CONNECTING

CHESAPEAKE

A STUDY OF HIGH-CAPACITY TRANSIT

Purpose and Need Document

Final
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Introduction

The City of Chesapeake (the city) lies on the Southside of the Hampton Roads metropolitan statistical area (MSA), just south of Norfolk and west of Virginia Beach (see Figure 1). Chesapeake is one of the most populous cities in the Hampton Roads MSA, accounting for about 15 percent of the region's total population of about 1.8 million residents, according to the 2020 United States Census.

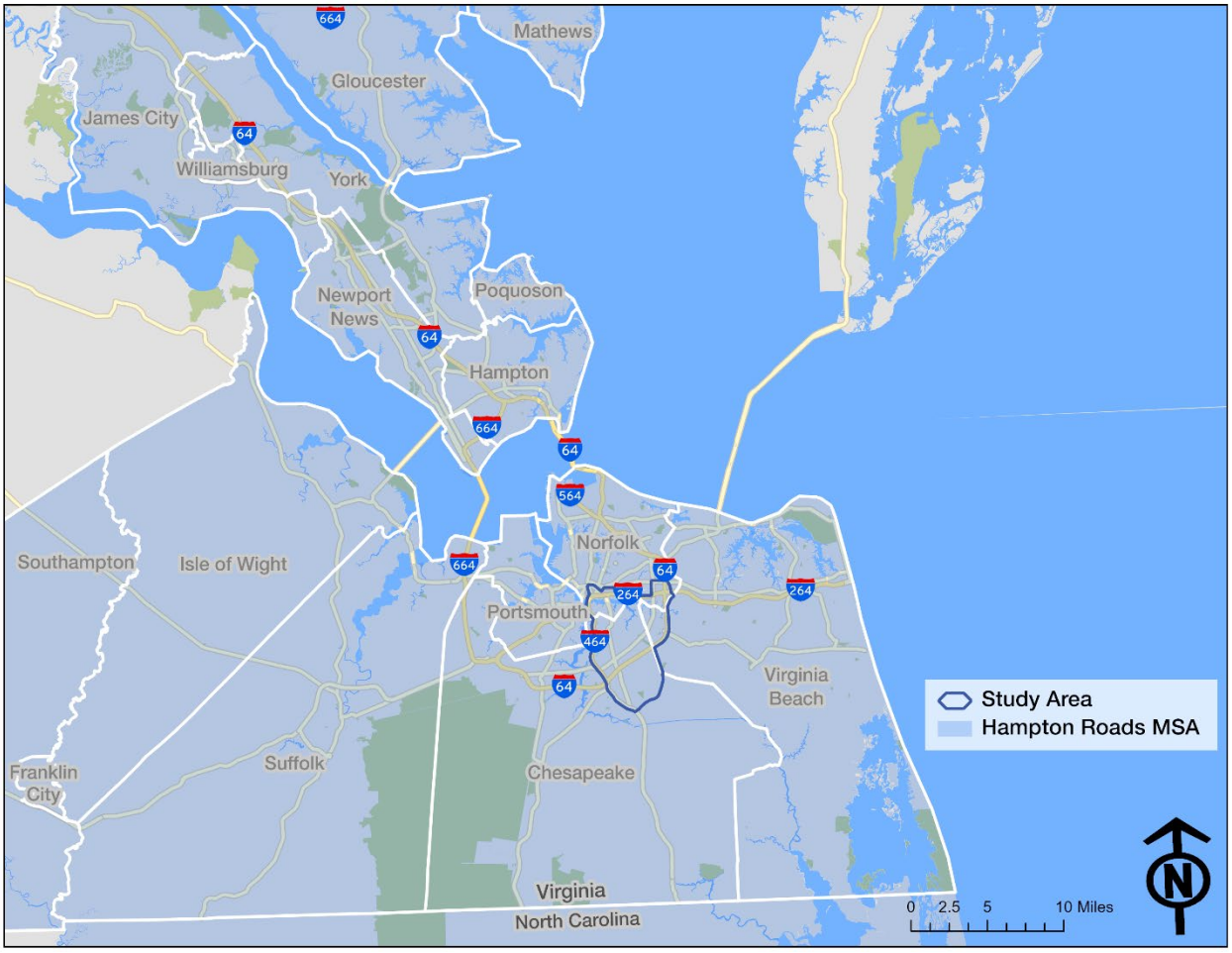

Figure 1. Hampton Roads Region with Connecting Chesapeake study area.

Since the 1990s, changes in travel patterns across the Hampton Roads region have been triggered by an increase in population, housing, and jobs. These changes have supported the city and Hampton Roads Transit (HRT) in discovering how transit could play a more effective role in the city's multimodal transportation network. Studies conducted by HRT and the city in 1999 and 2002 explored if light rail transit could be supported but concluded that the City's land development patterns did not support an investment in high-capacity transit at that time. In the 20 years since, development and travel patterns in Chesapeake have continued to evolve causing increasing levels of congestion on many of the city's streets and highways. The city and HRT are partnering again, through the *Connecting Chesapeake* study, to explore if there are corridors in the city where a different kind of transit, high-capacity transit, would enhance the city's economy and align with future growth plans while improving connectivity to the regional transportation network. The following sections provide the foundation, or Purpose and Need, for

the study and create the context for measurable goals and objectives that will be used to evaluate potential high-capacity transit corridors, alignments, and modes in Chesapeake.

