Portsmouth Master Transportation Plan

PART I:
Existing Conditions and Trends

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Acknowledgments

The consulting team of Wallace, Roberts & Todd, LLC with Kimley-Horn & Associates and the ETC Institute would like to thank the following groups and individuals for their contributions to the Existing Conditions and Issues Report of the Portsmouth Master Transportation Plan:

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All of the Portsmouth residents and other members of the public who attended the December Open Houses and Workshop to help shape the future of transportation in the City of Portsmouth.

On the cover: Mount Vernon Street in the Port Norfolk neighborhood

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INTRODUCTION

Portsmouth is a city that was founded for transportation reasons. As an ideal harbor to construct ships and carry on trade, the City quickly grew into a thriving port. Over time, the region grew up around Portsmouth, so that today it is at the center of the highway, rail, and transit network.

This document analyses the issues and trends that affect the transportation system in Portsmouth. It is based on field work, interviews with stakeholders, public meetings and surveys, and data gathered about the transportation network from various sources and agencies such as the Virginia Department of Transportation and the Hampton Roads Regional Planning District Commission (HRPDC).

(Left) Bicycle and pedestrian ramp to the Pinners Point/Western Freeway Bridge

Relationship to the Comprehensive Plan

The Master Transportation Plan is an evolution from the city's comprehensive plan, *Destination 2025*. That plan sets out the following policies for transportation:

- Enhance the existing roadway network to optimize operational efficiency.
- Support implementation of regional facilities needed to address regional transportation impacts on the City of Portsmouth.
- Promote pedestrian and bicycle facilities and usage throughout the City.
- Enhance transit service (bus, ferry, and future light rail) and usage throughout the City by increasing ridership opportunities to activity centers and special event attractions.
- Provide for parking adequate to meet needs within the context of Portsmouth's roadway network and urban/historic character.
- Coordinate land use strategies with the existing and future multi-modal transportation system.
- Enhance communication with the public regarding the transportation system.

An additional goal was added for the MTP in order to reinforce the connection to land use and economic development:

- Incorporate the highest standards of urban design and community appearance into the transportation system.

Purpose of the Master Transportation Plan

The purpose of the Master Transportation Plan is to coordinate City transportation policy, describe investment priorities, map potential future projects, and ensure that the transportation system supports the City's goals for land use, economic development, and quality of life.

The transportation plan will provide the framework for making decisions about transportation policies and investments in the coming years. It is responsive to goals that citizens have identified for the future of their city, and it is supportive of parallel efforts to improve neighborhoods and commercial areas to make Portsmouth an even more attractive place to live.

The Master Transportation Plan (MTP) is the first plan in the city's history to address all transportation modes—motor vehicles, freight carriers, railroads, transit, bicycles, and pedestrians. This plan addresses these modes as a networked, intermodal system.

Bicyclists on Crawford Parkway

Plan Objectives

The transportation system must support other city goals, such as fostering great neighborhoods, encouraging economic development, and improving the environment.

The Portsmouth Master Transportation Plan (MTP) is intended to:

- Create a plan for the Portsmouth transportation system that is embraced by the community and meets future transportation needs.
- Focus on moving people, goods, and information, not just automobile traffic.
- Accommodate urban development and growth without increasing vehicle miles traveled and congestion.
- Facilitate regional transportation and freight traffic without negatively impacting city residents and businesses.
- Create an integrated multi-modal transportation network that offers convenience and choice to users.
- Support the development of walkable, mixed-use urban centers and vibrant residential neighborhoods.
- Improve the urban design of the City by creating complete streets that effectively serve all travel modes.
- Create a sound methodology for evaluating projects and prioritizing City resources to carry out the plan.
- Create a plan that complies with all applicable government regulations and standards and is coordinated with regional planning.
- Design a transportation system that will help improve air quality, reduce pollution (including greenhouse gases), and increase public health.

Planning Process

The city's Comprehensive Plan identified the need for a more in-depth plan to guide city transportation policy. Based on the Comprehensive Plan recommendations, the city opted to create a Master Transportation Plan that would coordinate all transportation modes and ensure that the transportation system supports other goals, such as developing regional activity centers, enhancing the vitality of the downtown, and fostering a high quality of life for citizens.

Consultant Team

To help prepare the plan, the city retained a consultant team led by Wallace Roberts & Todd (WRT), LLC, a nationally known planning and design firm and the lead consultant for the comprehensive plan. WRT is joined by Kimley Horn Associates, a national transportation engineering firm with offices in the Hampton Roads region, and ETC Inc., a firm that specializes in public surveys and opinion research for transportation projects.

Master Transportation Plan public workshop.

Phase I: Existing Conditions and Trends

Phase I of the planning process addresses the transportation system as it exists today and the major trends that may shape future conditions. This phase provides the foundation for making detailed recommendations in subsequent phases of work. The existing conditions report summarizes the results of the following steps:

Stakeholder interviews were conducted to solicit concerns and ideas for the plan, and collect available data. The team interviewed representatives from the ports, railroads, trucking companies, school district, bicycle commuters, city agencies, Navy facilities, the Virginia Department of Transportation (VDOT), Hampton Roads Regional Planning District Commission (HRPDC), Hampton Roads Transit (HRT), and other stakeholders.

Data was analyzed to assess the condition of the transportation system. Data analyzed included traffic volumes, travel patterns, public transit routes and service characteristics, bicycle conditions, land uses, freight facilities, crashes, and demographics.

Public meetings were held in several locations in Portsmouth to provide residents with the results of the preliminary analysis of existing conditions and to solicit comments, concerns, and suggestions. An evening public workshop was conducted to identify the top concerns for each transportation mode in an interactive roundtable process.

Synthesis of existing conditions, trends, and issues brings together the results of the preceding steps. It will lead to crafting recommendations to improve and enhance the transportation system in Phase II.

Key Findings From Phase I

The following is a summary of the key findings of Phase I:

Truck traffic is a major concern of city residents. Citizens at public meetings expressed a strong desire to mitigate the impacts of port-related traffic. There was general support for expanded regional facilities (e.g. the proposed "Third Crossing") as a means to cope with increased truck traffic. While rail facilities are being improved, deficiencies exist. The Belt Line needs upgrades to handle increased rail traffic. Increased rail shipping affects grade crossings, creating delays for vehicular traffic.

The transit system should be more convenient. Members of the public stated that it often takes too long to reach their destination by transit partly because users must transfer among lines in order to reach their ultimate destinations. Some transfers are coordinated, but others result in missed connections. Many Portsmouth residents stated that they have to walk too far to reach the nearest transit service. Other ideas for improving the transit system include safer and more attractive transit centers, bringing light rail to Portsmouth, and increasing ferry service.

Congestion is primarily a problem on regional highways. The tunnels create bottlenecks that make it difficult to access many parts of the region—especially at rush hour. Except for a handful of congested intersections, local streets provide excellent mobility throughout the day. Future traffic forecasts indicate that this trend will continue. Congestion will worsen on highways, while local arterial streets and collectors will be less affected.

Portsmouth lacks a bicycle network. There are very few designated bicycle routes. Arterial streets are mostly hostile to bicyclists. Bridges are another major barrier to cycling. However, local streets offer comfortable bicycling conditions, and the mostly flat terrain makes it easy to ride. Several former railbeds may offer potential for rail-trails.

Complete streets supporting all travel modes are needed. Much of the street network lacks sidewalks. At intersections, crosswalks are often missing. Streets often lack trees and streetscape that would support quality development. In general, there is a need to focus on pedestrian improvements in many areas outside of downtown, and especially on major corridors and in proposed mixed-use centers. Some recent projects, such as New Port, offer models for complete streets.

Phase II: Recommendations

The next phase of the MTP will develop detailed recommendations for each transportation mode and how they can work together to form a complete multimodal transportation system.

Recommendations for the city's major corridors will be developed that address how to incorporate each transportation mode, and create a framework that will support the city's land use goals and address issues of traffic flow and safety.

The transit system will be addressed through designation of transit centers coordinated with land use, recommendations for routes, and strategies for improved service. Intercity transportation will also be considered, including bus and rail connections and coordination with regional airports.

Walkable centers will be designated, where the expectation is that design standards will help create an environment that supports travel on foot, by bicycle, and by transit.

A framework for developing a bicycle network will be developed, including on-street and off-street routes that can be phased in over time.

Congestion will be addressed, with a primary focus on improving regional flows (where most congestion occurs) and shifting traffic from single occupant vehicles to more sustainable modes of travel.

The freight system will be a focus area of the plan, including strategies to minimize truck traffic on local streets and to provide sufficient future capacity to meet expected freight movement.

Design standards for complete streets will be created providing standards to follow when retrofitting or constructing streets, roads, and other transportation facilities in the city.

Priorities for action will be established, along with a "decision matrix" for use in evaluating investment options and potential transportation projects.

CHAPTER 2

PLAN CONTEXT

The MTP is part of a larger strategy by the City of Portsmouth to improve quality of life, the local economy, and the environment. Moreover, the City's efforts are affected by forces at work at the regional, national, and even global levels. Thus, the plan must be responsive to its context—the larger issues and goals that shape the planning process and recommendations.

For discussion purposes the plan context can be divided into three levels or scales:

1. **Global issues** are the larger forces operating at the national and international scales. These include concerns about global climate change, energy security, and trade flows—all of which affect Portsmouth's transportation system.

2. **Regional issues** relate to forces at work in the Hampton Roads region. These include regional transportation facilities, travel patterns through Portsmouth, air quality, employers, and transportation funding methods.

3. **Local issues** occur within the City of Portsmouth. These include the design of local transportation facilities, local land use decisions, and transportation planning within the city. Key concerns include coordinating transportation and land use planning and planning for a multi-modal transportation system.

(Left) Normandy St. in the New Port at Victory neighborhood.

Global Issues

The City must respond to global trends in order to remain competitive and to "do its part" in addressing the pressing issues of our time. Global issues that affect the city's transportation system include climate change, energy security, and global freight flows.

Climate Change

The implications of climate change and sea level rise caused by human greenhouse gas emissions for a low lying, coastal community such as Portsmouth are well documented.

The Mayor of Portsmouth has signed the *US Conference of Mayors Climate Protection Agreement*, committing the City to reduce its carbon emissions to seven percent below 1990 levels by the year 2012.

Approximately one-third of greenhouse gas (GHG) emissions are due to transportation. More than half of the emissions from transportation are from personal vehicles. Therefore, it is imperative to address transportation (and particularly personal trip-making) as part of the solution to reducing GHG emissions.

