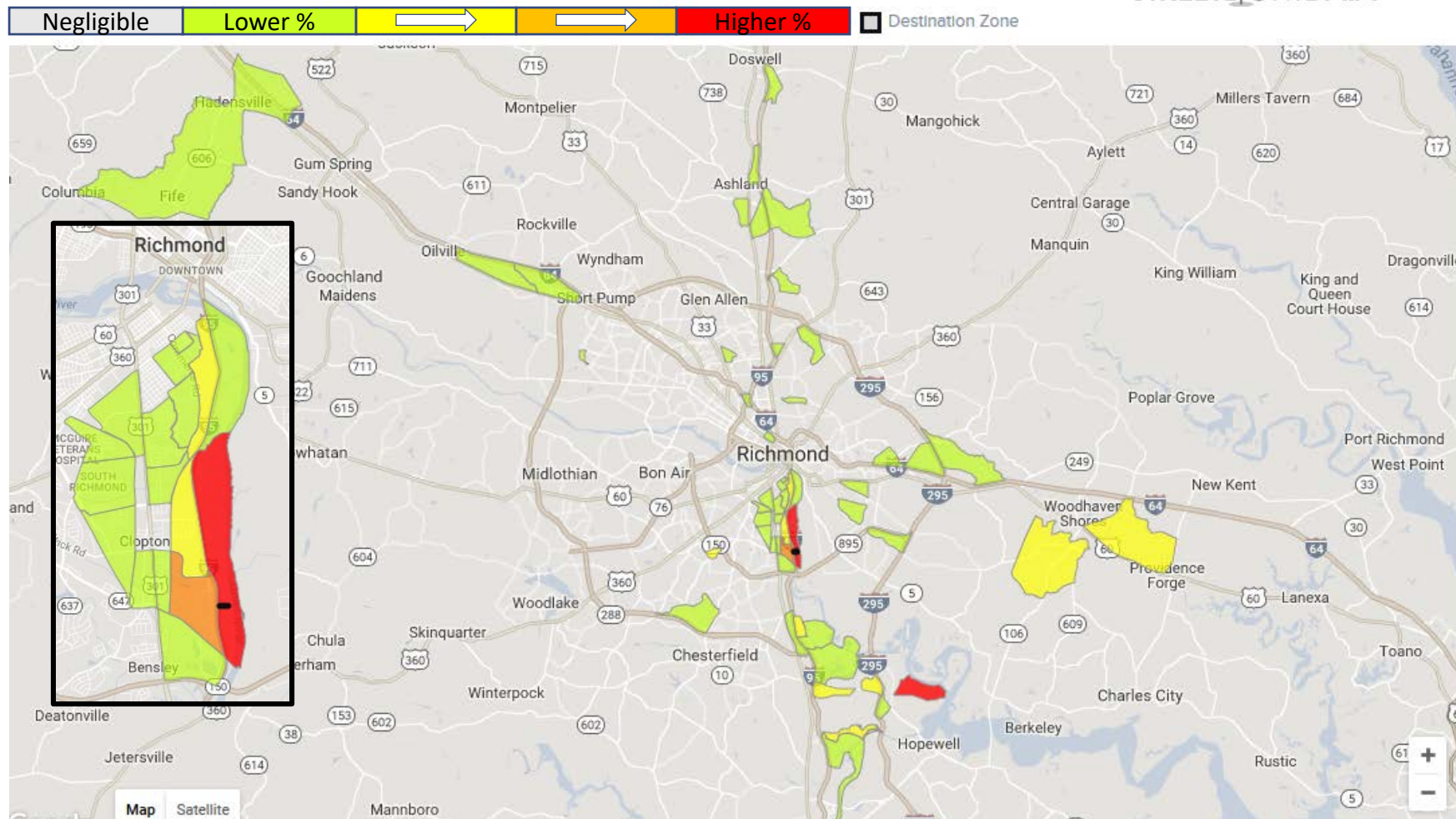
Stewards of Tomorrow

Existing Transportation Assets & Deficiencies

Richmond Marine Terminal

- Origins of large trucks during typical weekday (Monday – Thursday, April 2015 – March 2016) destined for RMT.

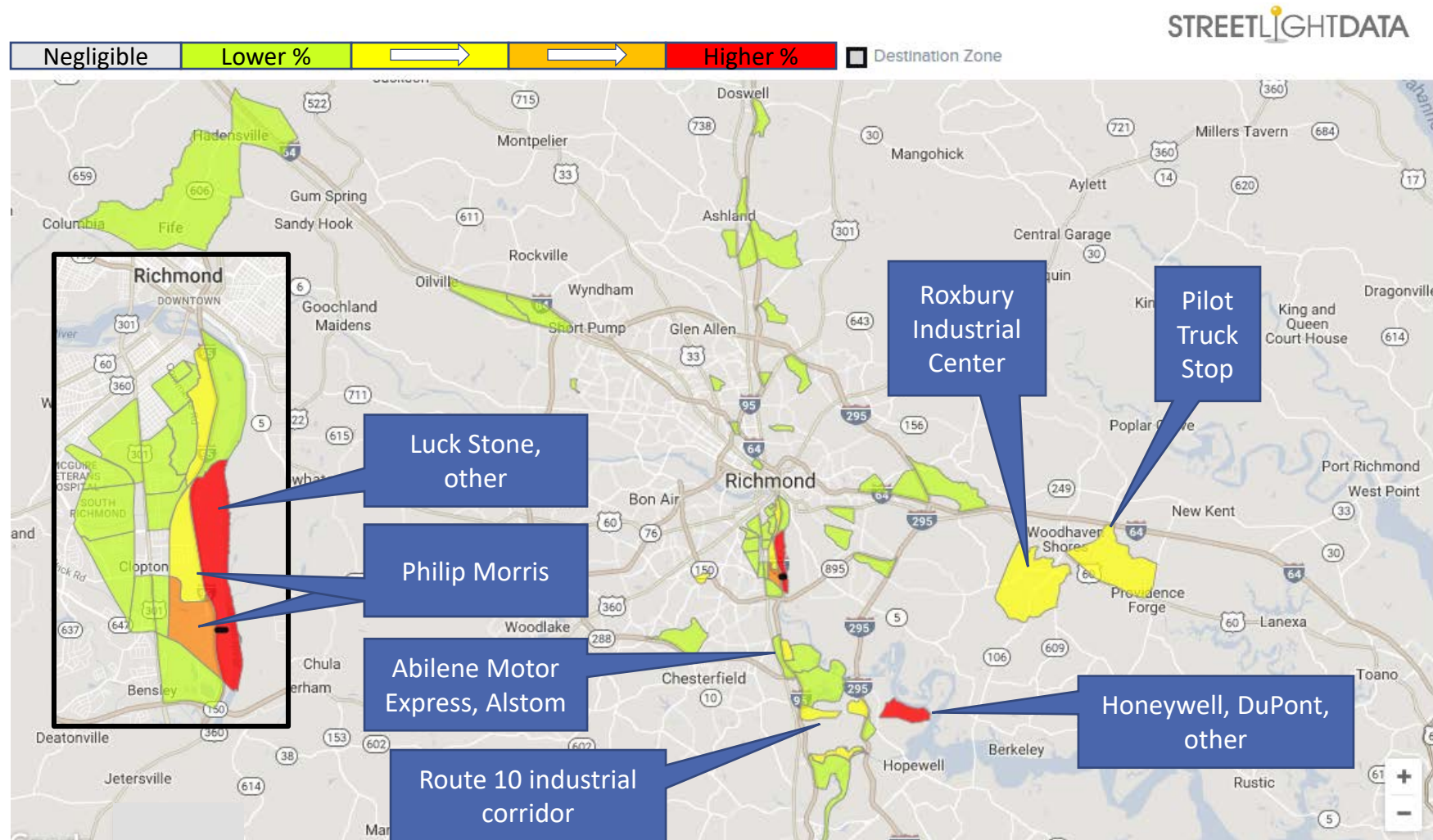
STREETLIGHTDATA



Existing Transportation Assets & Deficiencies

Richmond Marine Terminal

- Origins of large trucks during typical weekday (Monday – Thursday, April 2015 – March 2016) destined for RMT.