What Is High-Capacity Transit?

High-capacity transit is public transportation that can carry a larger volume of passengers compared to traditional local bus service. High-capacity transit often offers an improved quality of service compared to local bus with fewer stops and more frequent service. High-capacity transit is more reliable by using dedicated lanes, exclusive rights of way, or technology to prioritize transit vehicle movements while avoiding traffic congestion. Some examples of high-capacity transit are shown in Figure 2 include express bus, bus rapid transit (BRT) and light rail transit (LRT). High-capacity transit can also be an effective part of an integrated regional plan to reduce greenhouse gas emissions and improve air quality.

Figure 2. Details for three types of high-capacity transit.

History of High-Capacity Transit

The feasibility of high-capacity transit has been evaluated in detail over the past two decades in Chesapeake. In addition to the *Chesapeake Corridor Planning Study* from 1999 and the *Chesapeake Corridor Alternatives Analysis* in 2002, there have been other transit- and land use-related studies that help inform the purpose and need and provide context for the current study (see Figure 3 for a summary of past planning efforts). The 1999 and 2002 studies examined the potential for LRT between Norfolk and Chesapeake but determined that the alternatives considered were not viable at the time. Each of the alternatives had either very low ridership projections, very high estimated capital costs or severe environmental concerns. However, with population growth, more jobs and increased development, one or more of those alternatives may become a viable high-capacity option for the City of Chesapeake.

Year	Study	Summary
1999	*Chesapeake Corridor Planning Study*	Study was the first look at LRT between Norfolk and Chesapeake. Recommended maintaining rights-of-way for future use and called for expansion of existing bus service
2002	*Chesapeake Corridor Alternatives Analysis*	Analysis concluded that Chesapeake was not yet ready for LRT. Recommended improving bus service, fostering more growth, and preserving rights-of-way
2011	*Hampton Roads Transit Vision Plan*	Recommended different corridors for future high-capacity service: LRT to Greenbrier from Harbor Park and Military Highway and commuter rail between Harbor Park and Fentress
2014 - 2021	*Chesapeake 2035 Comprehensive Plan & 2050 Transportation Plan*	The plan put forth strategies for improved transit service in Chesapeake with a focus on the Battlefield Boulevard and Military Highway corridors. Plan also looked at future service to Great Bridge.
2021	*HRTPO 2045 Long Range Transportation Plan*	The 2045 LRTP recommended service expansion in Chesapeake, starting with a study of the feasibility of high-capacity transit to Greenbrier.
2021	*HRT Transit Strategic Plan FY2023-32*	HRT's TSP recommended exploring fixed-guideway transit service (LRT or BRT) opportunities in Chesapeake and proposed a now-implemented streamlining of Chesapeake's local bus services.

Figure 3. Timeline of significant transit-related studies in Chesapeake.

Connecting Chesapeake Study Area

The study area for the *Connecting Chesapeake* Study (see Figure 4) includes parts of the City of Chesapeake, the City of Norfolk, and the City of Virginia Beach. The northern edge of the study area is roughly Interstate 264 (I-264), extended on the east and west to include Military Circle, Norfolk State University and Downtown Norfolk, respectively. On the east, the study area is bounded by Interstate 64 (I-64, and the Virginia Beach/Chesapeake City line. On the west, the Interstate 464 (I-464) borders the study area. The southern edge of study area is defined by Kempsville Road and the Chesapeake Expressway. Other major roadways in the study area include Battlefield Boulevard, Greenbrier Parkway, Volvo Parkway, Eden Way, Military Highway, Atlantic Avenue, Campostella Road, Providence Road, and Indian River Road.