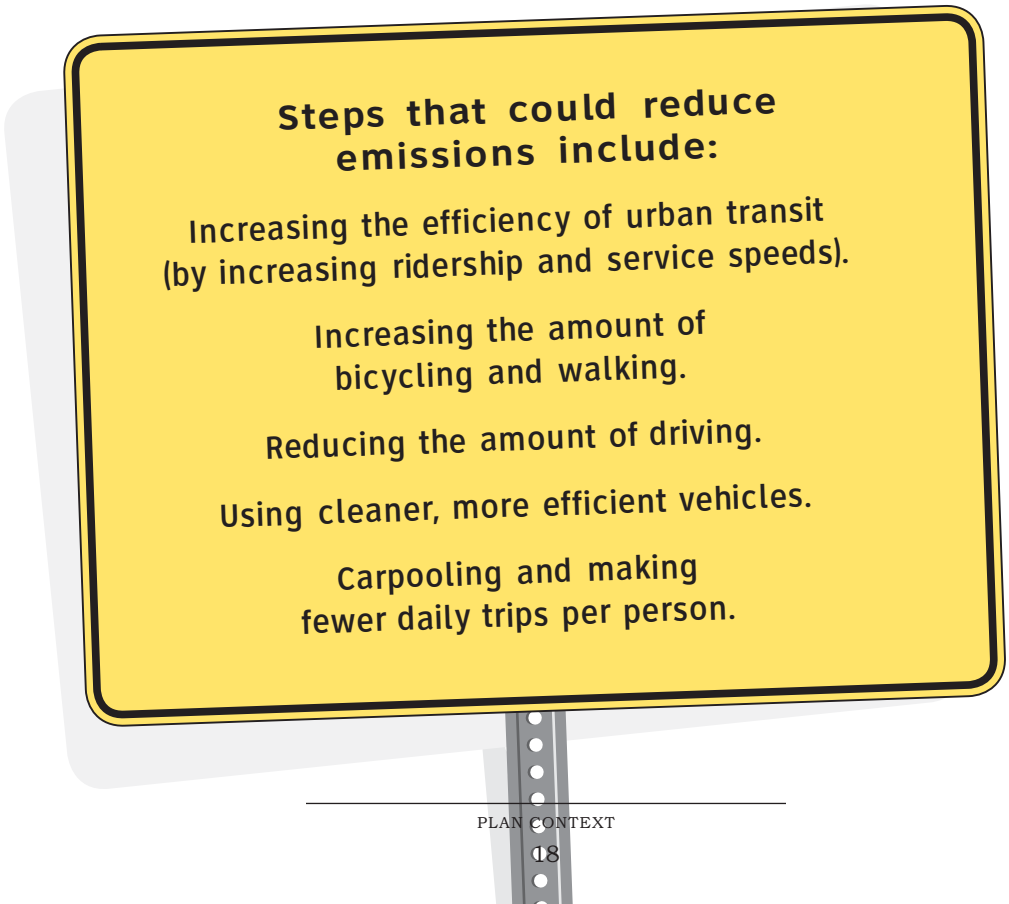
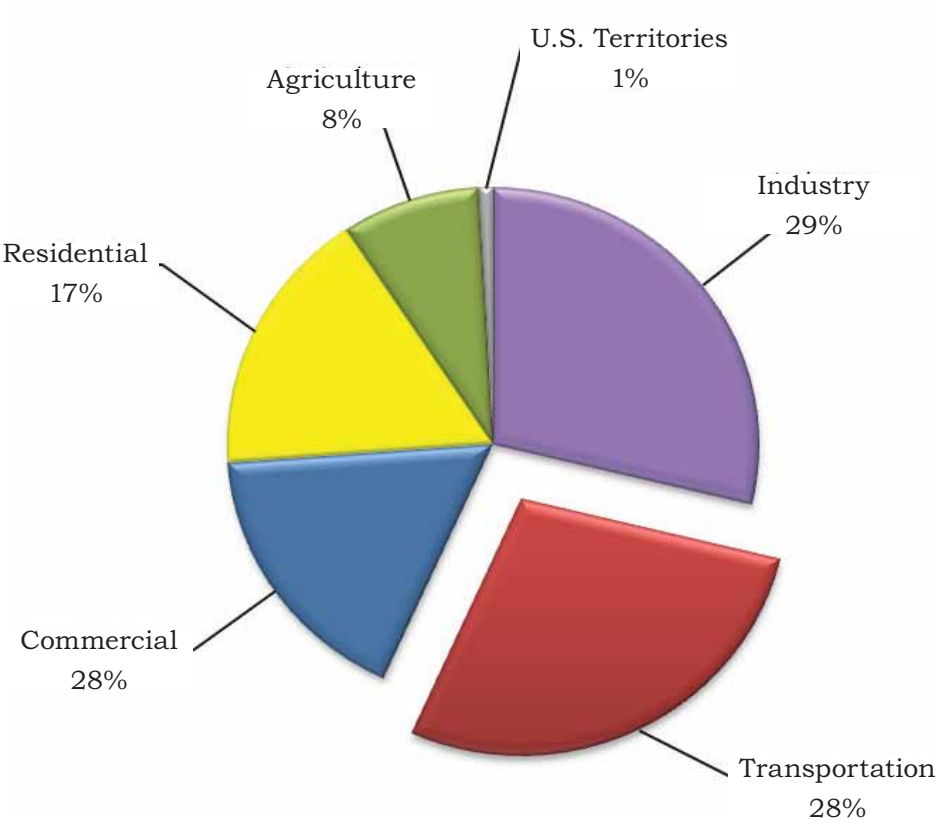


Figure 2.1 Greenhouse Gas Emission by Sector



Data Source: U.S. Environmental Protection Agency; http://www.epa.gov/climatechange/emissions/downloads/08_CR.pdf; page ES-17 Accessed January 9, 2009.

Energy Security

Energy security concerns center on the nation's dependence on foreign sources of non-renewable fossil fuels. Many experts predict that the world is fast approaching a watershed moment termed "peak oil"—the point at which maximum daily oil production will decline, even as demand increases in China and India in particular. The oil fields of the United States peaked in the 1970, and domestic production has declined by approximately 50% since that time. *Source: http://www.eia.doe.gov/neic/infosheets/crudeproduction.html*

While energy security is a worldwide as well as a national concern and a challenge, it has direct consequences at the local level. The record-setting gas prices of 2008 exposed the vulnerability of the local economy and transportation system to imported oil and fossil fuel dependency in general. Here are some key facts about oil consumption:

- **The United States uses the most oil of any country**—about 21 million barrels of oil per day (a barrel holds 42 gallons). The US uses three times more oil each day than China, the next largest user.

- **Most of the oil (about two-thirds) that the United States consumes is used for transportation.** In particular, the use of personal vehicles consumes the majority of oil used for transportation.

- **Two-thirds of the oil we use each day is imported.** Some of these imports are from Canada and Mexico, but much of the imported oil comes from countries that are members of OPEC—the Organization of Petroleum Exporting Countries. Thus, the United States is heavily dependent on oil from a global cartel that includes suppliers with unstable political systems or political hostility toward the United States.

- **The United States is at risk from interruptions in oil supply.** Because our economy and lifestyle are so dependent on oil, we are at risk from even minor interruptions that could be caused by natural disasters, terrorist attacks, wars, or political conflict.

- **Oil supplies are being depleted.** Current economic conditions have resulted in reduced demand, providing some relief from record gas prices. However, this temporary situation does not change the fact that oil production is declining in many countries. For

example, Mexican oil production—a major source of US imports—is decreasing rapidly. As oil supplies become constrained and peak oil is approached, many negative effects are possible, including economic turmoil and international conflict.

- **Oil imports contribute to a trade imbalance.** The United States has to purchase hundreds of billions of dollars worth of oil each year, which contributes to a large trade imbalance.

Increasing the energy efficiency of the transportation system is critically needed to reduce dependence on foreign oil. While Portsmouth has no direct control over approaches such as increasing the production of more fuel-efficient vehicles, it can affect the amount of travel that occurs in motorized vehicles (referred to as Vehicle Miles of Travel or VMT).