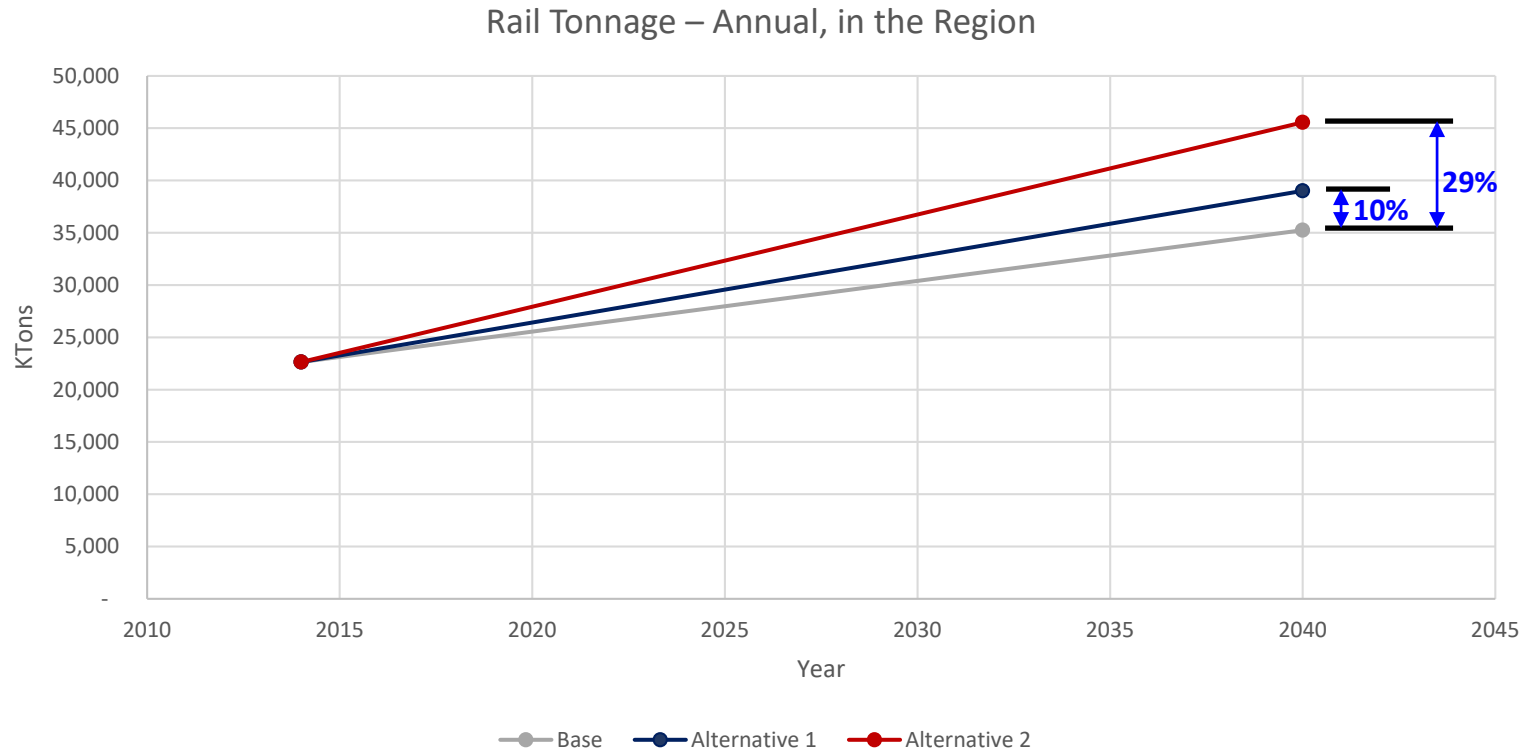
Existing Transportation Assets & Deficiencies

Richmond Marine Terminal

- Transportation-related challenges to growth at RMT
 - Gate capacity / operations
 - Vertical height restrictions at key highway locations
 - Bells Road Access Road (across from Altria)
 - Commerce Road Access (across from Alleghany)
 - Others as shown in previous slides
 - Operations at Bells Road interchange with I-95
- A more diversified / balanced mix of RMT customers is an important part of the future success (e.g. more rail)
- There exist opportunities through future contracts with customers to have 'on-site presence'. This includes the 14-acres of developable land at south end of site

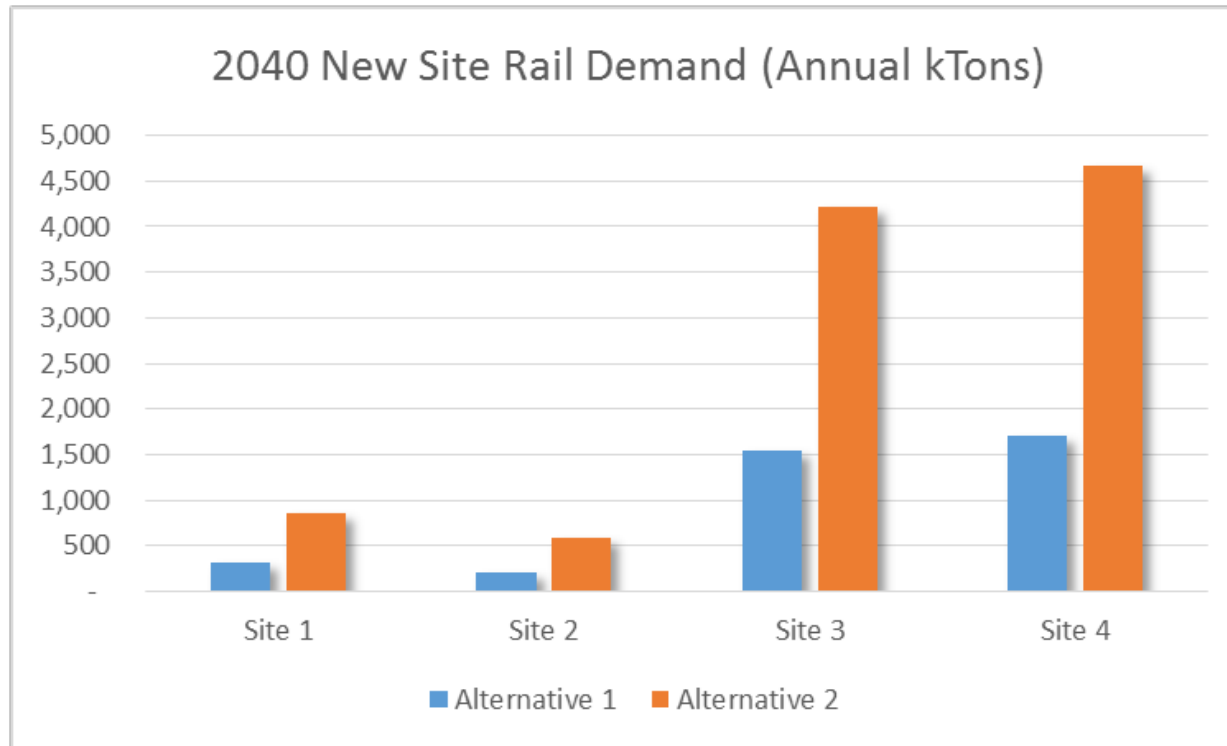
Future transportation conditions

Development-Generated Rail Demand



- Aggregate regional estimation of rail demand from new development alternatives, relative to baseline growth
- Tonnage forecast based on current pattern of commodities produced/consumed by each industry that use freight rail

Development-Generated Rail Demand

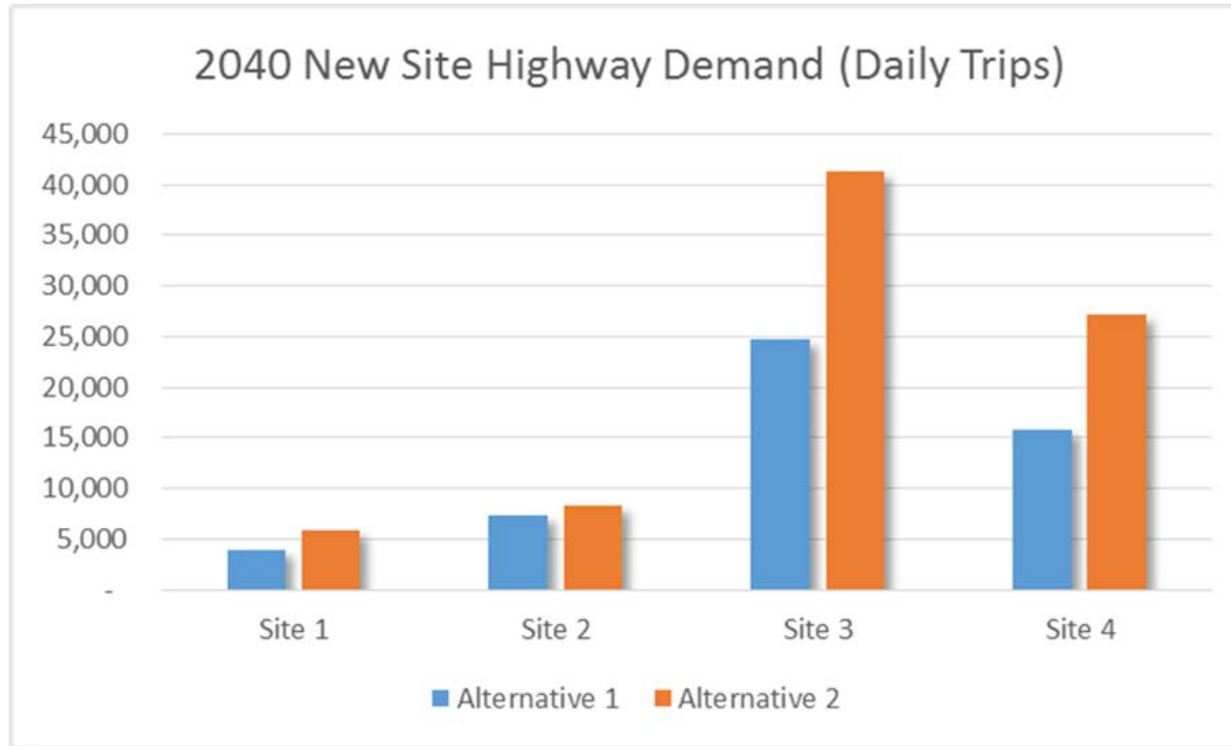


Alt 1: Moderate industrial development at 4-sites mimicking regional patterns

Alt 2: More intense industrial development at 4-sites reflecting port-oriented uses

- All four sites have nearby or immediately adjacent Class 1 Rail lines
- For each site, infrastructure investment will be needed to allow for rail access, depending on site layout and service requirements
- Due to the large area & multiple parcels reflected at Sites 3 & 4, not all parcels will be able to achieve practical & cost-effective rail access