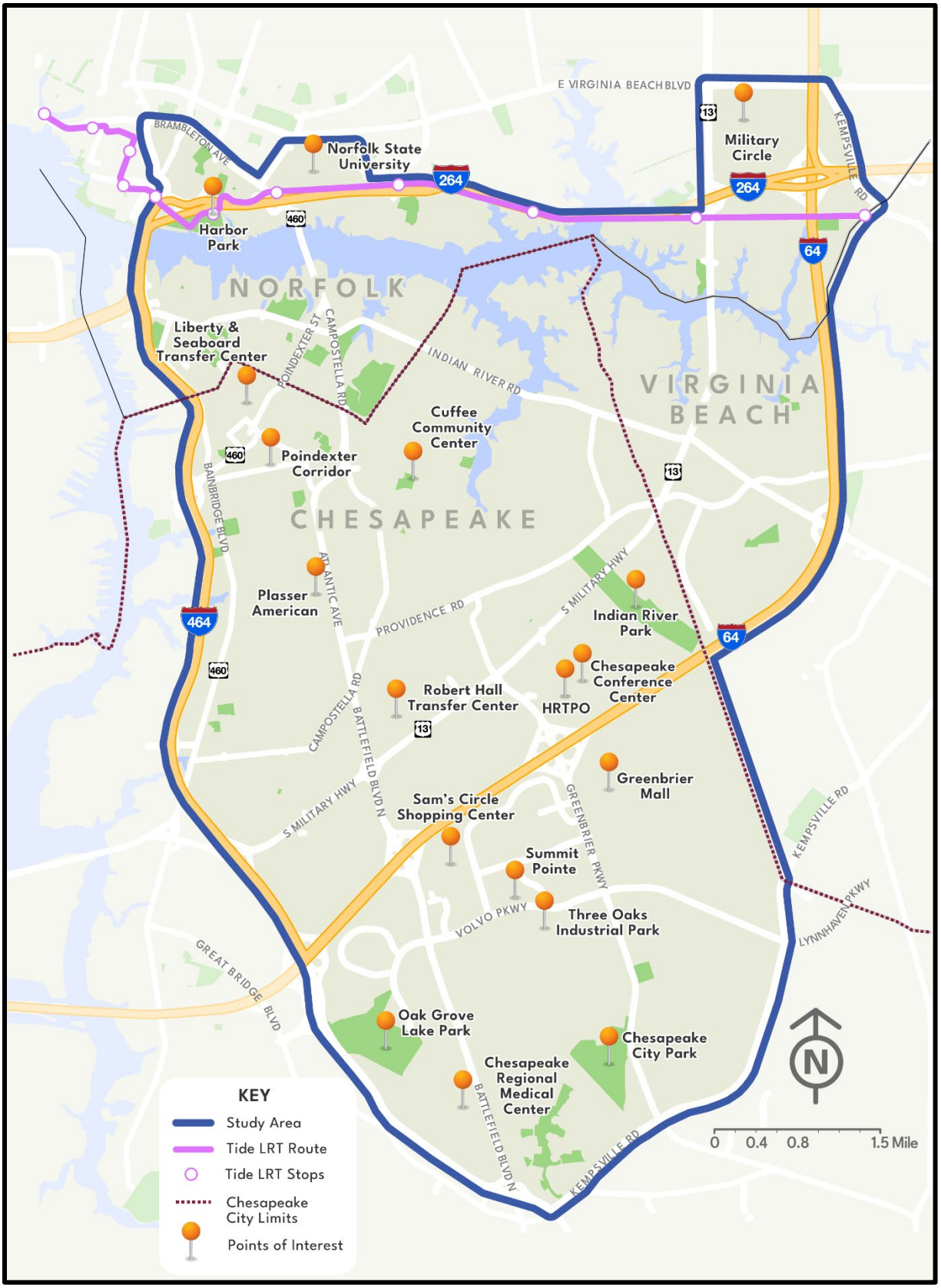

Figure 4. Connecting Chesapeake study area with points of interest.

Purpose and Need Statement

The purpose of the *Connecting Chesapeake* study is to identify a high-capacity transit corridor that enhances Chesapeake's quality of life by supporting the City's growth and development goals, enhancing the regional and internal connectivity, and addressing the future mobility needs of its residents, employees, and visitors. The investment in high-capacity transit will further underscore Chesapeake's vision as an "economically strong, culturally diverse, and environmentally responsible" city.

The need for the project is discussed below, followed by a set of objectives that will be used to measure the effectiveness of each of the project's alternatives.

NEED 1:
Emphasis on Chesapeake's Quality of Life with Strong Internal and Regional Connections

The study area currently has a large variety of land use types including all levels of intensity of commercial, industrial, and residential uses. The northwest corner of the study area includes Downtown Norfolk. Downtown Norfolk has 3 million square feet of Class A office space and a workforce of approximately 28,000 employees. Adjacent to Downtown Norfolk, is Norfolk State University—a historically black college/university—with approximately 5,500 students. Anchoring the northeast corner of the study area is the former Military Circle Mall. Opened in 1970, the 963,000 square foot mall is currently owned by the City of Norfolk and no longer operates as a retail center. Norfolk is currently working with the development community on redevelopment opportunities for the site. Running east to west in the northern third of the study area is the Eastern Branch of the Elizabeth River. Land immediately adjacent to the river has historically been used for water-borne, industrial purposes including port and shipyards. Larger industrial uses along the river include the Colonna's Shipyard, the Lyon Shipyard, Titan America (concrete), and Seaward Marine Corporation. There are also residential areas adjacent to both sides of the river. Immediately south of the Eastern Branch of the Elizabeth River are the neighborhoods of Berkley and Campostella in Norfolk and South Norfolk in Chesapeake. Originally founded as streetcar suburbs of the larger City of Norfolk, the neighborhoods are a mix of older residential, commercial, and industrial areas, some of which now have redevelopment potential. The eastern edge of the study area, east of Interstate 64, includes portions of the City of Virginia Beach. These areas primarily consist of townhouses, apartments, and single-family residential homes located along the Military Highway commercial corridor.