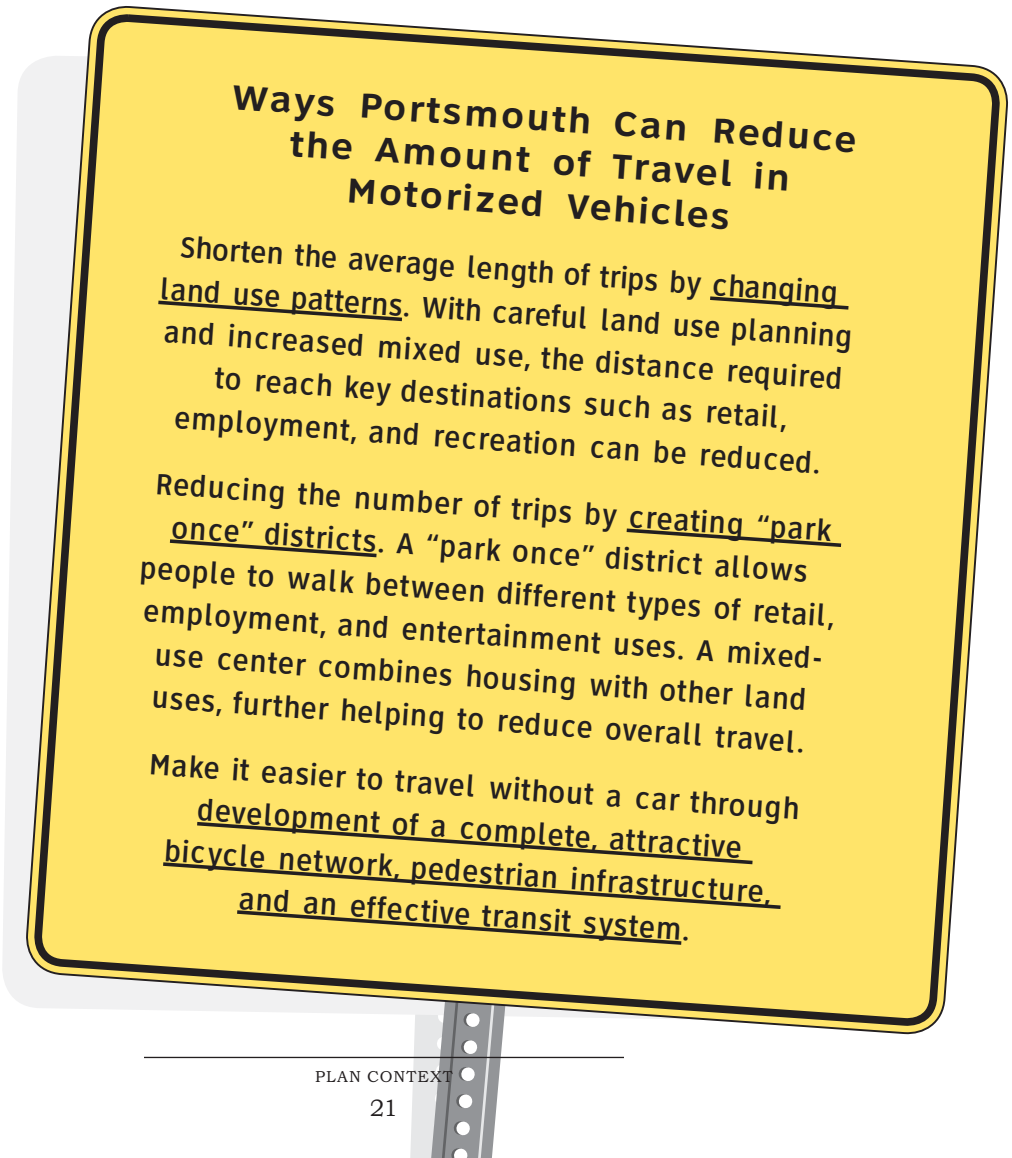
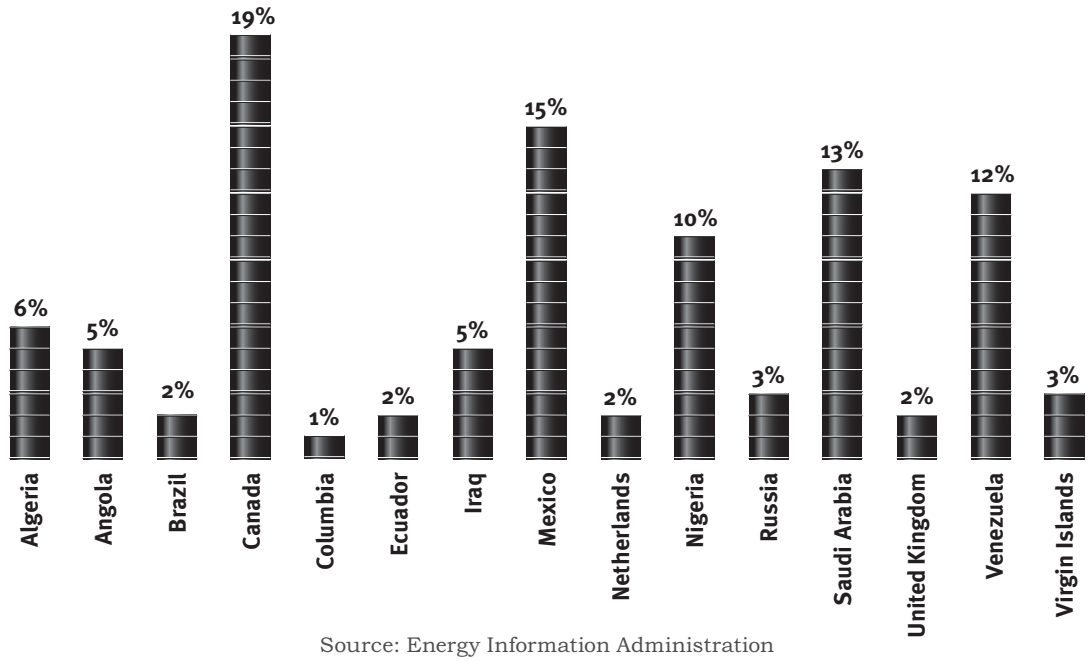
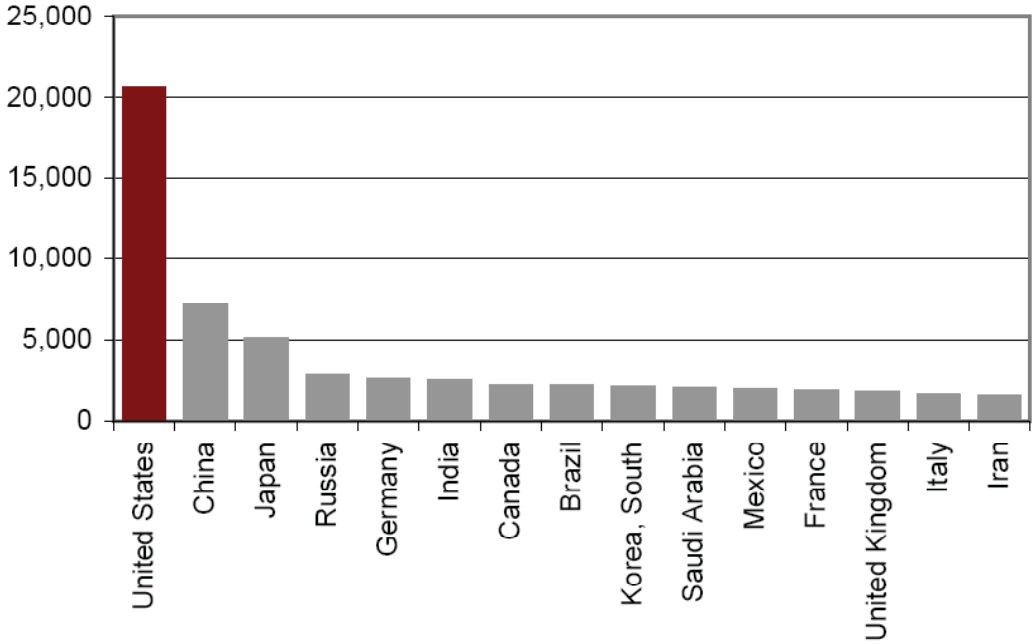


Figure 2.2 Where Does US Imported Oil Come From?



Source: Energy Information Administration

Figure 2.3 Daily Oil Consumption
(In Thousands of Barrels)



Global Trade Flows

Portsmouth is a major American port. As the economy becomes more global, greater international freight traffic is flowing through Portsmouth. Key factors affecting Portsmouth include:

- **Increased global trade** leads to increased imports and exports and flows of goods through port cities such as Portsmouth.

- **New port facilities,** such as APM, will lead to an increased number of ship calls and increased freight activity. These facilities also attract other logistics companies, such as warehousing and distribution centers, that locate near ports.

- **Major transportation corridors** create attractive routes from Portsmouth to interior markets in the United States. For example, the Heartland Corridor project will create a "double-stack" rail corridor all the way to Chicago, a major freight rail hub.

- **Expansion of the Panama Canal** is likely to lead to increased Asian shipping traffic. Even larger vessels will be able to sail across the Pacific, through the canal, and up the East Coast to Portsmouth.

- **Congestion at other East Coast ports** could shift freight traffic to Portsmouth, which has excellent rail and highway connections to much of the United States.

Safety

The transportation plan must consider the safety of the system, including specific intersections that have the highest rates of crashes. From a broader perspective it is important to understand motor vehicle safety in its larger context.

- **Each year, more than 40,000 people die in road crashes in the U.S.** More than 1.5 million are injured. The number of people killed each year in motor vehicles would be enough to fill 100 Boeing 747s.

- **Motor vehicle traffic crashes are the LEADING CAUSE OF DEATH for people between the ages of 3 and 33.**[1] "Every day in the United States, an average of five children age 14 and younger were killed and 548 were injured in motor vehicle crashes during 2007."[2]

- **Pedestrians are also at risk.** Crash data shows that, "There were a total of 4,654 pedestrian fatalities (in the United States) in 2007."[2]

- **In 2007, there were no passenger fatalities on scheduled United States commercial airlines.** The exemplary safety record of the airlines illustrates the potential to improve safety through a systemic approach.

- **The Wisconsin DOT recently committed to reducing traffic deaths to zero.** This follows international goals, such as "Vision Zero" established by Sweden. "To stop the senseless death and destruction on Wisconsin streets and highways, the goal of our department and our traffic safety partners is to one day attain zero preventable traffic fatalities in Wisconsin."[3]

(1) http://www.nhtsa.dot.gov/people/Crash/LCOD/index.htm

(2) www.nhtsa.dot.gov/portal/nhtsa_static_file_downloader.jsp?file=/staticfiles/DOT/NHTSA/NCSA/Content/TSF/2007/810987.pdf

(3) http://www.dot.wisconsin.gov/opencms/xport/nr/modules/news/news_1107.html_786229440.html

Regional Issues

Portsmouth is at the center of the regional transportation system. Highways, rail lines, and mass transit funnel through the City. It makes sense to address transportation from a regional standpoint, since many improvements would benefit the region as well as the City and are beyond the fiscal capacity of Portsmouth to address. This section lays out some of the regional factors that must be taken into account in developing the transportation plan.

Regional Travel Patterns

Regional traffic flows through Portsmouth. The City of Portsmouth lies at the heart of the Hampton Roads metropolitan area. Because of its location in the center of a region divided by waterways, highways carry disproportionate amounts of regional traffic through the City, leading to bottlenecks at the Midtown and Downtown Tunnels. The resulting congestion creates a strong separation between Norfolk and Portsmouth, which are only a few hundred yards apart. Congestion from tunnel access points extends onto Portsmouth streets.[1]

Regional growth has been directed outwards. The greater Hampton Roads region grew tremendously in population after World War II and today is home to 1.6 million residents. In the second half of the 20th Century, population moved away from the region's core into the suburbs and the City of Portsmouth declined in its population and prosperity. Today, the population of Portsmouth is approximately 100,000 residents—down from 116,000 residents in 1960.

Portsmouth is home to regional employers and destinations. The Portsmouth Naval Shipyard, the Naval Medical Center, the ports, and other regional facilities attract commuters and travelers from across the region. Thus, the transportation system must function well at the regional level if it is to support these local employers.

(1) More specific information about travel patterns is provided in Section IV—Travel Patterns.

Regional Funding Constraints

Transportation funding is a major concern. The current fiscal climate creates difficulty in financing regional transportation projects, as evidenced by the following:

Revenues from the gas tax are stretched very thin. Gas is taxed at a rate of 38 cents per gallon—18.5 cents federal tax and 19.5 cents from Virginia. The tax is not indexed to inflation, and has not been raised since 1993. Virginia has not raised gas taxes in more than twenty years. The American Association of State Highway and Transportation Officials estimates that, because of inflation, the purchasing power of the gas tax has declined by 65 percent since 1993. At the same time, increased fuel efficiency and a decrease in driving is reducing overall gas tax receipts. These forces are creating a major crunch in transportation funding. Recently, Congress had to shift $8 billion in general funds to the Highway Trust Fund to cover a large shortfall.

Federal funding for transit is limited. Construction of new transit facilities such as the Norfolk light rail system is usually funded mostly by the federal government through the New Starts program. This program is over subscribed and funding is limited. Planning procedures are rigorous and take significant time and funds to complete. Currently, it can take many years, even decades, to deliver a major project.

The HRTA is in limbo. In response to such funding challenges, the Hampton Roads Regional Transportation Authority (HRTA) was created by the Virginia legislature to provide a regional source of funds to construct major projects such as the Third Crossing and expansion of existing tunnels, roads, and bridges. The Authority was to be funded through a variety of taxes, fees and tolls. However, in 2008 the Virginia Supreme Court ruled that the legislature could not delegate taxing authority to an unelected body (such as the Authority), thus suspending its ability to collect revenue. This has created uncertainty for many large-scale regional transportation projects due to the lack of funding.

"Future Funding and Program Effects" presentation by Jack Basso, Chief Operating Officer and Business Development Director, American Association of State Highway and Transportation Officials, to PennDOT Planning Partners Conference, October 8, 2008.

Private companies may build some major facilities, but probably not all of them. VDOT has begun the process to select a private consortium to expand the Midtown Tunnel and implement tolls to provide the project financing. Tolls would be electronically collected and would not require toll booths. A transit tunnel remains a possibility, although VDOT has not stated that this will be a requirement of the project. Another potential privately-financed project that has recently arisen is the replacement of the Jordan Bridge with a new toll bridge. This proposal team includes a company which has built many similar facilities worldwide. A future parkway connection to the MLK freeway may also be a possibility.

Inconsistent local funding places pressure on transit service. Thirty-three percent of funding for Hampton Roads Transit (HRT) is provided by contributions from local governments, such as Portsmouth. This means that local governments have to collect and allocate revenues for transit service and that service levels vary by jurisdiction.

Types of Transportation Pollution

- **Ozone (O_3)**—a gas composed of three oxygen atoms— is the primary constituent of smog. The ozone that forms naturally at an elevation of 10 to 30 miles above the earth's surface is "good ozone" that shields the planet form harmful ultraviolet rays. However, when ozone forms at ground level as a result of pollution, it can trigger serious respiratory problems in humans. Repeated exposure can scar the lungs. Ozone is formed from the reaction of Volatile Organic Compounds (VOC_s) and Nitrogen Oxides (NO_x), both of which are caused partly by transportation. Ozone pollution is worse in the summertime, when sunlight and higher temperatures contribute to ozone formation.