Development-Generated Highway Demand



Alt 1: Moderate industrial development at 4-sites mimicking regional patterns

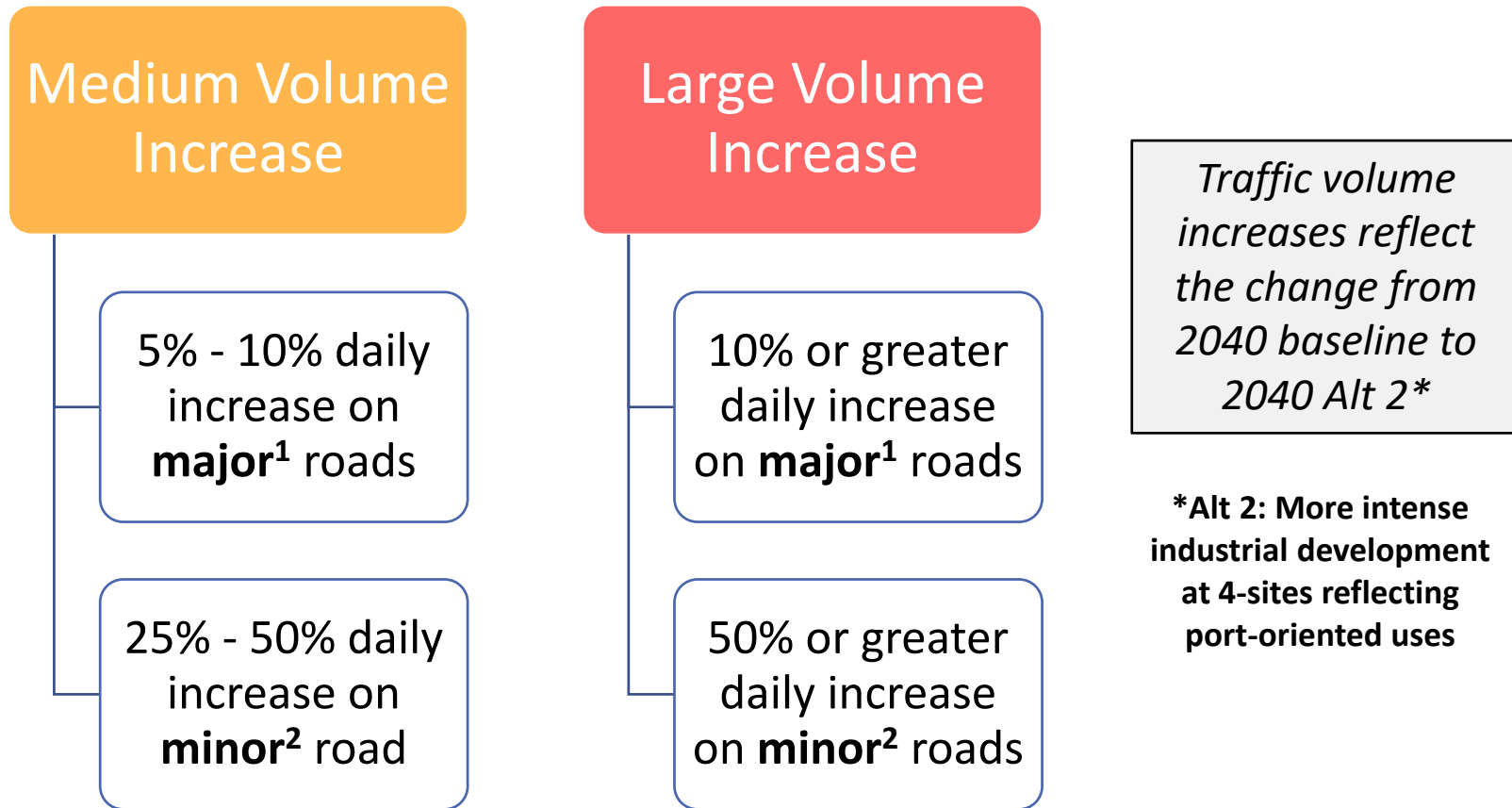
Alt 2: More intense industrial development at 4-sites reflecting port-oriented uses

- Daily highway trips includes both employee work trips as well as trucks generated by industrial activity
- From an acreage / development potential standpoint, sites 3 and 4 are able to generate significantly more demand than sites 1 and 2.

Future Highway Volumes

Future Highway Volumes

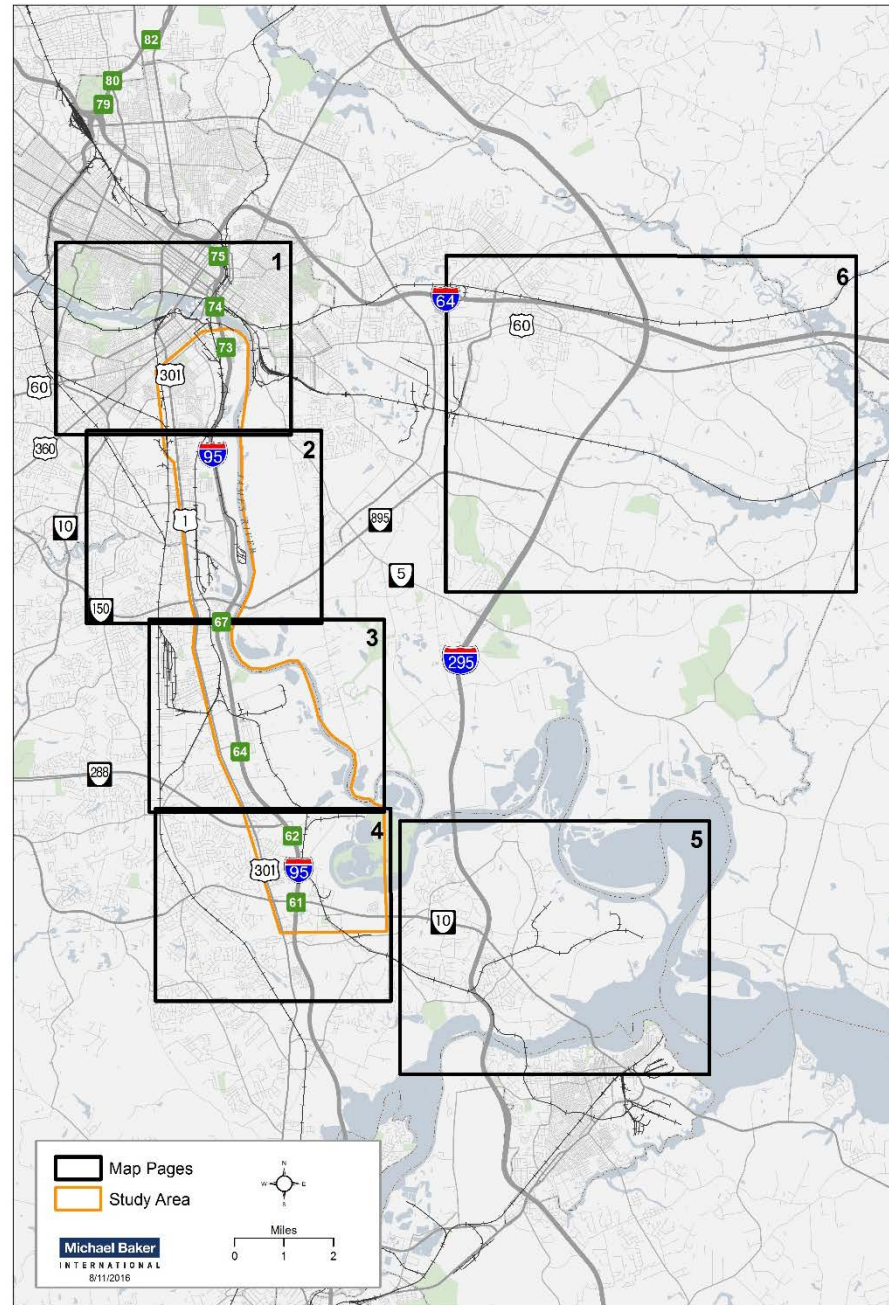
Two types of highway volume increases identified



¹ **Major** roads are defined as having higher volume and at least 2-lanes in each direction