The Greenbrier area, in the middle and southern end of the study area, is anchored by a large, enclosed shopping mall (Greenbrier Mall at approximately 900,000 square feet), regional shopping centers (Crossways Center, Greenbrier Market Center, Walmart/Sam's Club, etc.), and a mix of office parks, light industrial, and distribution uses. Along Volvo Parkway in the center of Greenbrier is the 69-acre Summit Pointe Development. When complete, Summit Pointe will include more than one million square feet of office space, up to 500,000 square feet of retail space, approximately 250,000 square feet of hospitality and conference space, and 1,400-plus residences. The development includes the corporate headquarters of Dollar Tree. Surrounding the commercial core of Greenbrier are residential uses including single family homes, apartments, and townhouses and pockets of open space and parks.

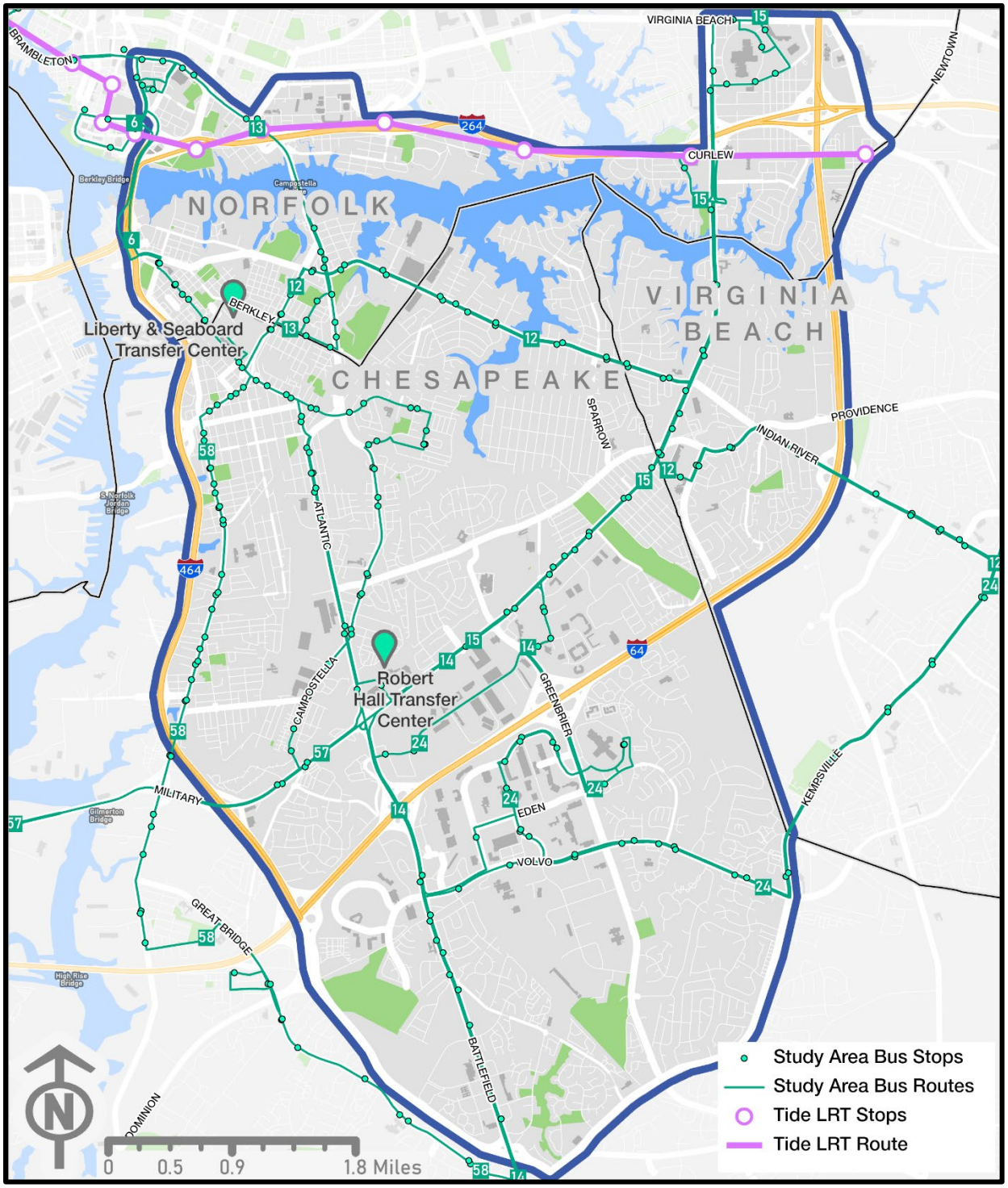

Figure 5. Existing local bus service in the study area (Source: HRT)

HRT's transit service covers the major activity centers in the study area (see Figure 5) including Greenbrier, Volvo Parkway, and Military Circle. One of the region's bus transfer centers is at the intersection of Military Highway and Battlefield Boulevard. There is a strong north-south component to HRT's Chesapeake bus

service, which helps connect the City to its neighbors, but there may be an opportunity to strengthen internal connectivity, especially between commercial centers and neighborhoods between Indian River Road and Providence Road to the north. The span of service for local bus service in the study area varies depending on the route and city. Local bus routes in Norfolk start early in the morning and provide service until late in the evening. In Chesapeake, weekday service begins just before 9:00 AM and with most service ending by 8:00 PM with some service ending later. The local routes with the highest ridership in the study area between 2022 and 2023 include Route 15 (Robert Hall Blvd/Evelyn T. Butts Avenue), Route 13 (Downtown Norfolk/Robert Hall Blvd/Summit Pointe), and Route 6 (Downtown Norfolk/South Norfolk/Robert Hall Blvd).