- **Volatile Organic Compounds (VOC_s)** are harmful, unstable chemicals that react with other chemicals, especially in the presence of sunlight. Examples of VOCs include gasoline and other motor vehicle fuels that are incompletely combusted or evaporate from vehicles.

- **Nitrous Oxide (NO_x)** is one of the primary ingredients in the formation of ground level ozone and other toxic chemicals. This pollutant deteriorates water quality, contributes to global warming, and contributes to formation of acid rain and smog.

- **Particulate Matter (PM)** consists of tiny particles and droplets of liquid that are suspended in the air. These particles are much smaller than the width of a human hair. Typically, the federal government classifies particulates by size—PM10 is smaller than 10 micros; PM2.5 is smaller than 2.5 microns (a micron is one millionth of a meter, or 39 millionths of an inch). These particles are so small that the human body cannot effectively remove them from the lungs. Breathing in particulate matter can contribute to heart and lung problems. New research suggests that these particles may be more dangerous than previously realized.

- **Carbon monoxide (CO)** is a colorless, odorless, and poisonous gas that is formed when fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust.

- **Sulfur dioxide (SO_2)** gas is formed when fuel containing sulfur (such as diesel fuel) is burned (among other sources). SO_2 dissolves in water vapor to form acid, and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and their environment.

- **Carbon dioxide (CO_2)** is not a poisonous gas regulated by the EPA, but it is a significant contributor to global climate change.

Source: http://www.epa.gov/cgi-bin/broker?_service=data&_debug=0&_program=dataprog.dw_do_all_emis.sas&pol=228&stfips=51

Air Quality

Much of the region's air pollution comes from transportation sources. At the present time, new, stricter federal air quality standards are being implemented that could require the region and Portsmouth to implement more aggressive measures to bring local air quality into compliance.

The next few years will determine whether the Hampton Roads region is classified as being in attainment or *non-attainment* of federal air quality standards. Regions that are classified as non-attainment have to take actions to improve air quality, such as investing in mass transit and reducing investment in highway capacity. The Hampton Roads region has air quality that is better than many large metro areas in the United States, but it still experiences days when the air is considered unhealthy.

Because of the need for clean air, transportation policies need to focus on reducing congestion and reliance on internal combustion engines. Strategies that encourage walking, biking, and transit use can reduce vehicle miles of travel, resulting in decreased emissions and reductions in congestion, which also helps reduce harmful emissions. Optimizing transportation infrastructure can help to move traffic as efficiently as possible, also reducing congestion and associated emissions.

Figure 2.4 International Transportation Through the Hampton Roads Region

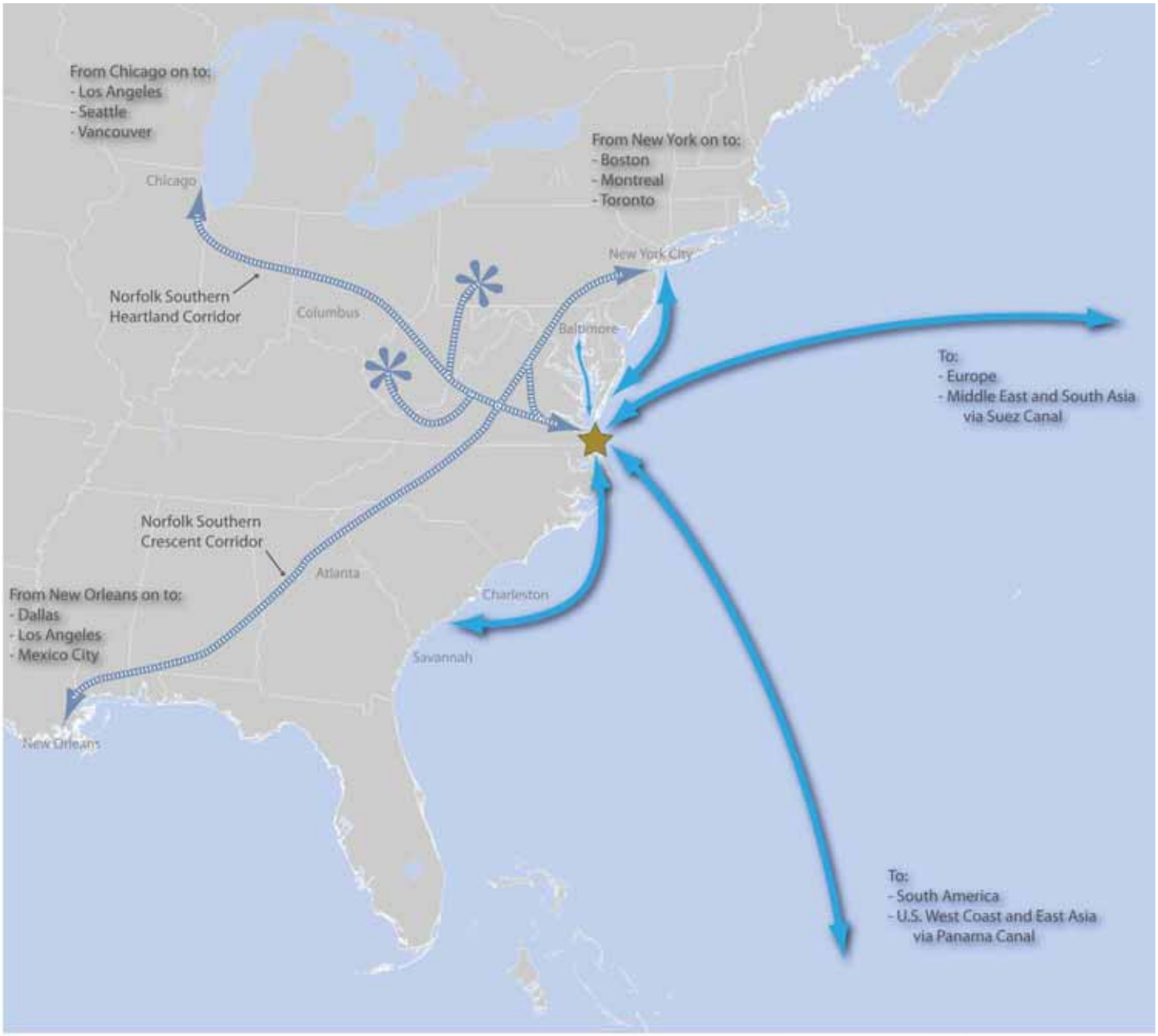
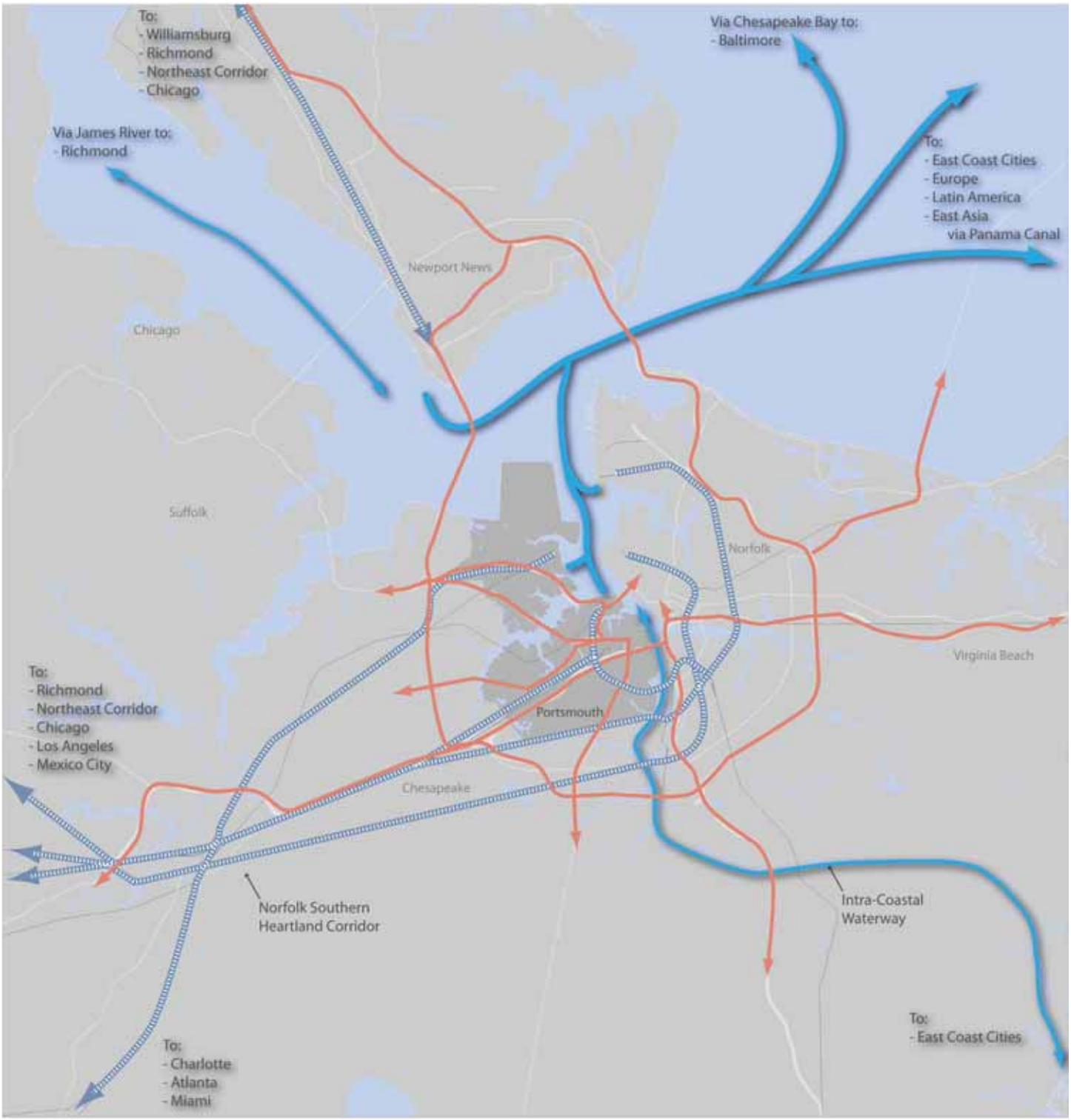


Figure 2.5 Regional Transportation Through the Hampton Roads Region



Multi-modal Transportation

Multi-modal transportation means providing people with choices for how to get around. Without a network that supports walking, bicycles, and transit, there is little choice but to drive. The existing network is designed primarily for motor vehicles. In order to create a multi-modal system, the City will need to invest in infrastructure for other transportation modes.

Intermodal connections link different modes of transportation together. The idea is to make it easy for travelers to change from one mode to another in a seamless way. For instance, it should be easy to change from ferries to buses and bicycles, in order to make it easier to travel by each mode. Major transit hubs, such as airports and rail stations, need access by bus, bike, taxi, and car to provide for good connections to local destinations.