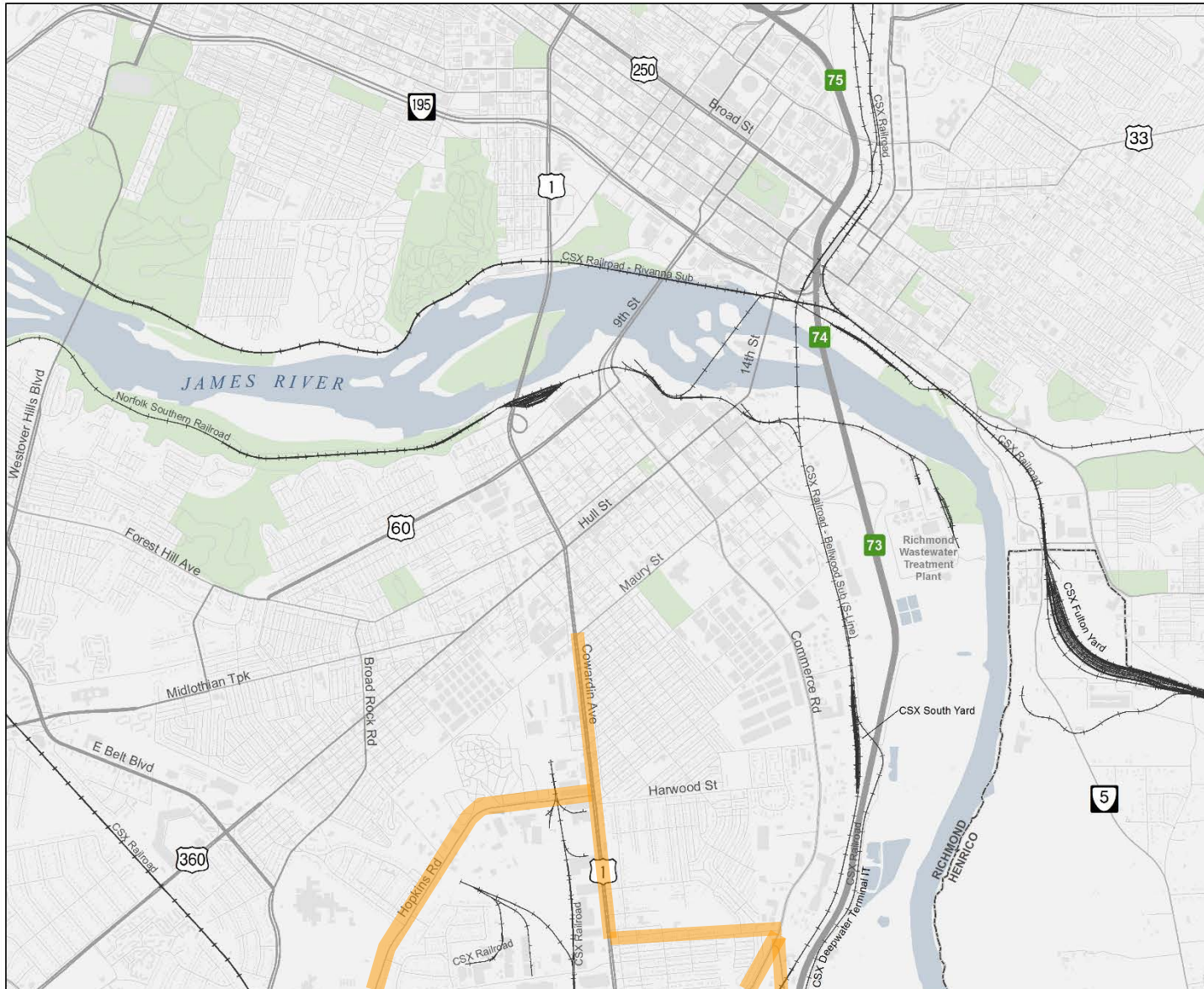
² **Minor** roads are defined as having lower volumes and typically 1-lane in each direction

Future Highway Volumes



Six inset
figures will be
used to display
information

Future Highway Volumes



Commerce Corridor:
Sheet 1

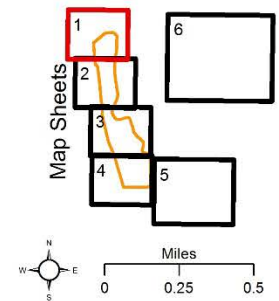
Change in 2040
Daily Volume:

Medium Increase

Large Increase

Comparing Baseline
to Alternative 2

Yellow represents
defined growth area



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Future Highway Volumes



Commerce Corridor:
Sheet 2

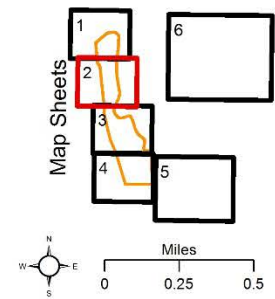
Change in 2040
Daily Volume:

Medium Increase

Large Increase

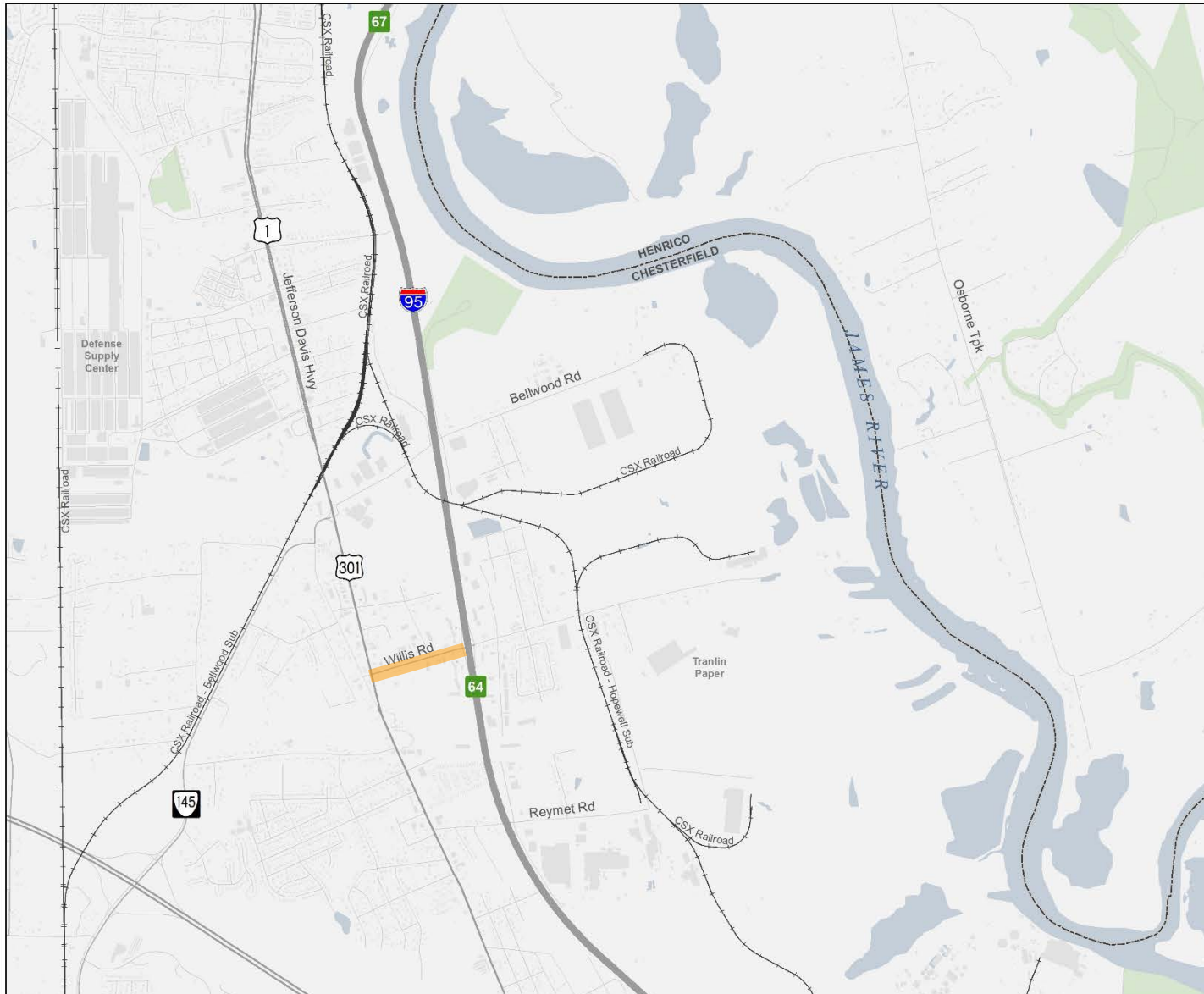
Comparing Baseline
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Future Highway Volumes



Commerce Corridor:
Sheet 3

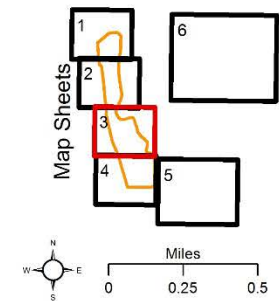
Change in 2040
Daily Volume:

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Large Increase

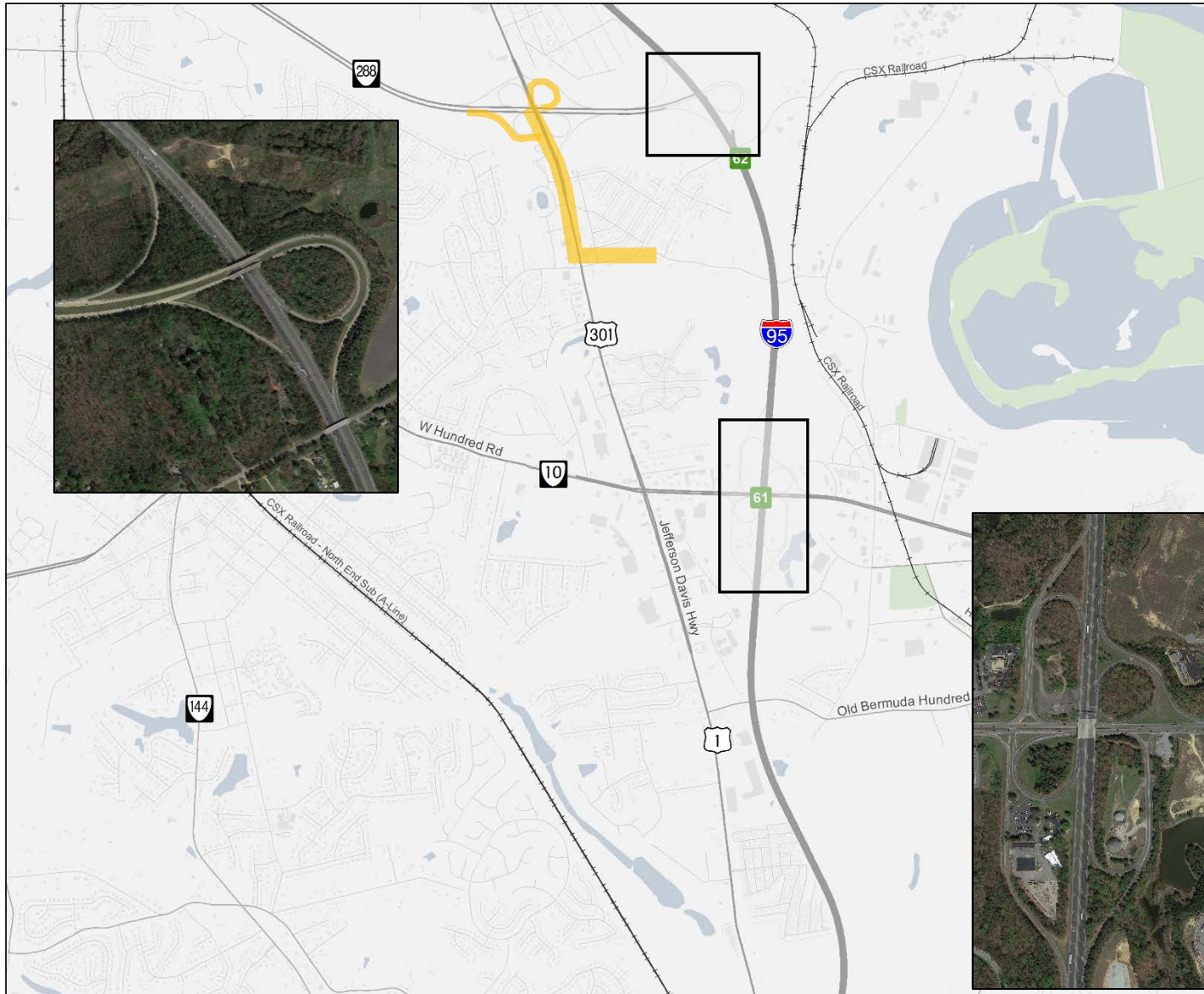
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Future Highway Volumes