GOAL 1.A: Strengthen and enhance the economic vitality of Chesapeake by providing transportation alternatives, increasing transit service capacity and reliability, and expanding access to activity centers both inside the study area and in the region.

- Objective 1.A.1: Improve transit frequency and span of service for existing transit routes.
- Objective 1.A.2: Provide high-capacity transit service to residential neighborhoods, commercial nodes, and other activity centers.
- Objective 1.A.3: Add high-capacity transit service to employment centers both inside the study area and in the region.
- Objective 1.A.4: Improve the mix and balance of transportation choices for all transportation needs.

NEED 2:
Future Development and Redevelopment In Sync With Chesapeake's Growth Plans

Chesapeake's current comprehensive plan, *Moving Forward: Chesapeake 2035 Comprehensive Plan*, and small area plans including the *Indian River Planning Area Study and Redevelopment Strategy* (2022) show continuing change in land uses throughout the study area. Included in that change are additional apartments, townhouses mixed-use developments, and the reuse of some underutilized industrial property for commercial uses. The plans show the potential for new, large-scale developments in the study area including additional office and mixed-use buildings at Summit Pointe, a new Veterans Administration medical clinic, and redevelopment of the Greenbrier Mall. The City of Norfolk continues to look at options for the long-term redevelopment of the former Military Circle Mall. Other areas of the study area with significant land use changes indicated in the comprehensive planning documents include parts of the study area in the City of Norfolk and South Norfolk in Chesapeake, and along key commercial/transportation corridors throughout the study area, including Battlefield Boulevard, Military Circle, and Indian River Road.

The potential for further redevelopment in the study area was examined using a Development Potential Ratio analysis (see inset for details). The results are shown in Figure 6. Based on this analysis, the highest concentrations of parcels with medium to high potential for redevelopment were found along the frontages of two major transportation corridors in the study area, Military Highway (especially east of Greenbrier Parkway) and Battlefield Boulevard (south of Military Highway). Scattared sites with similar, low to medium redevelopment potential were found near Military Circle and the Greenbrier Mall. Large sites with significant redevelopment potential were identifed at older industrial sites along the banks of the Eastern Branch of the Elizabeth River and in South Norfolk. In addition, large sites with high redevelopment potential were also identified near Chesapeake Regional Medical Center, in older commercial areas along Military Highway, and older light industrial areas in Greenbrier.

> ***Development Potential Ratio*** is the value of improvements on a given parcel compared to the parcel's land value, where the ratio reflects improvement value divided by land value. Both the improvement values and land values come from each jurisdiction's parcel assessment data. The ratio helps identify which parcels have the highest potential for redevelopment, reflected in darker colors and lower ratio values.