Complete streets are multi-modal facilities that accommodate walking, biking, transit, and motor vehicles. In the past, many streets were designed primarily for cars. This policy has now shifted to constructing complete streets — often by retrofitting sidewalks, bike lanes, and other infrastructure within existing rights of way.

Multi-modal corridors are the streets that link the major destinations in the city together. These roads should serve as the arterial network, providing safe and efficient service for all modes of travel.

Local Issues

Local issues are those factors which mostly impact Portsmouth. These are also issues which the City has the most direct control over, and where the MTP may have the greatest impact.

Land Use

Land use and transportation are linked. For example, if destinations are spread far apart, it is necessary to drive further to reach a destination. In contrast, if destinations are arranged in a compact way, it may be possible to walk or bicycle to the destination instead of using a motor vehicle. Likewise, land use decisions can support public transportation—for example, when employment centers are served by mass transit. Providing ample amounts of free parking encourages more driving as well.

The Destination 2025 Comprehensive Plan designated Activity Centers where mixed-use development is encouraged. In addition, mixed-use corridors provide spines for multi-modal transportation. The MTP creates a transportation framework to support the land use goals of the Comprehensive Plan.

Schools, activity centers, and regional hubs need to be well connected to the multi-modal transportation system. These areas should receive special focus to make sure that connectivity and safety are maximized.

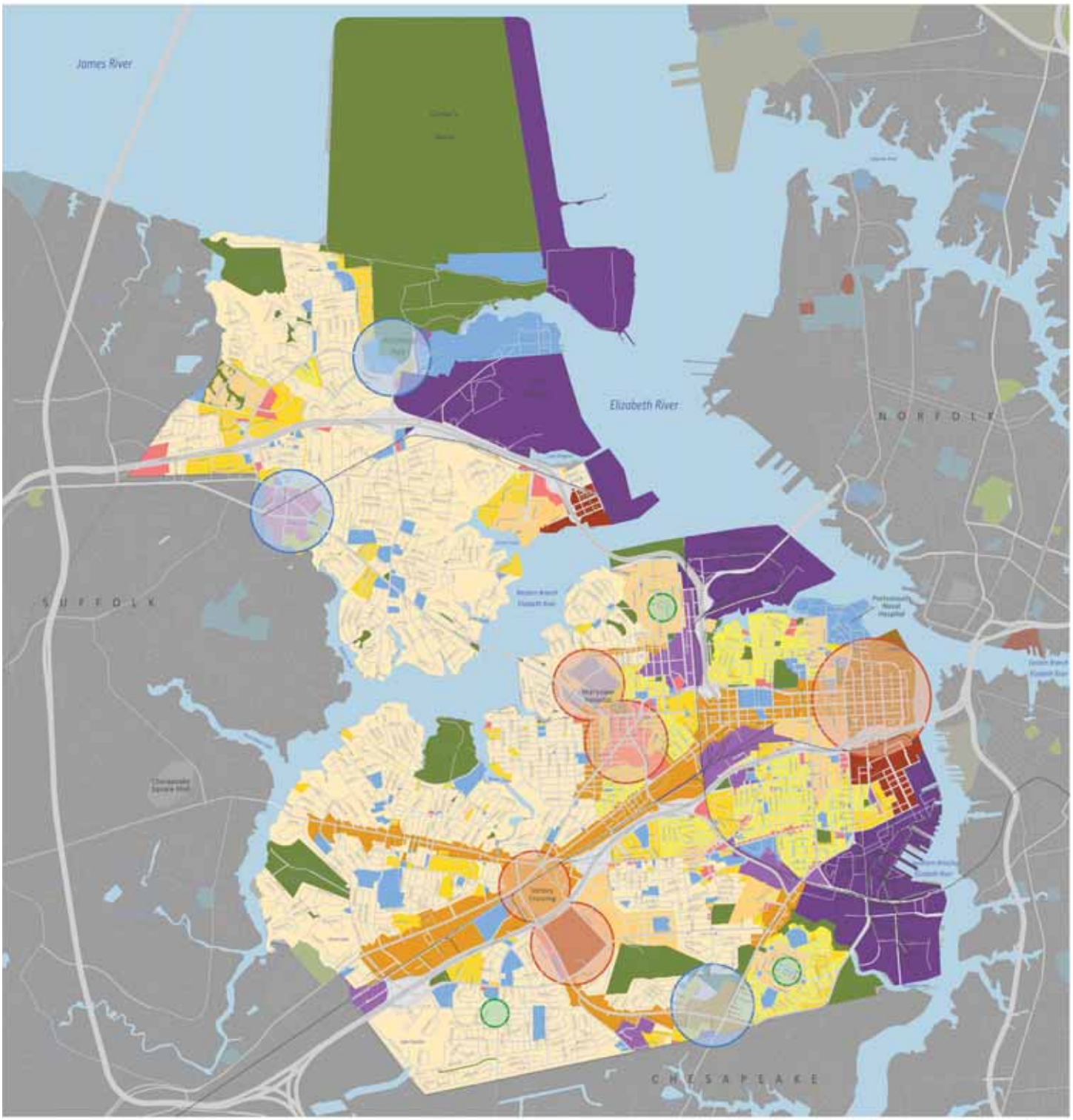
Efficient transit service requires careful land use planning. Sprawling, single-use developments do not allow for efficient bus routes or adequate access to transit stops by pedestrians. Compact, mixed-use developments are more supportive of transit and walking.

Investments in transportation tend to influence real-estate development patterns. Expanding roads tends to stimulate outward development, because it becomes easier to travel longer distances quickly. Building rail lines tends to concentrate development near stations.

What's old is new again. Older portions of the City of Portsmouth were developed in a mixed-use fashion that reduces reliance on the automobile. In contrast, newer neighborhoods tend to be spread out with separated land uses. However, the very newest developments in the city, such as New Port, return to compact land-use patterns that promote walkability.

Mixing land uses may help reduce the number of trips on the roads. Mixed uses make it possible to reduce the number of vehicle trips necessary to commute and run errands. Mixed uses encourage more people to walk, bike, or take transit. Reduced automobile use makes the road network more efficient and less congested.

Figure 2.6 Future Proposed Land Use



Analysis of Major Urban Corridors

The interaction between a street and its surrounding land use sets the context for how it operates. Wide streets with ample set-backs will usually result in higher vehicular speeds. Numerous driveways and access points increase vehicle conflict points and result in higher crash rates as well as inhibit pedestrian activity with vehicles continually crossing walkways and sidewalks. Studies show that minimal set-backs and the presence of on-street parking and street trees discourage speeding, as motorists have to mentally process more visual information and anticipate activity within a busier environment.

As part of the assessment of existing transportation conditions, six key corridors were observed during the PM peak hour to evaluate corridor operations and speeds in relation to their cross-section and abutting land uses. The following sections detail the interaction of transportation and land use in the corridors based on current development and the future land use plan.

High Street

The segment of High Street from the Churchland Bridge to Harbor Drive was observed during the PM peak hour. West of Harbor Drive, High Street is a four-lane facility which varies in cross section between undivided, divided with a two-way left-turn lane (TWLTL), and median-divided. The posted speed limit on High Street is 35 mph in the vicinity of Maryview Hospital and drops to 30 mph east of Airline Boulevard. The surrounding area is largely commercial with some scattered residential, although much of the commercial property is vacant. Average vehicle speeds of 35-40 mph were observed west of Airline Boulevard, and average speeds of 30-35 mph were observed to the east. Because High Street appears primarily to be used as a thoroughfare to Olde Towne and Downtown Portsmouth, it is likely that drivers would operate at faster speeds if the lanes were wider or the speed limits were increased.

The Portsmouth Comprehensive Plan calls for mixed use corridor land development patterns along the corridor in the future, noting coherent and connected land uses with transitions into established residential areas and a focus on redevelopment with corridor improvements. Medium- and high-density residential, institutional, mixed use, and commercial uses are also planned and denoted along the corridor, particularly near the core of the Midtown regional activity center. The High Street corridor will be the most direct link between regional activity centers of Downtown Portsmouth/Olde Towne and Midtown/Maryview Hospital, and therefore should serve pedestrian and cyclists as well as vehicular traffic and transit. Future recommendations for High Street should emphasize multimodal facilities and context-sensitive design, as it will be important to focus on improvements that will reduce speeds.

Portsmouth Boulevard

This segment of Portsmouth Boulevard from the Effingham Street lizabeth River Bridge to Interstate 264 is a four-lane, divided facility with a posted speed limit of 35 mph. The surrounding land use is a mix of commercial and residential. During the PM peak hour, the corridor was observed to have poor signal progression with numerous stops at traffic signals, resulting in average vehicle speeds of 30-35 mph in most sections. When unimpeded by traffic signals, most vehicles travel at 40-45 mph. Given the existing land uses and cross-section, the 35 mph speed limit feels appropriate, although higher speeds could be achieved with better signal progression.

Similar to High Street, future plans for Portsmouth Boulevard call for solely a mixed use corridor land development patterns along the corridor west of I-264, surrounded by low-density residential and small sections of medium-density residential and institutional land uses. East of the interstate, the future corridor land uses are primarily residential (of varied density) and neighborhood commercial. The Comprehensive Plan identifies Victory Crossing as a regional activity center of predominantly mixed use corridor and mixed use employment land uses. The transportation network and prescribed land uses for Portsmouth Boulevard wWest of I-264, the future land use calls for a mixed-use corridor. Here, seem supportive of auto-oriented development patterns, where a four-lane, median-divided facility with 3530-mph speed limits seems appropriate. The eastern portion is more conducive to slower speeds and multimodal considerations. Improvements to sidewalks or new bike facilities should be considered, and right-of-way for these improvements may be obtained by reducing typical roadway lane widths, encouraging slower travel speeds, and reinforcing a “share the road” philosophy.

Portsmouth Blvd. at Staunton Ave.

George Washington Highway

George Washington Highway from the southern city limits to Portsmouth Boulevard is primarily a four-lane, undivided facility with a posted speed limit of 35 mph. From Portsmouth Boulevard to Frederick Boulevard, the lanes in both directions are very narrow, forcing trucks and other oversized vehicles to spill into both lanes and standard vehicles to drive at slower speeds. Vehicle speeds averaged 30-35 mph with some occasional speeds up to 40 mph. From Frederick Boulevard to the Portsmouth city limit, the lanes widen considerably, encouraging higher travel speeds. Vehicles were observed driving an average of 35-40 mph with some runs in the 40-45 mph range. The overall fit with land use could be improved by widening the lanes on the northern portion of George Washington Highway where the surrounding land use is industrial and numerous heavy vehicles are present.

Even though futureFuture land uses along the southern portion of this segment include low-/medium- and high-density residential uses and pockets of mixed use. , South of downtown and along Effingham Street, a mix of employment and residential uses would benefit from speed reductions. By narrowing the existing wide travel lanes and installing bike lanes, the road could become an important north-south link for bicycle commuters while encouraging slower traffic speeds. Pthe industrial uses south of downtown and the associated truck traffic may call for the roadway to remain as recommended above. Pedestrian facilities may need adequate buffers from vehicular traffic, as well as high-visibility crosswalks with pedestrian-actuated signals at key locations along the corridor.

George Washington Hwy looking South towards the Belt Line RR Crossing.