Commerce Corridor:
Sheet 4

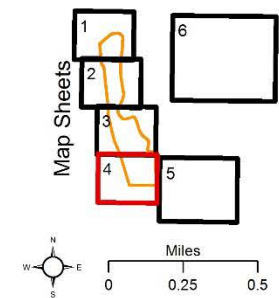
Change in 2040
Daily Volume:

Medium Increase

Large Increase

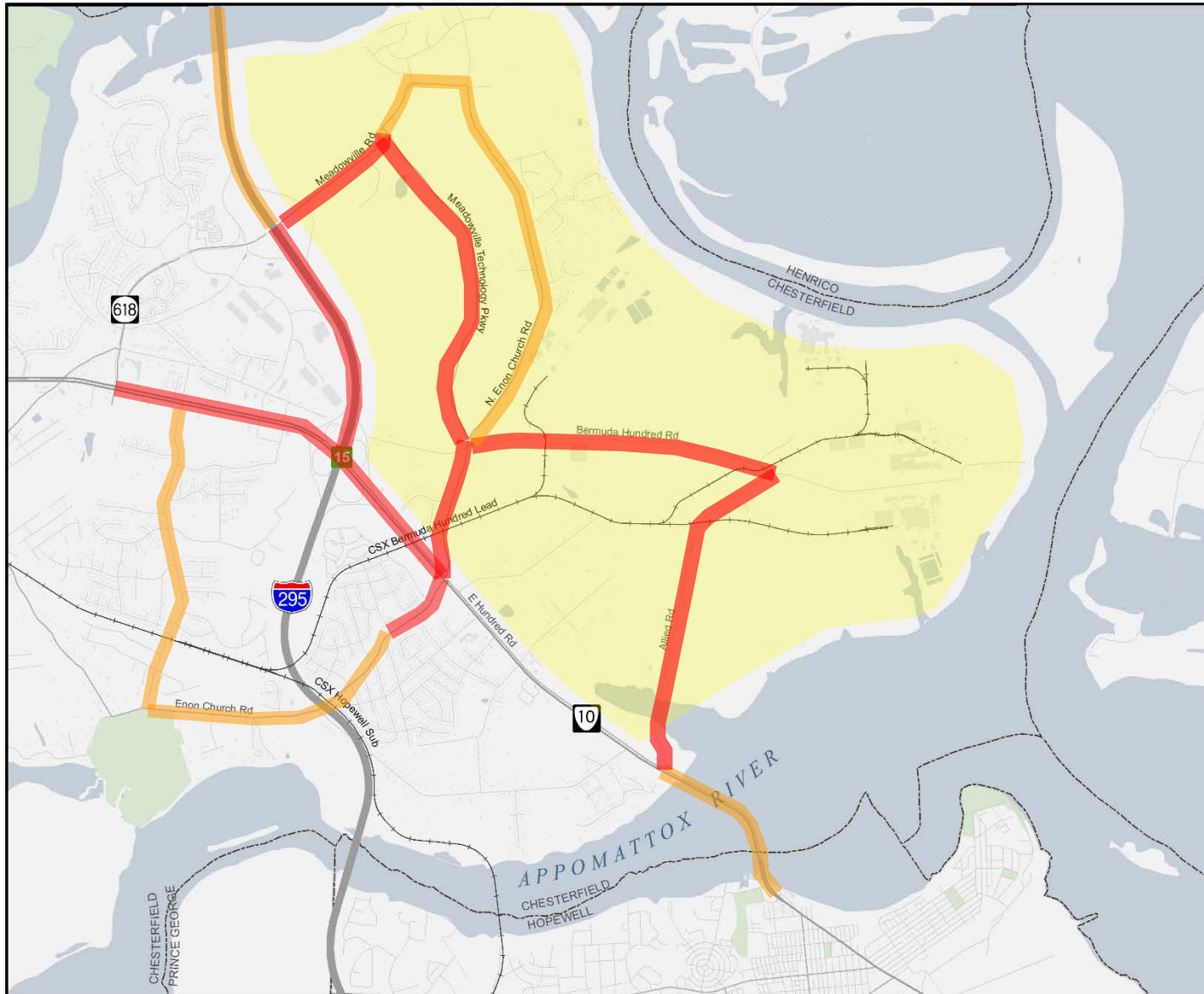
Comparing Baseline
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Future Highway Volumes



Commerce Corridor:
Sheet 5

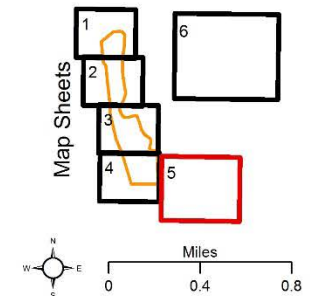
Change in 2040
Daily Volume:

Medium Increase

Large Increase

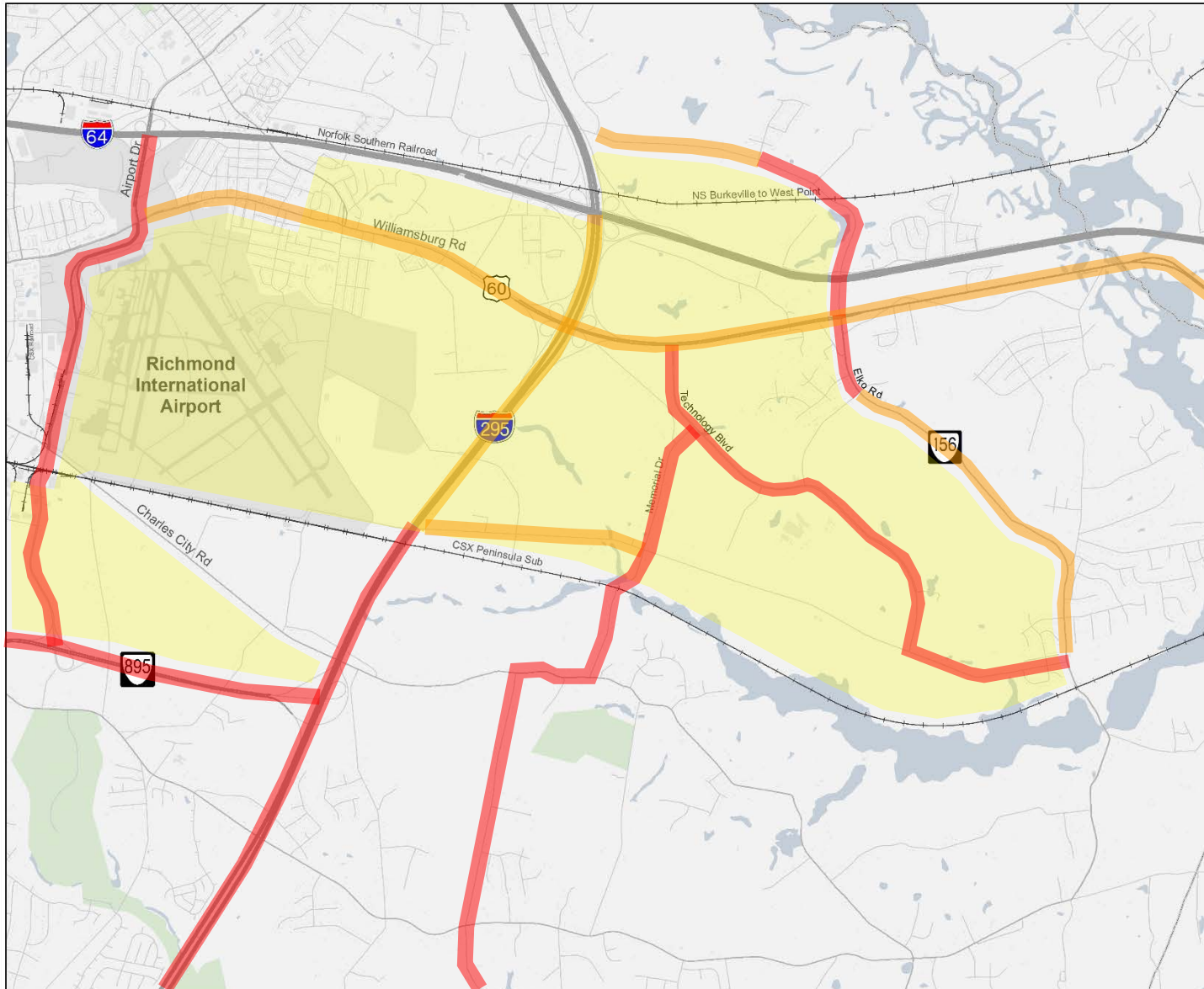
Comparing Baseline
to Alternative 2

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Future Highway Volumes



Commerce Corridor:
Sheet 6

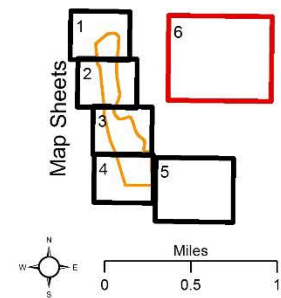
Change in 2040
Daily Volume:

Medium Increase

Large Increase

Comparing Baseline
to Alternative 2

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Future Highway Operations

Future Highway Operations

Study investigated two types of impacts

1

Highway links that DO NOT get impacted by our growth scenarios and ARE NOT congested in 2040

2

Highway links that DO NOT get impacted by our growth scenarios and ARE congested in 2040

Only those in close proximity to our growth sites were further investigated

3

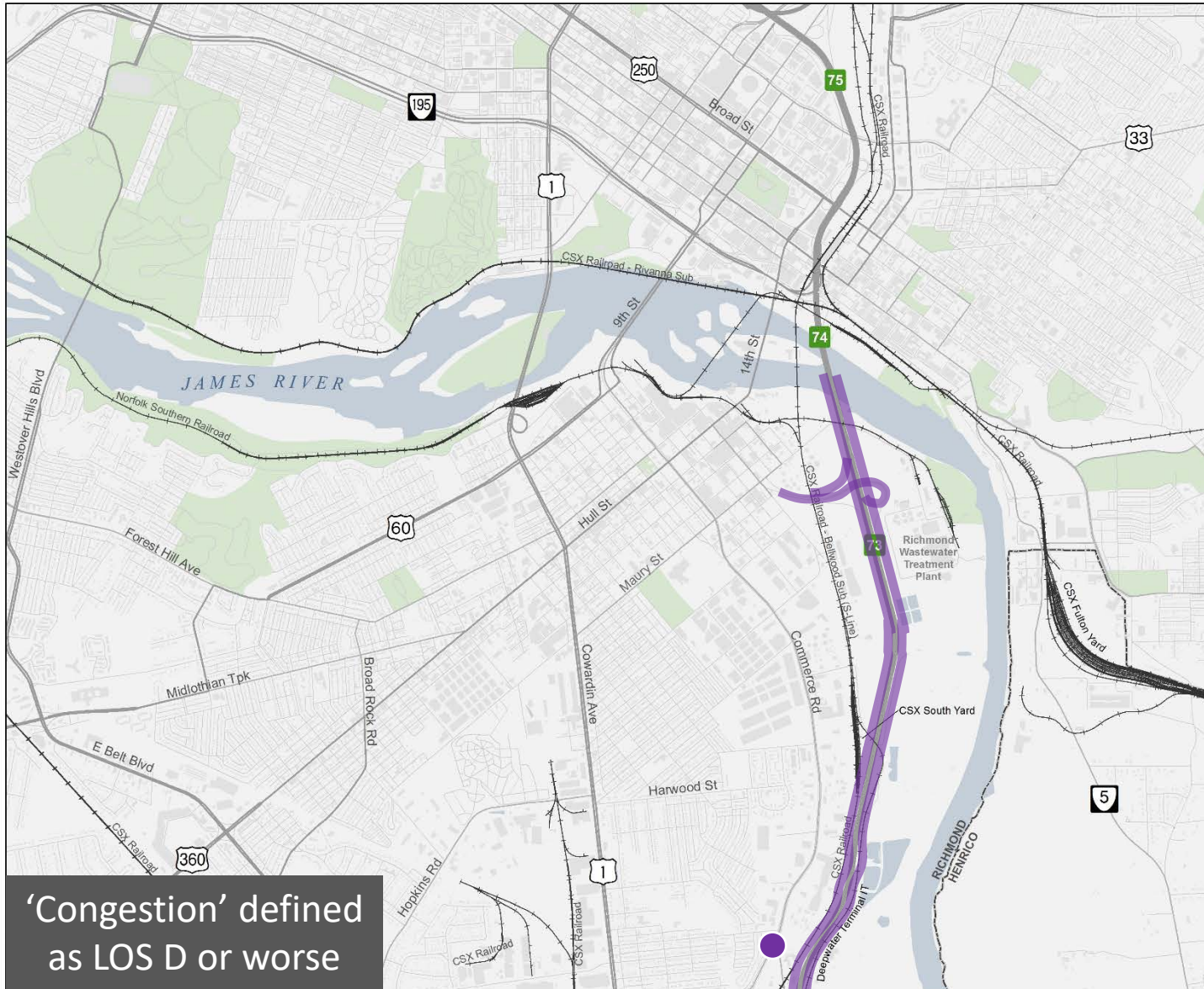
Highway links that DO GET impacted by our growth scenarios and ARE NOT congested in 2040

4

Highway links that DO GET impacted by our growth scenarios and ARE congested in 2040

All of these locations were further investigated

Future Transportation Impacts and Needs



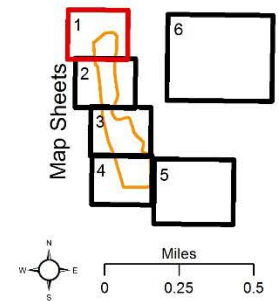
Commerce Corridor:
Sheet 1

Alt 2 Peak Period
2040 Congestion:

Congested but not
impacted by growth

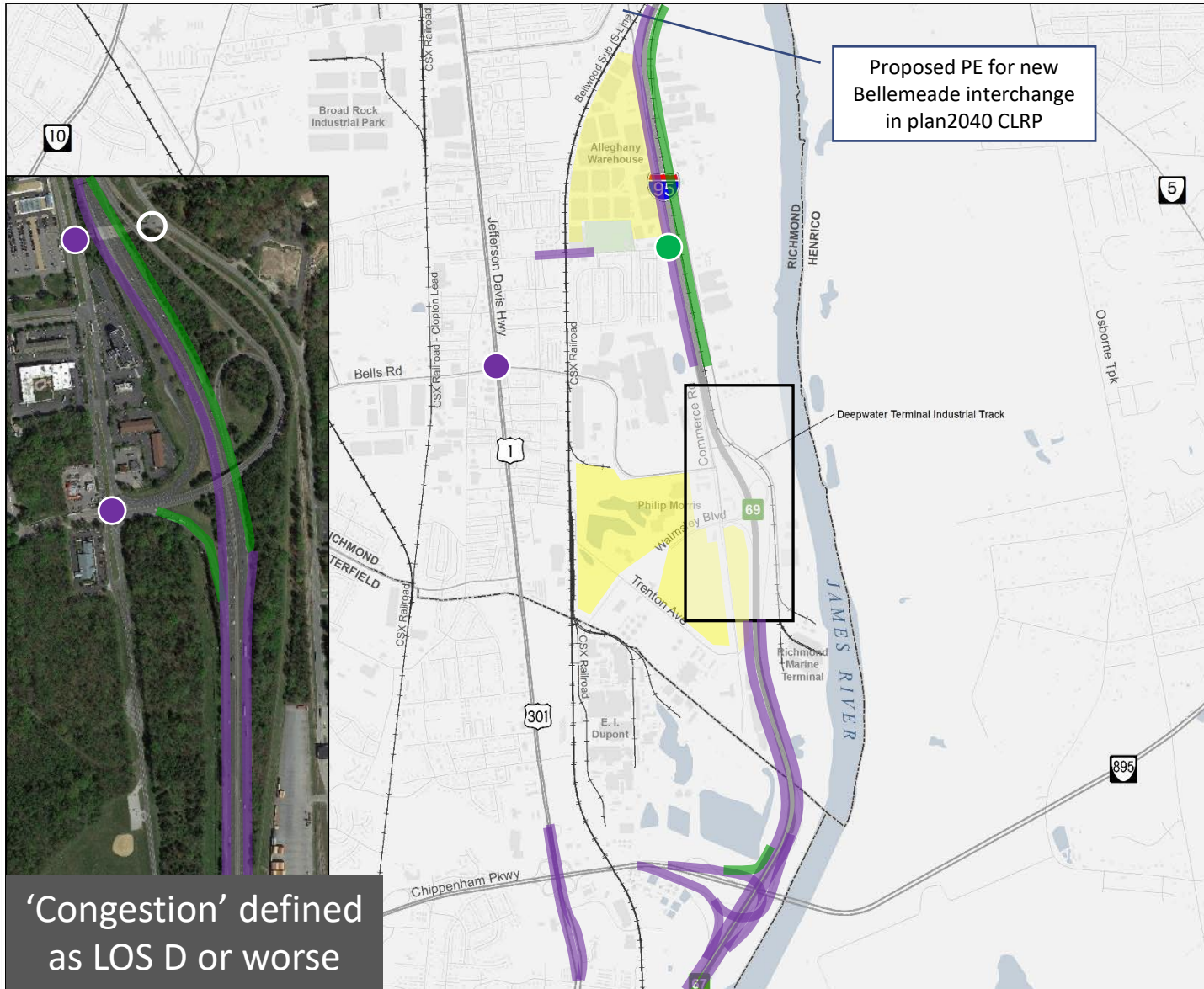
Congested and
impacted by growth

Yellow represents
defined growth area



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Future Transportation Impacts and Needs