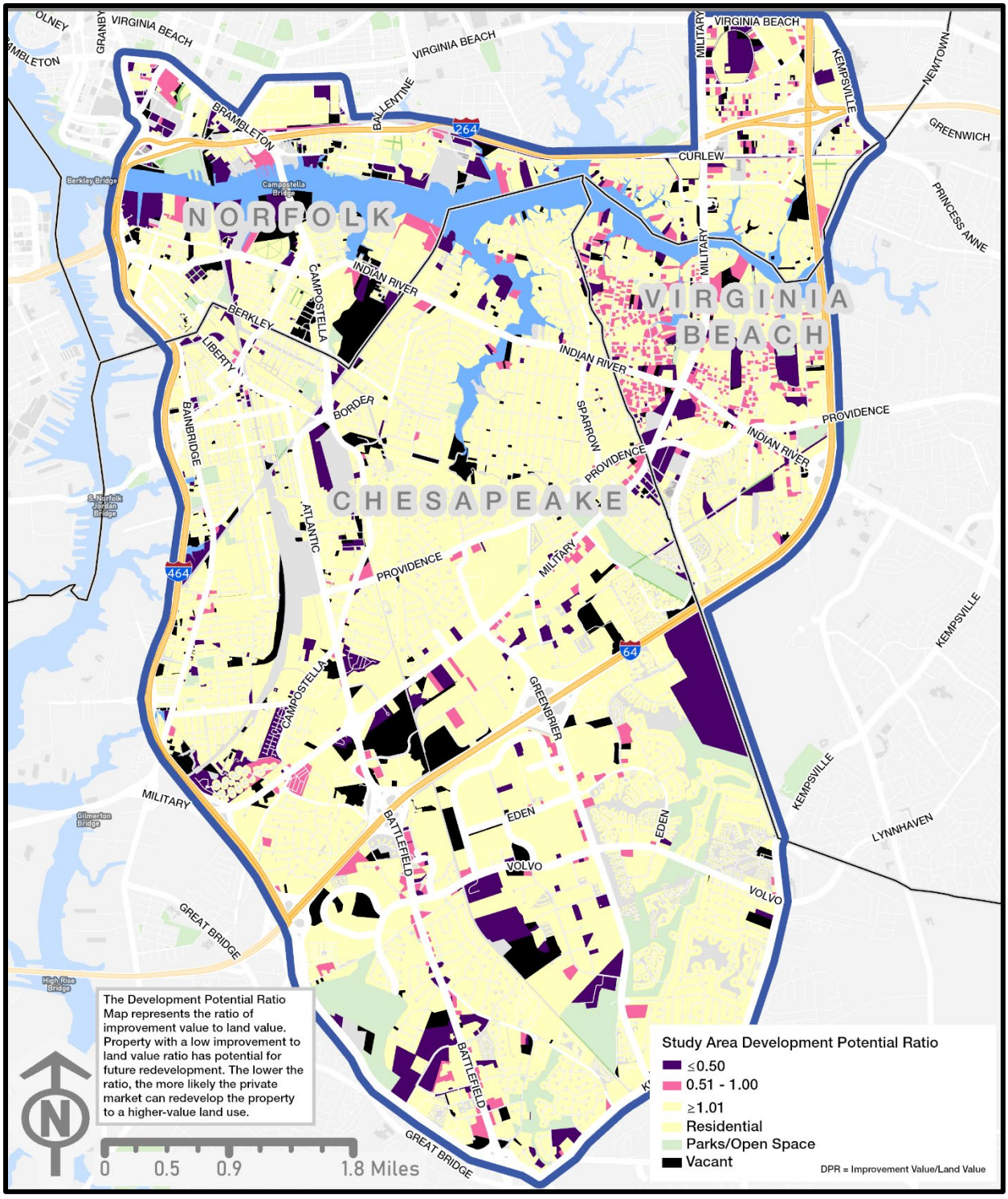

Figure 6. Calculated development potential (ratio of improvement value to land use) of non-residential parcels over an acre (Source: HRTPO)

High capacity transit including express bus, BRT, and LRT combined with supportive policies can encourage more walkable and transit-supportive development and can help reduce greenhouse gas emissions, which disproportionately impacts the quality of life and health outcomes for all, especially those living in

disadvantaged and historically marginalized communities such as South Norfolk. The City's Comprehensive Plan recognizes that:

> *Urban areas of the City [should] continue to be designated for infill development at higher densities. Higher concentrations are targeted for the areas adjacent to future mass transit corridors.*

The plan also describes the need for combining development and transit in the Compact development area of the city (roughly the same boundaries as the study area. The plan states that in the Compact area,

> *… the older city fabric will be revitalized and in-filled with higher density and higher quality mixed use developments arranged around existing neighborhood and transportation networks. As population and employment in these areas grow, they will be served by an efficient high speed transit system that supplements and reduces dependence on auto transportation.*

GOAL 2.A: Support the planning, growth, and economic development goals of Chesapeake through targeted and effective public transportation investment.

- Objective 2.A.1: Develop a plan of action for introducing high-capacity public transportation in Chesapeake that supplements existing travel patterns and connects new and existing activity centers.
- Objective 2.A.2: Proactively identify strategies for increasing multimodal connectivity and access to areas of Chesapeake where new development is expected in the mid- to long-term.
- Objective 2.A.3: Ensure public transportation investments are coordinated with and supportive of other community development and economic development goals of the city.

NEED 3:
Strong Connections to the Hampton Roads Region

Currently, land uses in and around the study area generate a significant amount of activity—residences, jobs, shopping, recreation, etc. This activity brings thousands of people to the study area every day and allows thousands more to live in the study area and work elsewhere. This travel pattern to, from, and within the study area is represented by "trips". A trip is created when someone leaves one place and goes to another. As shown in Figure 7, there are approximately 220,000 daily trips that begin and end within the study area (internal to internal trips). This represents people who live and work in the study area who are shopping, eating at restaurants, and going about their lives without leaving the study area. In addition to those trips, there are approximately 250,000 daily trips created by people who travel from outside the study area to a destination within the study area (external to internal trips) and a similar number who travel from the study area to another area (internal to external trips). Further, both sets of these trips

(external to internal and internal to external) increased since 2019 by about 2.5 percent.[1] Internal trips, however, increased by over 13 percent in the same time period, indicating some change in trip patterns.

One potential change is how Chesapeake residents are communing. The Census's American Community Survey shows that over the past decade, the percentage of people both living and working in Chesapeake began trending upward. In 2012, 38 percent lived and worked within the city. That percentage increased to 41 percent in 2018 and jumped to 46 percent in 2022[2].

As a result, internal trips (both for commuting and other purposes) have increased both in total trip numbers and a share of those total trips. Without a commensurate increase in capacity (either through roadway expansion or increased transit), the likely result of this trend is increased congestion within the study area.