Victory Boulevard

This segment of Victory Boulevard has a posted speed limit of 35 mph. Victory Boulevard is a six-lane divided facility between Airline Boulevard and Freedom Avenue. North and south of this segment, Victory Boulevard narrows to four lanes. Land use in the surrounding area is largely commercial. Average vehicle speeds of 30-35 mph were observed north of Interstate 264, with higher average speeds of 35-40 mph observed south of the interstate to Gust Lane due to a decrease in commercial density. This segment of Victory Boulevard has a posted speed limit of 35 mph. With improved signal progression, it is likely that more vehicles would travel at even higher speeds.

Designated as a regional activity center in future land use plans, Victory Crossing is a focus for mixed use employment land use south of I-264 and mixed use corridor land use from Portsmouth Boulevard to George Washington Highway. The area near its intersection with George Washington Highway is designated as a future community activity center. Corridor profiles in the two activity centers that book-end the corridor should include design features that enhance the cycling and pedestrian environment as well as discourage speeds above 35 mph. For the segment in between these activity centers, higher speeds may be appropriate as long as pedestrian facilities to the residential area just off the corridor have adequate buffer or are provided through the relatively-well connected local streets and area parks. Adequate, high visibility pedestrian crossings may also need to be improved and added at regular intervals along the corridor since it serves as a pedestrian barrier between the neighborhoods to the north and south of the eastern section on either side.

Victory Blvd. west of Deep Creek Blvd.

Airline Boulevard

The cross-section of Airline Boulevard between the western city limits to Kings Highway varies widely from a three-lane undivided facility near the city limits to a five-lane facility divided by a two-way left-turn lane (TWLTL) east of City Park Avenue. The posted speed limit is 35 mph. Airline Boulevard is surrounded primarily by commercial land uses with the exception of some residential in the vicinity of Laigh Road and Lancer Drive. The higher density of businesses along Airline Boulevard and the crossing of two major intersections (Victory Boulevard and Portsmouth Boulevard) near Alexander Corner causes traffic to travel fairly consistently at the 35 mph speed limit through this segment. Higher speeds were observed when traffic was progressed through both Victory Boulevard and Portsmouth Boulevard. Travel speeds west of City Park Avenue varied throughout the peak period. When unimpeded, traffic tended to travel at speeds of 40-45 mph. Occasionally, both travel lanes were blocked by vehicles traveling below the speed limit, and the average speed dropped to 30-35 mph. While the running speed and speed limit seem appropriate for this corridor, vehicle progression would be improved by providing a consistent cross-section for Airline Boulevard.

The future land use plan programs the whole corridor from the Green Lake area to the Victory Crossing regional activity center as a mixed use corridor. The northern segment is planned to transition from low-/

Looking North on Airline Blvd. at Portsmouth Blvd.

medium-density residential to mixed use corridor to commercial as one heads into Portsmouth approaching the Midtown regional activity center. The 35-mph speed limit for the southern segment should be appropriate, for the corridor-based, auto-oriented land uses, but the corridor aesthetics and safety could be enhanced through the implementation of access management measures in the five-lave section. North of Victory Boulevard, the residential nature of the corridor and its function as the main link between the two activity centers calls for improvements to pedestrian and bicycle facilities, as well as lowering the speed limit. The narrow right-of-way limits possibilities for widening the small monolithic medians in this segment, but the option could be explored with lane width reductions and minimal widening.

Frederick Boulevard

Frederick Boulevard is a four-lane divided facility between High Street to Portsmouth Boulevard and has a posted speed limit of 35 mph north of Interstate 264, which increases to 40 mph south of the interstate. Travel speeds averaged from 35-40 mph from High Street to Turnpike Road and occasionally reached 45 mph when travel was unimpeded. South of Turnpike Road, typical travel speeds were in the 40-45 mph range due to the higher speed limit. However, some speeds as low as 25 mph were experienced when the flow of traffic was blocked due to vehicles turning at median crossovers that lacked exclusive turn lanes. Slower speeds were also experienced between Deep Creek Boulevard and Portsmouth Boulevard due to poor signal progression. Given the commercial nature of this corridor, travel speed times could be improved with some access management. The existing medians are also wide enough to construct exclusive turn lanes at median crossovers and at major intersections. With the free-flow conditions south of the interstate and minimal driveway access points, the posted speed limit could comfortably be raised to 45 mph just south of Interstate 264 to Deep Creek Boulevard.

Future land use conditions south of the interstate are planned to remain similar to current uses and therefore any short-term changes could stay take place without harm to long-term plans. The northern segment of the corridor lies mostly within the Midtown regional activity center with commercial and high-density residential land uses planned on the adjacent parcels. Similar to other corridors feeding into this area, future recommendations for Frederick Boulevard should emphasize multi-modal and context-sensitive design that will reduce speeds and better serve pedestrian and cyclists. The current landscaped median should be retained and potentially enhanced by closing lesser-used cross-overs and by adding improved pedestrian crossings.

Frederick Blvd. north of Portsmouth Blvd.


OPEN

CHAPTER 3

PUBLIC PARTICIPATION

The MTP is intended to be responsive to community concerns and needs. The planning process includes a civic engagement program to offer the public an opportunity to become involved in the planning process and have their voices heard.

(Left) Confederate Monument at Court and High Sts.

Destination Portsmouth Committee

The City established the Destination Portsmouth Committee to provide oversight and input to multiple planning projects currently underway. This committee is comprised of citizens representing a wide cross-section of community interests. The committee also helps to ensure that the various plans are compatible with each other and with public expectations and goals.

Public Workshop

Public Meetings

The planning process has included several public meetings to date that allowed local residents to interact with planners face to face. The City mailed more than one thousand invitations to local residents, placed advertisements, and sent emails to advertise the events. Questionnaires and comment cards were provided at the meetings to solicit public input. In addition, visitors were asked to mark on maps specific areas of concern and location of their home and the place they visit most often (employer, shopping center, church, recreation center, etc.)

The following public meetings were held during Phase I of the plan:

Three public open houses were held (at Green Acres Presbyterian Church, Calvary Baptist Church, and I.C. Norcum High School) to provide an opportunity for members of the public to review preliminary analysis and existing conditions data and to interact directly with project planners.

A public workshop was conducted at Calvary Baptist Church during the evening, with refreshments provided. A slide show summary of transportation issues was presented, followed by break-out sessions. Members of the public worked with project planners at group tables focused on particular topics (the road system, freight, bicycles/pedestrians, and transit). Each participant visited at least two tables during the course of the evening. At the end of the workshop, the results from each table were presented back to the group.

TRANSIT

"The stops, routes and schedules are poorly coordinated."

"The location of transit hubs is an issue."

"HRT should improve its visibility by widely publicizing transit routes and schedules."

"Shelters and lighting should be improved at bus stops."

VEHICULAR SYSTEM

"The Jordan Bridge closure is increasing traffic congestion at the downtown tunnel."

"Maintenance of roads needs to be improved."

"Coordinate utility improvements with road improvements so the roads are only torn up once."

"Need to restrict trucks to designated truck routes."

FREIGHT

"Focus on the Third Crossing instead of the Midtown Tunnel."

"Encourage more freight movement via barges instead of trucks."

"Increase enforcement of truck violations such as driving on local streets."

BICYCLES AND PEDESTRIANS

"The rights of way for pedestrians and bicyclists need to be designed differently and separated from cars."

"I live three minutes from my work, but I can't walk there!"

"There are no sidewalks anywhere. Any time you start walking on one it ends."

"There is no place to park your bike when you get to your destination."

"All the major intersections near the future TCC campus are hostile to pedestrians and bicyclists from the surrounding neighborhoods."

Public Survey

A random, statistically valid survey of Portsmouth citizens was conducted to solicit broader public input regarding transportation issues in Portsmouth. This section summarizes the results of the survey, which are available under a separate report.

Overview and Methodology

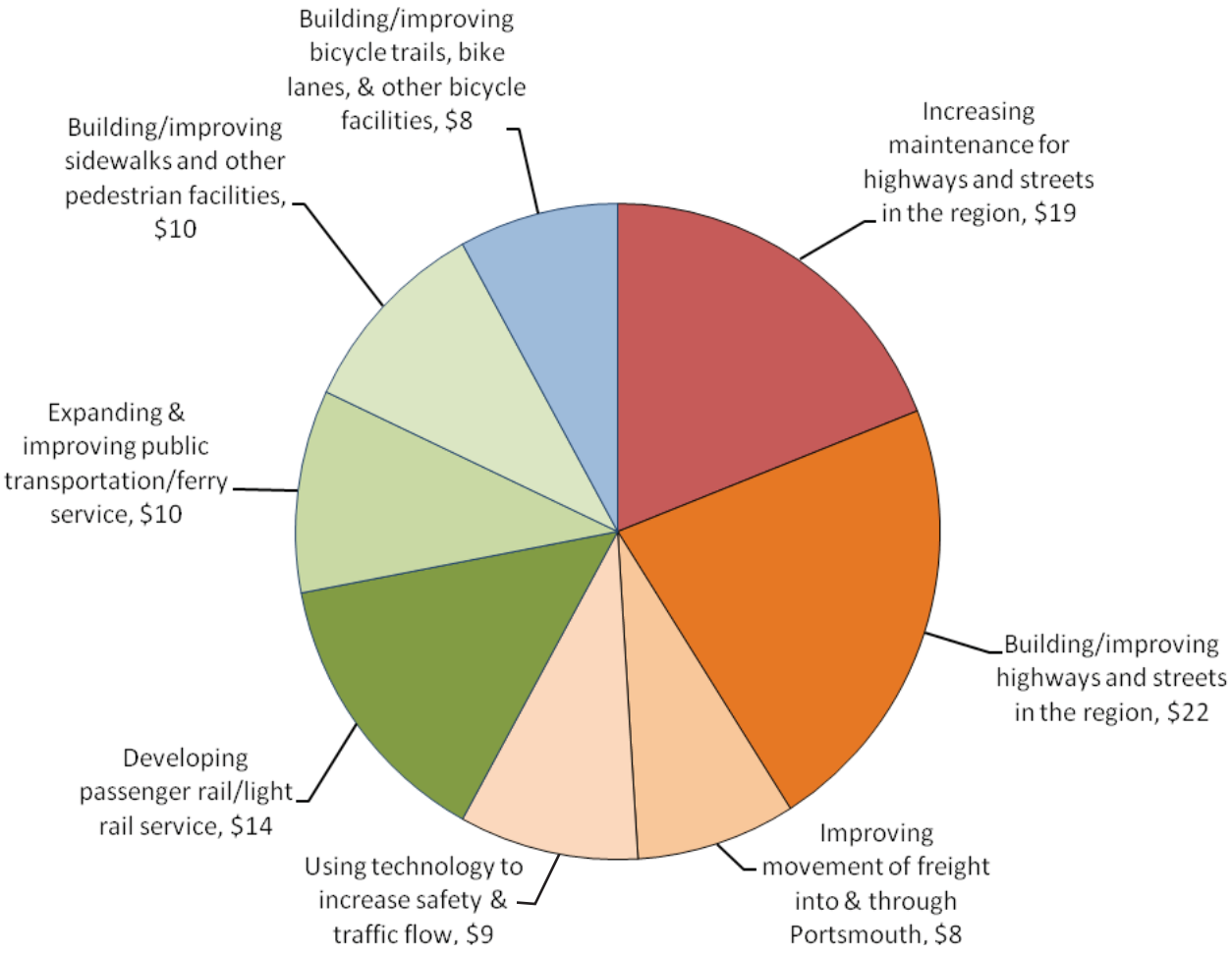
The City of Portsmouth conducted a Transportation Survey of households through Portsmouth during the fall of 2008 to inform establishment of priorities for transportation improvements within the community. The survey was administered by a combination of mail and telephone.