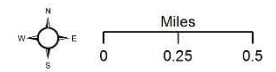
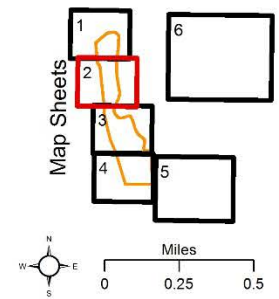
Commerce Corridor:
Sheet 2

Alt 2 Peak Period
2040 Congestion:

Congested but not
impacted by growth

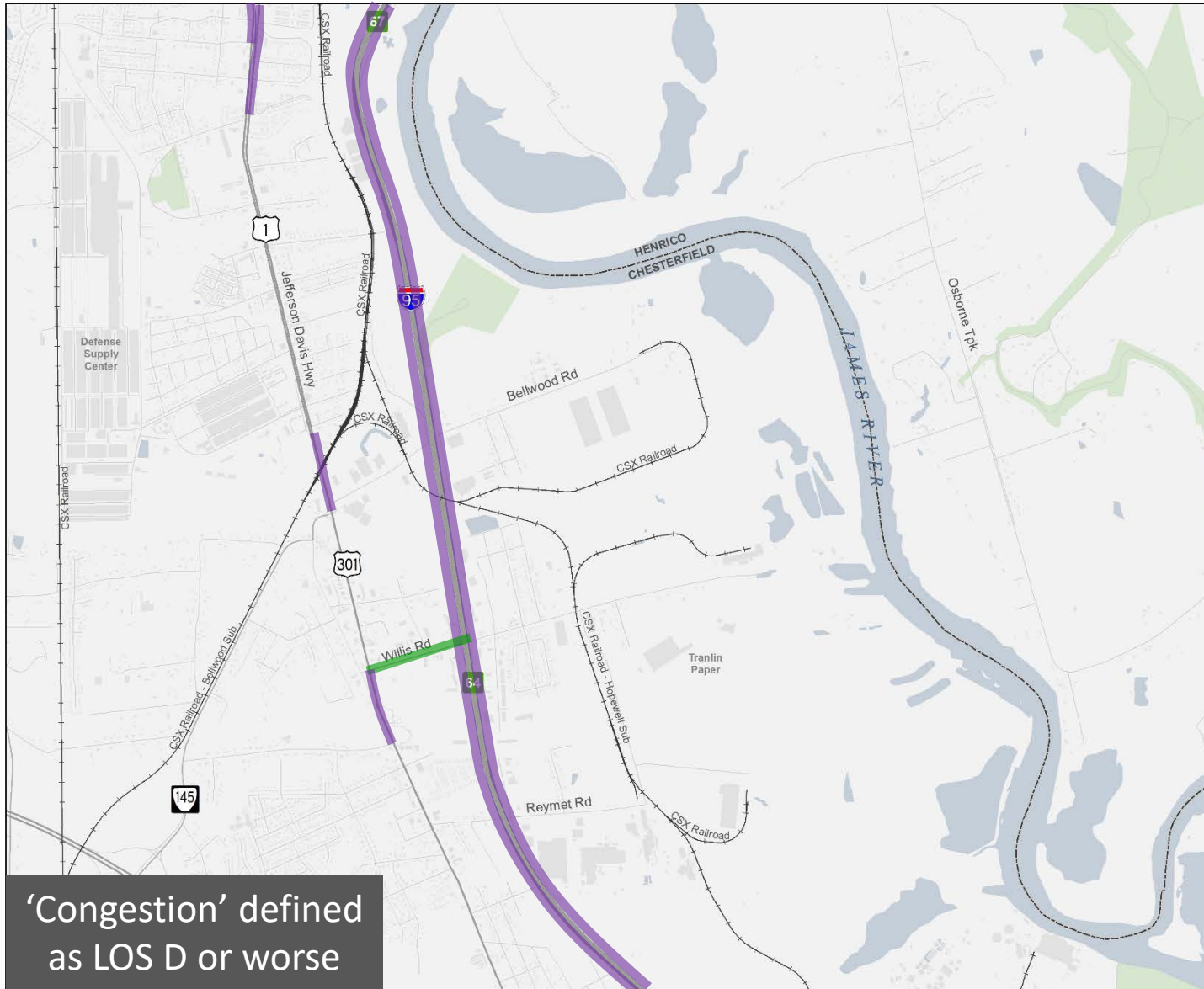
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Future Transportation Impacts and Needs



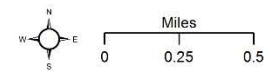
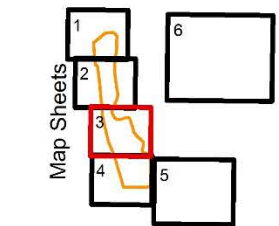
Commerce Corridor:
Sheet 3

Alt 2 Peak Period
2040 Congestion:

Congested but not
impacted by growth

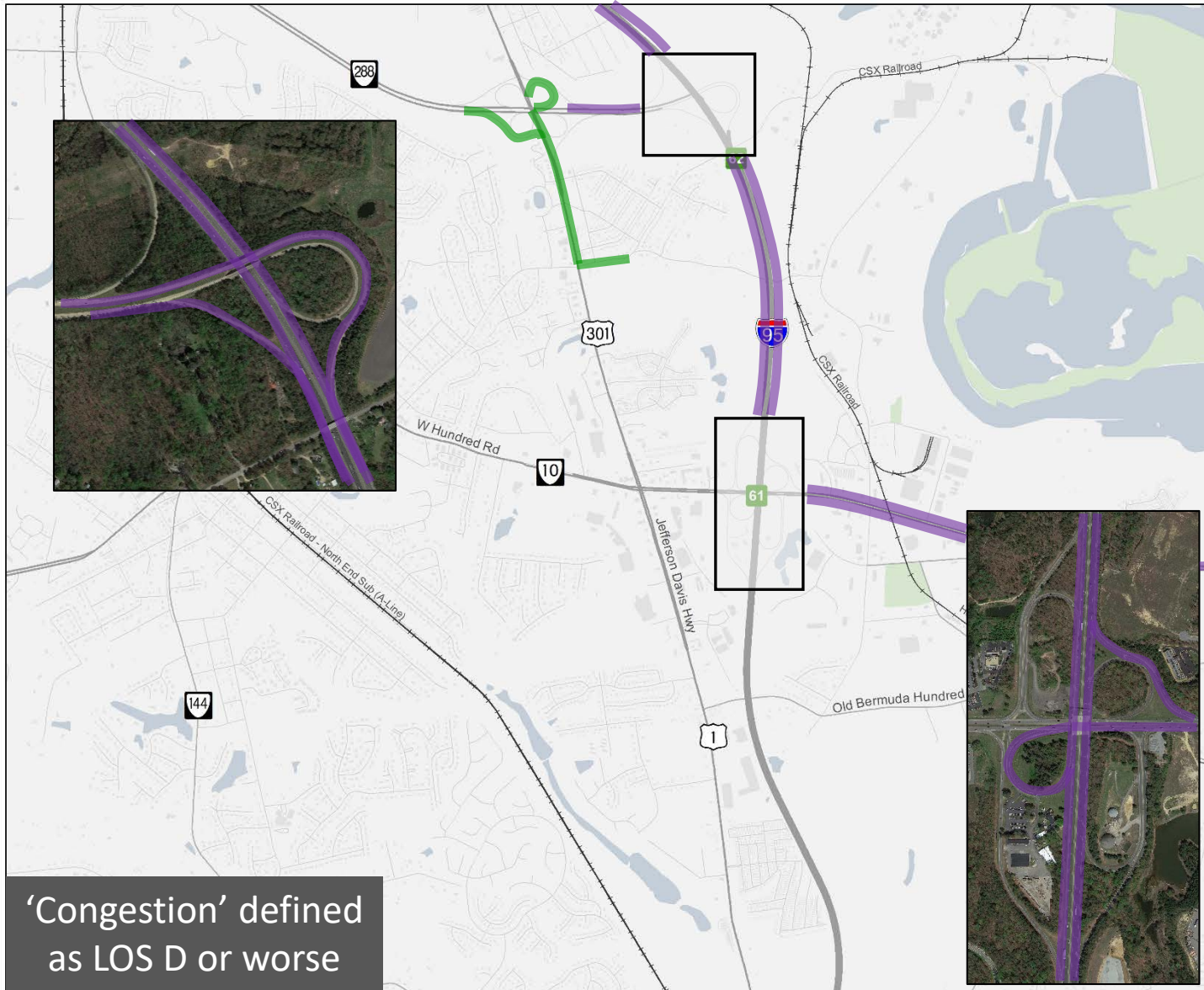
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Future Transportation Impacts and Needs



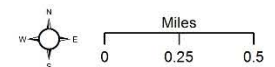
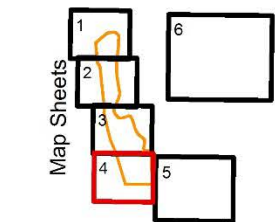
Commerce Corridor:
Sheet 4

Alt 2 Peak Period
2040 Congestion:

Congested but not
impacted by growth

Congested and
impacted by growth

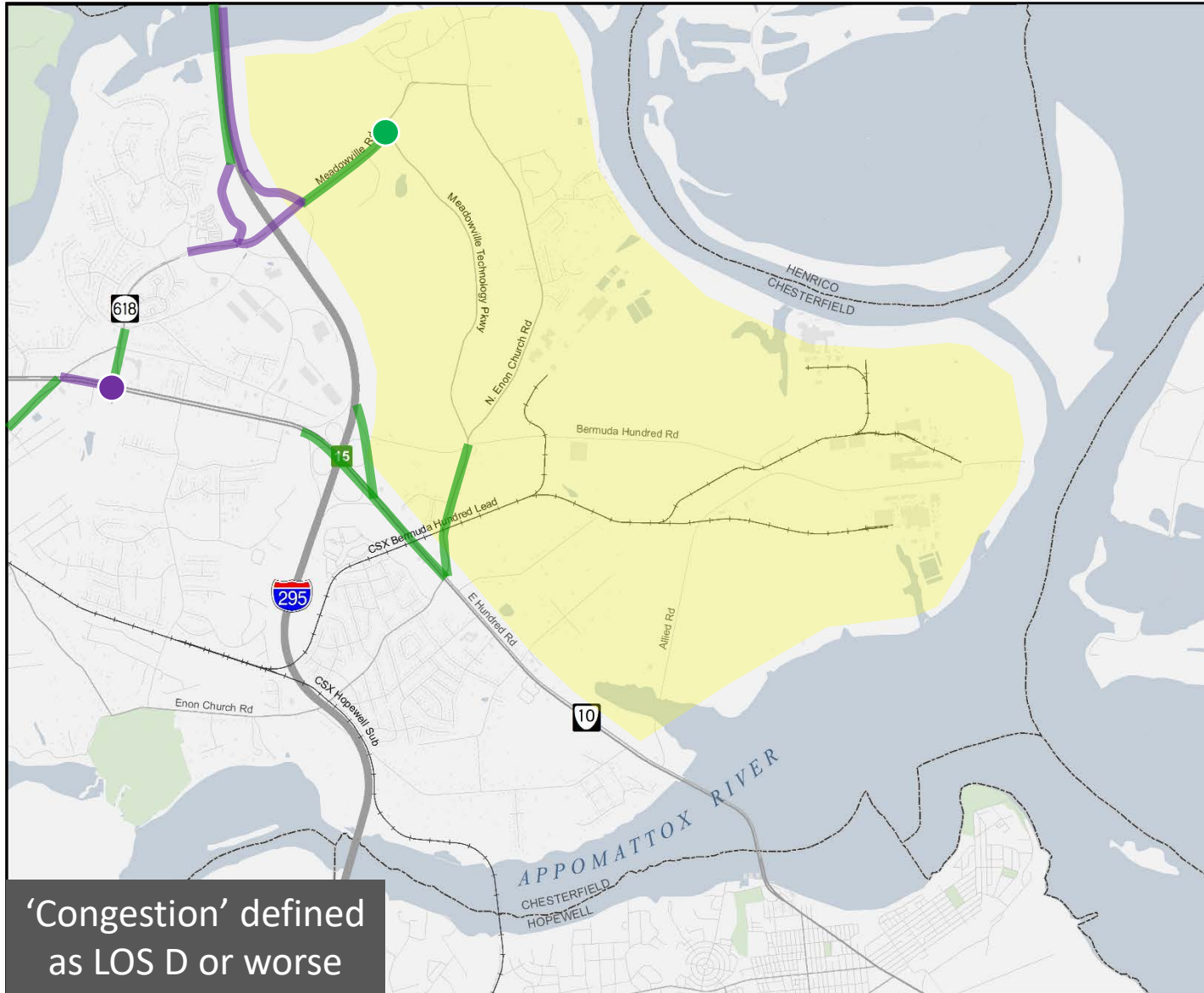
Yellow represents
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'Congestion' defined
as LOS D or worse

Future Transportation Impacts and Needs



'Congestion' defined as LOS D or worse

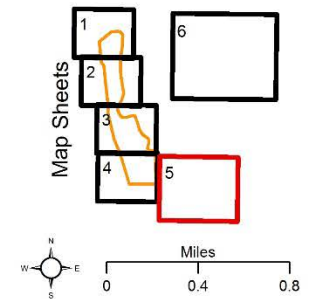
Commerce Corridor:
Sheet 5

Alt 2 Peak Period
2040 Congestion:

Congested but not
impacted by growth

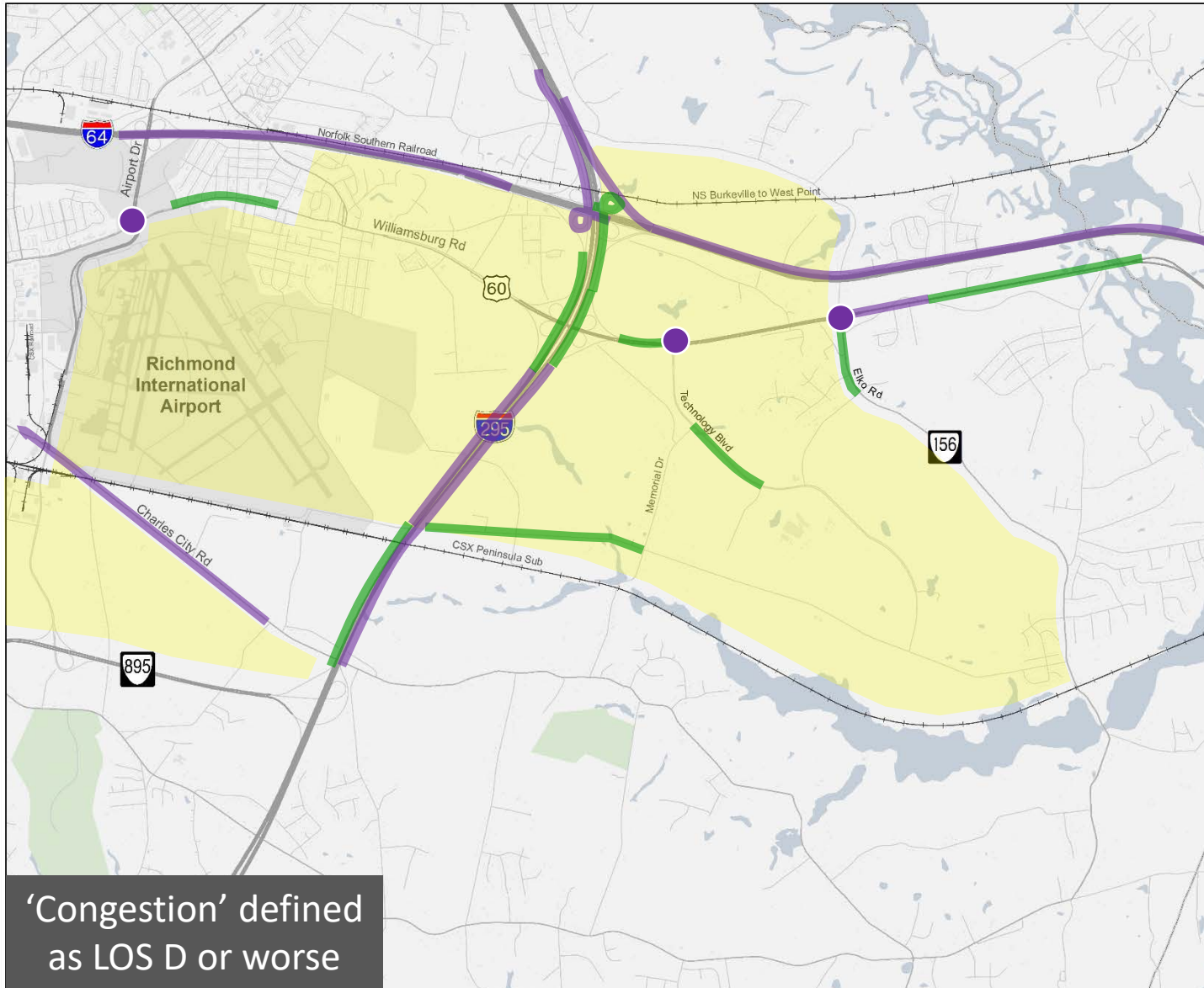
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Future Transportation Impacts and Needs



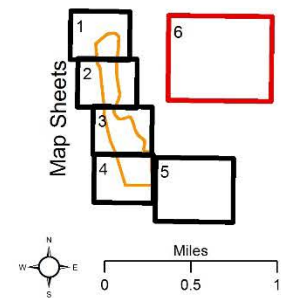
Commerce Corridor:
Sheet 6

Alt 2 Peak Period
2040 Congestion:

Congested but not
impacted by growth

Congested and
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Future Transportation Impacts and Needs

Intersection Analysis

Intersection		AM Peak Hour LOS**			PM Peak Hour LOS**			Increase in Delay (%)*
Street	Cross Road	Existing	2040 Baseline	2040 Alt 2	Existing	2040 Baseline	2040 Alt 2	
Commerce Road	Bells Road Access Rd	B	C	C	C	F	F	22%
Deepwater Terminal Road	Bells Road Access Rd	A	C	C	A	A	A	0%
Bells Road	Jefferson Davis Highway	D	E	E	D	E	E	0%
Commerce Road	Walmsley Road	A	F	F	A	F	F	110%
Commerce Road	Ruffin Road	A	F	F	A	B	D	176%
Commerce Road	Bellemeade Road	A	F	F	A	F	F	91%
W Hundred Road (Route 10)	Rivers Bend Blvd	D	F	F	E	F	F	24%
Meadowville Road	Meadowville Technology Pkwy	A	B	F	B	F	F	1330%
E Williamsburg Road (Route 60)	Technology Blvd	B	F	F	D	F	F	462%
E Williamsburg Road (Route 60)	Elko Road	B	F	F	C	E	F	654%
E Williamsburg Road (Route 60)	Airport Drive	D	F	F	D	F	F	167%

* Largest increase for either peak hour from the 2040 baseline scenario to the 2040 Alternative 2 scenario

**LOS A through C shaded in green, LOS D through F shaded in red