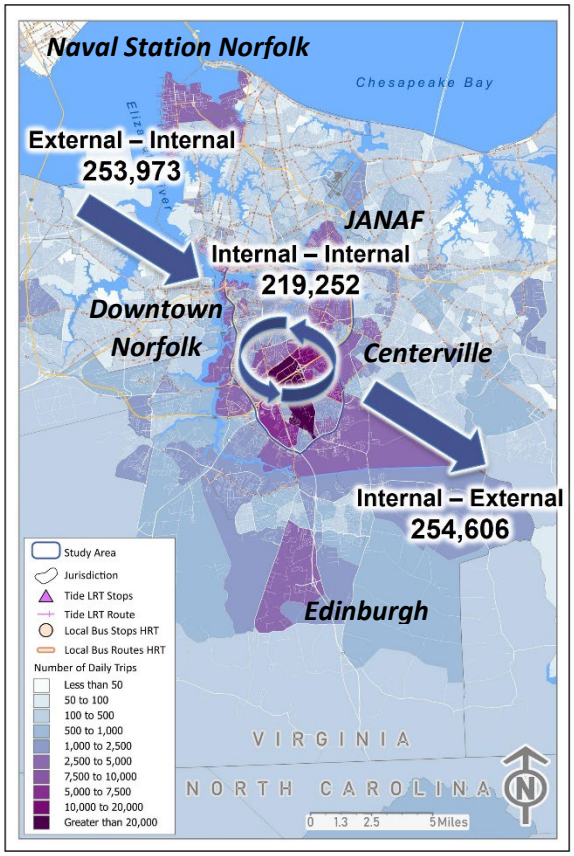

Figure 7. Overview of total daily trips in 2022 (Source: Replica)

The origins and designations of the external trips are generally from key regional activity centers or large commercial areas adjacent to the study area. The top destinations for trips that began in the study area and ended outside the study area were the same as the top five destinations for trips that began outside the study area and ended in the study area. Those destinations are, in order of trip count:

- Downtown Norfolk (Norfolk)
- Centerville (Virginia Beach)
- JANAF and Broad Creek Shopping Center (Norfolk)
- Naval Station Norfolk (Norfolk)
- Edinburgh (Chesapeake)

[1] Replica, 2019 – 2023.

[2] U.S. Census Bureau. "Commuting characteristics by sex." American Community Survey, ACS 1-Year Estimates Subject Tables, Table S0801, [2014], [2018], [2022].

An overwhelming majority of all trips (nearly 90 percent) are as either the driver or passenger of a private automobile (see Figure 8). It is likely that transit trips are slightly undercounted in data sources like this due to the difficulty in differentiating between linked trips (an entire trip by bus from beginning to end, including transfers) and unliked trips (just one segment of a trip), but based on the margin of error, transit trips are not a significant percentage of overall travel in Chesapeake at this time. Nine percent are walking trips, and one percent are via bicycle. Among those private automobile users, at least 93 percent of them had access to at least one vehicle in their household. Only four percent described themselves as zero-vehicle households.

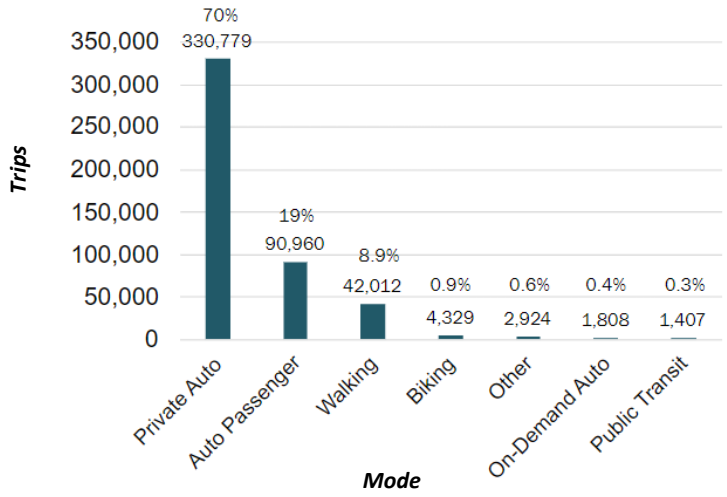

Figure 8. Trips by mode (Source: Replica)

Presently, Chesapeake's local bus service is complemented with some express bus service and direct connectivity to the Tide LRT. Express Bus service in the study area is provided by Route 967. This route starts at the Military Highway Park and Ride and stops in the study area at Greenbrier Mall before ending its route in Newport News. The Route 967 operates five trips in the morning and seven trips in the evening. The Tide operates between Downtown Norfolk and Newtown Road in Norfolk on the northern edge of the study area. The Tide operates seven days per week with a base frequency of 15 minutes and reduced frequency in early mornings and late evenings. The low percentage of public transit trips in Chesapeake might reflect a real or perceived limitation in service options, especially when commuters are looking at connectivity to the major destinations in the region. Exploring a potential high-capacity transit connection between Chesapeake and the Tide stations north of the Elizabeth River may help address this imbalance between transportation modes. This is especially important given the anticipated growth and increases in congestion in both Chesapeake and the region that will likely result from the increase in the total number of trips, especially those that are entirely within the study area.