The consultant team led by ETC Institute worked closely with City of Portsmouth officials in the development of the survey questionnaire. This work allowed the survey to be tailored to issues of strategic importance in planning for the future transportation system.

Surveys were mailed to a random sample of 4,000 households throughout the City of Portsmouth. Approximately three days after the surveys were mailed, each household that received a survey also received an electronic voice message encouraging them to complete the survey. In addition, about two weeks after the surveys were mailed, households were contacted by phone. Those who indicated they had not returned the survey were given the option of completing it by phone.

The goal was to obtain a total of at least 800 completed surveys from City of Portsmouth residents. This goal was accomplished, with a total of 851 completed surveys received. The results of this random sample have a 95% level of confidence with a precision of at least +/-3.4%.

Figure 3.1 How Would Respondents Allocate $100 Among Various Categories of Transportation Funding?



Major Survey Findings

Aspects of transportation that should receive the most emphasis over the next 5–10 years: Based on the sum of their top three choices, the transportation aspects that respondents feel should receive the most emphasis over the next 5–10 years are: ease of travel in the region (41%), adequacy of public transportation services (34%), and ease of travel by car on highways (33%).

Overall rating of transportation in Portsmouth: Fifty-one percent (51%) of those surveyed rated the overall transportation in the City of Portsmouth as average. Twenty percent (20%) rated transportation in Portsmouth as either excellent or good, and twenty-three percent (23%) rated it as poor.

Importance of various items in selecting where to live: The items that respondents rated as most important when deciding where to live were: access to medical care (80%), employment opportunities (74%), and access to major highways (71%).

Importance of promoting alternative modes of transportation: Eighty-two percent (82%) of those surveyed feel it's either very important (51%) or somewhat important (31%) to promote the use of alternative modes of transportation. Only five percent (5%) feel it's not important, and thirteen percent (13%) indicated "not sure."

Transportation services respondents are most willing to support with tax dollars: Based on the sum of their top three choices, the transportation services that respondents are most willing to support with their tax dollars include: rail service linking suburban areas with Downtown Portsmouth (35%) and door-to-door shuttle service for seniors or persons with disabilities (35%).

Most likely reasons for beginning to use public transportation in the Portsmouth area: The reasons respondents would be most likely to begin using public transportation in the Portsmouth area are: "price of gas remains high or increases" (33%), "car being repaired" (29%), "bus stop located closer to home" (28%), and "traffic congestion increases travel times" (27%).

Sources for keeping residents informed about transportation improvements: Respondents' most preferred methods of being informed about planned transportation improvements in the Portsmouth area are: local newspaper (62%), television news (61%), access channel on cable TV (36%), newsletters (32%), a website (31%), and radio announcement (31%).

Funding road and highway improvements: Sixty-eight percent (68%) of those surveyed think funding for road and highway improvements should be either much greater (24%) or somewhat greater (44%) in five years than it is now. Only six percent (6%) think funding for road and highway improvements should be reduced over the next five years.

Funding public transportation: Sixty-one percent (61%) of those surveyed think funding for public transportation should be either much greater (23%) or somewhat greater (38%) in five years than it is now. Only eight percent (8%) think funding for public transportation improvements should be reduced over the next five years.

Funding bicycle and pedestrian projects: Fifty-five percent (55%) of those surveyed think funding for bicycle and pedestrian projects should be either much greater (20%) or somewhat greater (35%) in five years than it is now. Only eight percent (8%) feel funding for bicycle and pedestrian projects should be reduced over the next five years.

Allocating $100 among various categories of transportation funding: Respondents would allocate $22 out of every $100 to building/improving highways and streets in the region. The remaining $78 were allocated as follows: increasing maintenance for highways and streets in the region ($19), developing passenger rail/light service ($14), building/improving sidewalks and other pedestrian facilities ($10), expanding/improving public transportation/ferry service ($10), using technology to increase safety and traffic flow ($9), building/improving bicycle trails, bike lanes, and other bicycle features ($8), and improving movement of freight into and through Portsmouth ($8).

Transportation improvements that should be the top priorities over the next 5–10 years: Based on the sum of their top four choices, the transportation improvements that respondents feel should be the top priorities over the next 5–10 years are: improving major roads and streets (50%), maintaining major roads and streets (46%), and improving transportation for seniors and persons with disabilities (41%).


ALTERNATE
ALTERNATE
EAST
EAST
EAST
58
460
337
WEST
EAST
337
337

CHAPTER 4

TRAVEL PATTERNS

This section of the report analyzes travel patterns within Portsmouth —primarily related to commuting. This data is useful for understanding how residents travel, so that the transportation system can be designed to serve their needs. The data includes federal sources and surveys and data provided by major employers in the City.

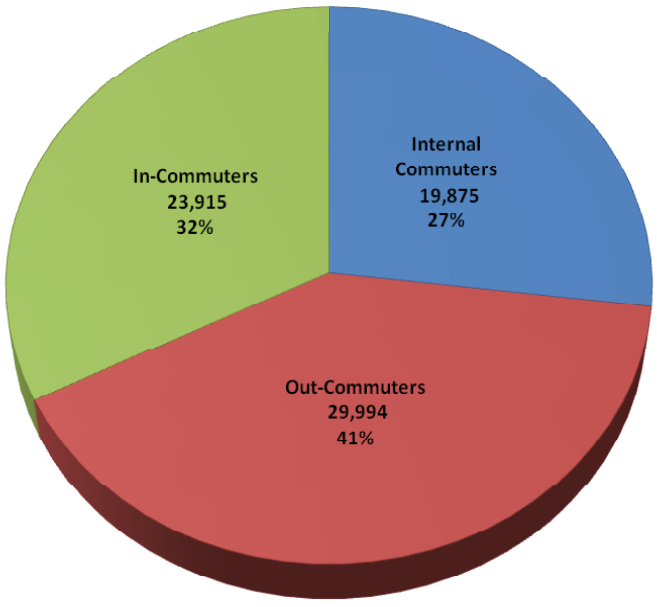
(Left) Alexanders Corner, Airline Blvd. at Portsmouth Blvd.

Employment and Commuting Patterns

This section of the report provides analysis of the patterns of employment and commuting of Portsmouth residents and employees. The data comes from several sources:

- The **American Community Survey** is a product of the United States Census, and provides data about travel modes and statistics in Portsmouth.
- **LED On the Map (version 3)** is produced by the US Census Bureau under the Local Employment Dynamics (LED) partnership. The web-based application displays where workers in a given area live and where residents of a given area work. (Military personnel may not be included in the data).
- **US Census Data** provides generalized data from the year 2000 about where employees live and work.
- **Major Employer Zip Code data** provides information about which zip code employees live in.
- **Employee Travel Surveys** provide data from employees about their commuting modes and patterns.

Figure 4.1 Portsmouth Commuter Summary



Inflow and Outflow of Commuters

According to the 2000 Census, approximately 40% of Portsmouth workers live in Portsmouth. The remaining 60% travel to Portsmouth from elsewhere. Figures 4.2 and 4.3 show the inflows and outflows of commuters according to census data. In 2000, the share of inbound commuters was composed of:

- (20%) Twenty percent from Chesapeake.
- (15%) Fifteen percent from Virginia Beach.
- (9%) Nine percent from Norfolk.
- (7%) Seven percent from Suffolk.
- (<2%) Less than two percent from Hampton.
- (<2%) Less than two percent from Newport News
- (<2%) Less than two percent from Isle of Wight.
- (5%) Five percent from other places.

In 2000, Forty-five (45%) percent of employed city residents worked in Portsmouth. Figure 4.3 illustrates the outflow of commuters. Of the sixty-five percent (65%) who commuted out of the city in the year 2000:

- (19%) Nineteen percent worked in Norfolk.
- (17%) Seventeen percent worked in Chesapeake.
- (7%) Seven percent worked in Virginia Beach.
- (4%) Four percent worked in Suffolk.
- (3%) Three percent worked in Newport News.