The Hampton Roads Transportation Planning Organization (HRTPO) annually tracks roadway congestion throughout the region. Figure 9 and Figure 10 show roadways currently experiencing high levels of congestion in the project study area during the AM and PM weekday peak periods. Roadways shown in red are experiencing severe congestion levels, meaning they are operating beyond their available capacity during weekday peak periods. Roadways shown in yellow are approaching their available capacity,

resulting in significant delays for roadway travelers. Generally, congestion levels are higher during the PM peak period as commuting trips mix with non-work-related trips such as shopping and recreational trips. The primary areas of congestion during the AM peak period are at the bridges between Chesapeake and Norfolk to the north and between Chesapeake and Portsmouth to the west. In addition, moderate levels of congestion are found on the roadways around Summit Pointe and Greenbrier. Portions of Campostella Road, Kempsville Road and Great Bridge Boulevard are also experiencing moderate to severe levels of congestion.

Roadways experiencing congestion during the PM peak period are more extensive and have a higher level of severity than during the AM peak period. Notably, roadways in the subarea around Summit Pointe and Greenbrier experience significantly higher levels of congestion than during the AM peak period. Roadways in the northern portion of the study area, in Norfolk and Military Circle, are also showing moderate to severe levels of congestion.

Figure 9: 2021 AM Peak Period Roadway Congestion (Source: HRTPO Annual Roadway Performance Report (2022))

Figure 10. 2021 PM Peak Period Roadway Congestion (Source: HRTPO Annual Roadway Performance Report (2022))

Existing roadway congestion levels will only increase into the future as local and regional population and employment increases. In 2020, the population of Chesapeake was 249,422 persons, a 12.2 percent increase from its 2010 population of 222,209 persons. Chesapeake is now the second largest city in the Commonwealth, and it continues to be one of the fastest growing cities in the region.

Future projections of population, employment and vehicles for the City of Chesapeake prepared by the Hampton Roads Planning District Commission[3] show 28 percent and 5 percent increases in population and employment by 2050, respectively. The projected growth in vehicles by 2050, which relates directly to roadway congestion, is expected to be 31 percent.

HRTPO staff produces future PM peak period roadway congestion levels as part of the regional Long-Range Transportation Plan. These projections are based on predicted future year traffic volumes and the list of transportation projects that are expected to be completed by the horizon year. Congestion levels for the year 2040 are calculated using Highway Capacity Manual procedures. The number of severely congested lane-miles in Hampton Roads is projected to grow significantly between 2018 and 2040, as shown in Figure 11. In 2040, nearly one quarter (23 percent) of the Hampton Roads Congestion Management Process (CMP) Roadway Network is expected to operate at severely congested levels during the PM peak period, up from 14 percent under 2018 conditions.

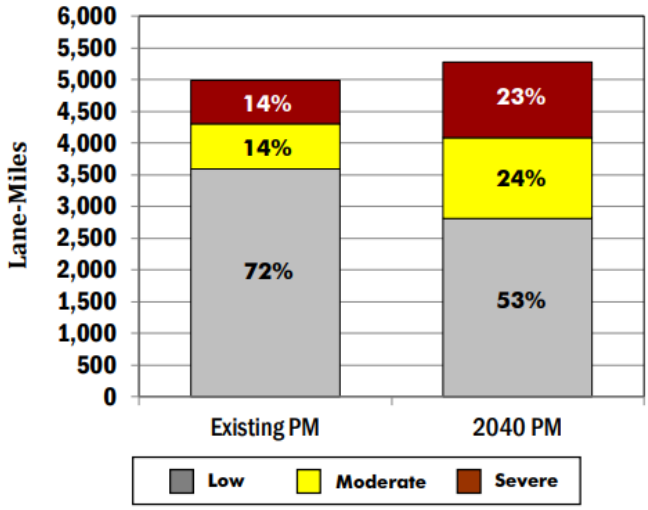

Figure 11. 2018 and 2040 congestion levels by lane mile for the CMP Roadway Network (PM Peak Period) (Source: HRTPO, INRIX, VDOT)

HRTPO staff produced a ranking of roadway segments throughout the region as part of their CMP analysis. CMP roadway segment scoring criteria included congestion, travel time reliability, freight, safety and roadway type. The higher the CMP score, the higher the priority for improvement. There are multiple roadway segments within or adjacent to this project's study area that were ranked in the Top 15 of CMP congested corridors regionwide. Notable segments in the study area are I-64 near at Greenbrier Parkway, Chesapeake Expressway, Battlefield Boulevard near I-64, and Military Highway west of Battlefield Boulevard.

Existing and future congestions levels in the study area will have negative impacts on quality of life, air quality, accessibility, safety, and mobility for the residents of Chesapeake.

[3] Hampton Roads 2050 Socioeconomic Forecast: Draft Population and Employment, Presented to TTAC, October 5, 2022.

GOAL 3.A: Improve the connectivity of Chesapeake to the rest of the region.

- Objective 3.A.1: Provide transit connection to existing regional transit network from Chesapeake's major activity centers.

GOAL 3.B: Expand the carrying capacity of Chesapeake's transportation network.

- Objective 3.B.1: Provide more frequent and comprehensive transit service options along major commercial corridors.
- Objective 3.B.2: Increase the potential carrying capacity of the transportation network at key river crossings between Chesapeake and its neighboring cities.