Figure 4.2 Portsmouth Commuters by Percentage of Workers

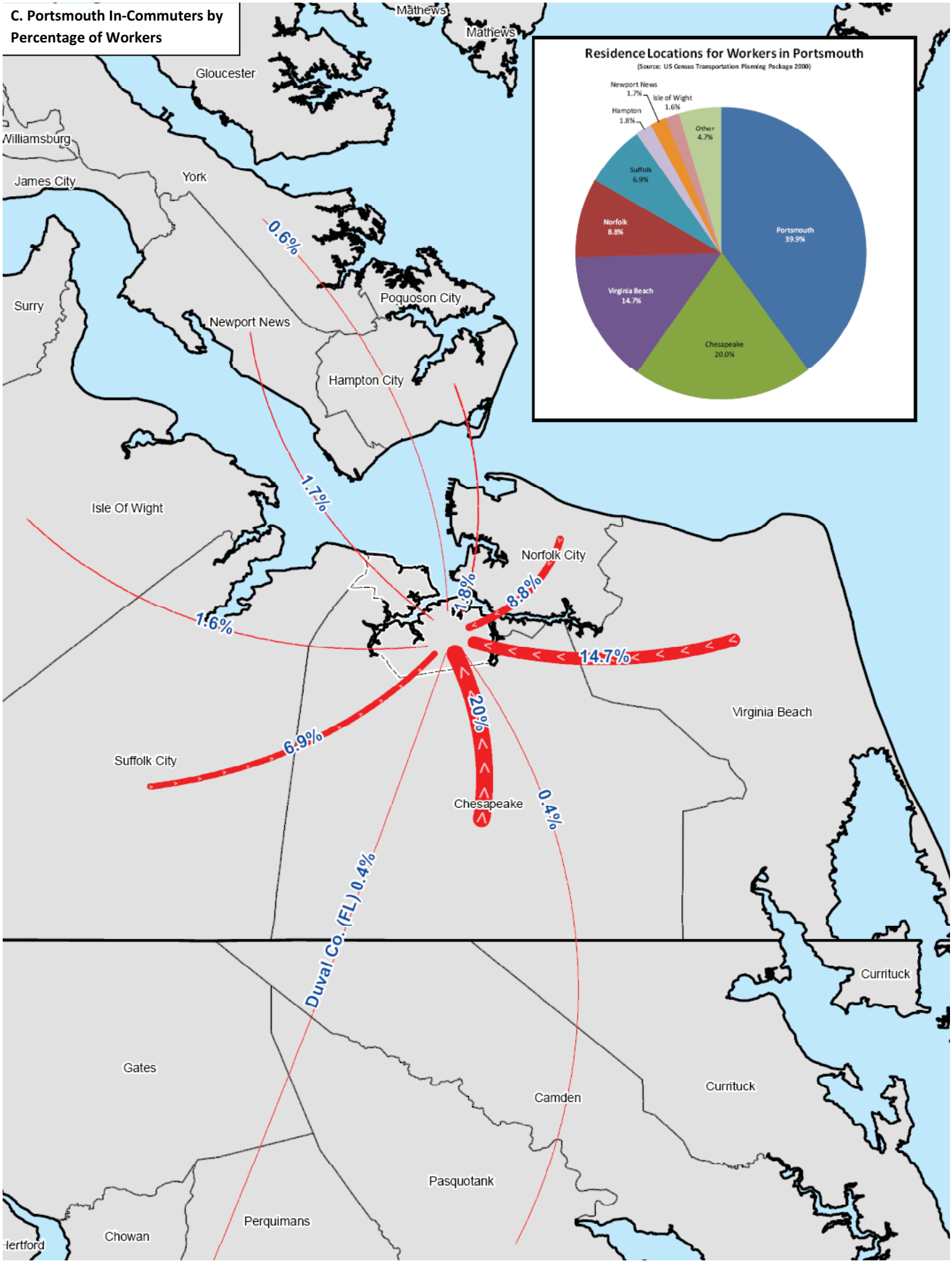


Figure 4.3 Portsmouth Out-commuters by Percentage of Workers

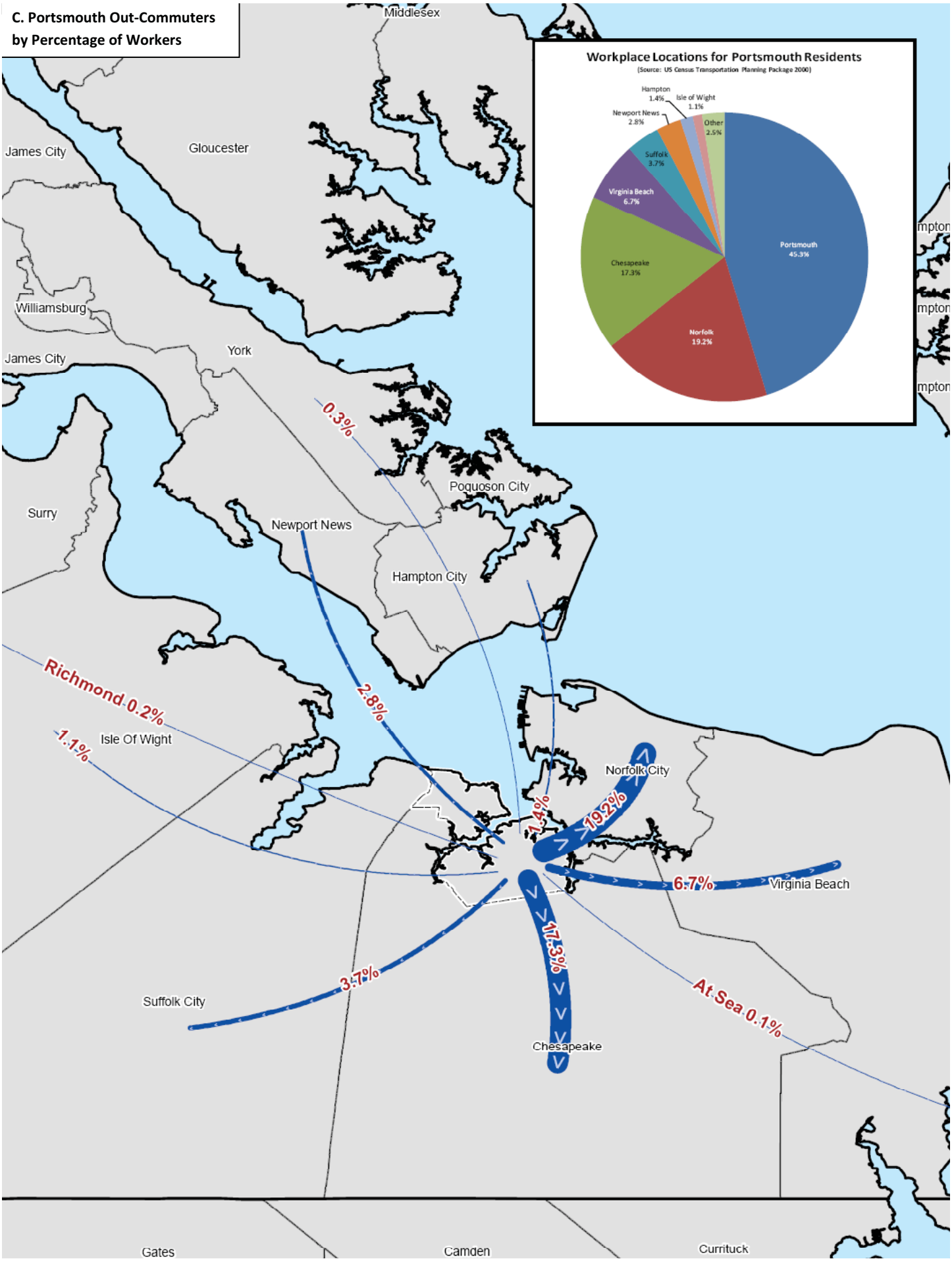


Figure 4.4 Top 25 Largest Employers in Portsmouth

Employer	Industry	Employees
Norfolk Naval Shipyard	Ship Repair, Marine Engineering & Defense Contractors	7,500
Naval Medical Center, Portsmouth	Health Care	5,400
City of Portsmouth	Government	2,605
City of Portsmouth Public Schools	Government	2,507
Bon Secours Maryview Medical Center	Health Care	2,200
U.S. Fifth District Coast Guard Command	Government	1,500
The Pines Residential Treatment Center	Health Care	800
Earl Industries	Ship Repair, Marine Engineering & Defense Contractors	615
Gwaltney of Smithfield, Ltd.	Food Processing & Distribution	500
Wal-Mart Supercenter	Retail	386
Direct Home Health Care	Health Care	360
Hampton Roads Regional Jail	Government	300
CDI Marine	Ship Repair, Marine Engineering & Defense Contractors	290
Food Lion	Retail	290
Chugach Support Services	Service	290
Southeastern Public Service Authority	Government	250
Portsmouth Marine Terminal	Marine Terminals	230
CINTAS Corporation	Service	180
WAVY-TV 10/FOX 43	Telecommunications	177
Family Care Medical Services	Health Care	175
John E. Hall Electrical Construction	Contractors	166
APM Terminals (Maersak)	Marine Terminals	160
Farm Fresh	Retail	150
Renaissance Portsmouth Hotel & Waterfront Conference Center	Hospitality	150
Shared Hospital Services	Service	140

Source: City of Portsmouth.

Portsmouth's Major Employers

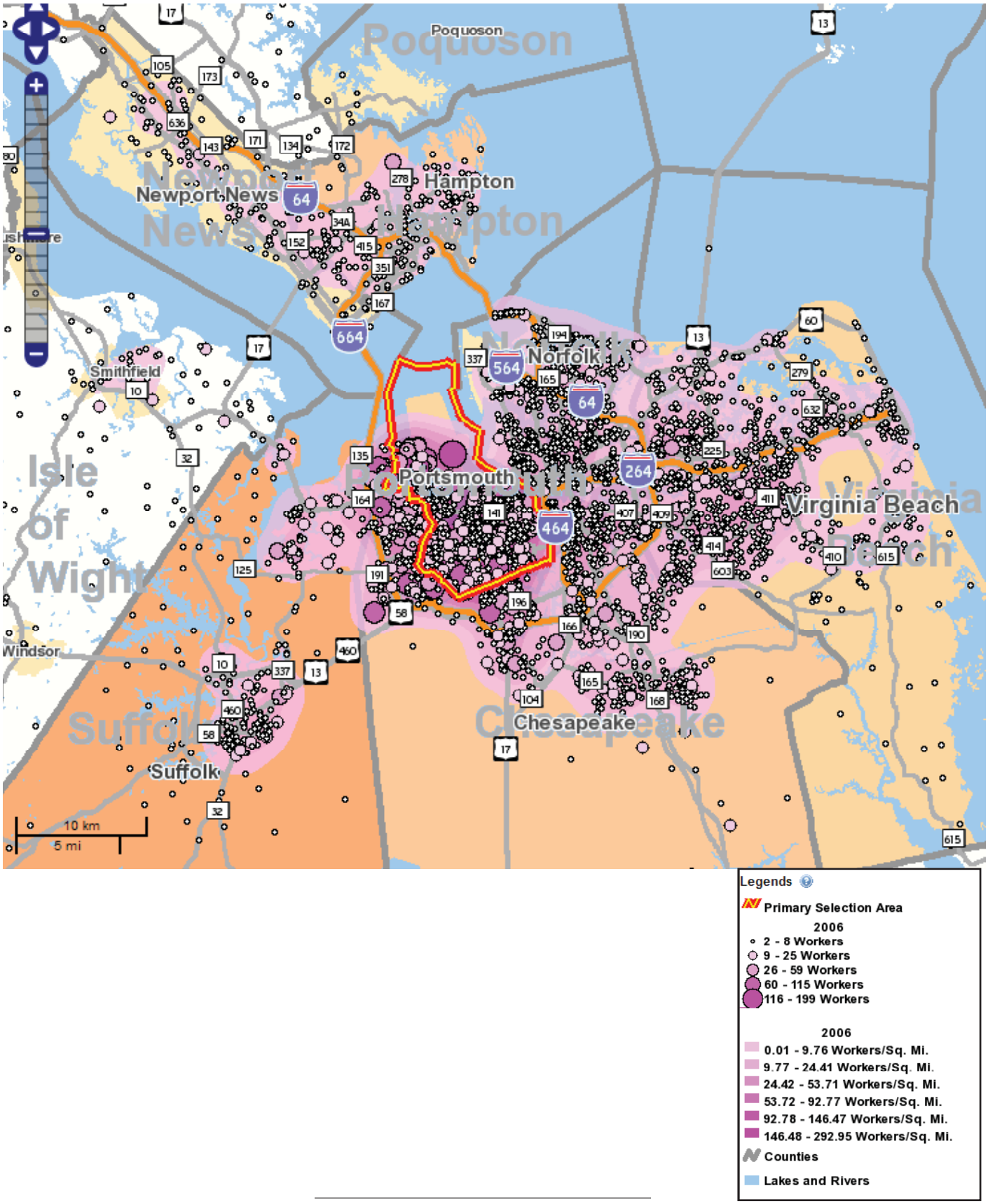
Figure 4.4 lists the top 25 employers in Portsmouth and the number of workers employed. Figure 4.5 shows the employment density in Portsmouth from the LED On the Map web application, which excludes federal and military employees.

- The data indicates that the largest employers are the federal and local government (including military and Coast Guard personnel).

- Many of the largest employers are centrally located around the downtown area, attracting numerous commuters into a small area with limited roadway capacity due to the Downtown Tunnel in the central business district.

- Portsmouth's employment density is high along the I-264 corridor, meaning that commuters may be caught in traffic congestion related to the tunnel.

Figure 4.5 Residential Distribution of Regional Workers of Portsmouth Employers



Commuting to Portsmouth Jobs: *The "Labor Shed"*

The US Census Bureau web application, LED On the Map, provides a map-based snapshot of where workers live and work (excluding federal employees and military personnel). Figure 4.5 shows where people who work in Portsmouth live in the region.

- Military and federal workers are not shown (data is not available yet through this application). Refer to the employer surveys section for additional information about federal employees.

- There are concentrations of commuters coming from outside of Portsmouth to jobs within the City exist west of Churchland and to the south, in Deep Creek North.

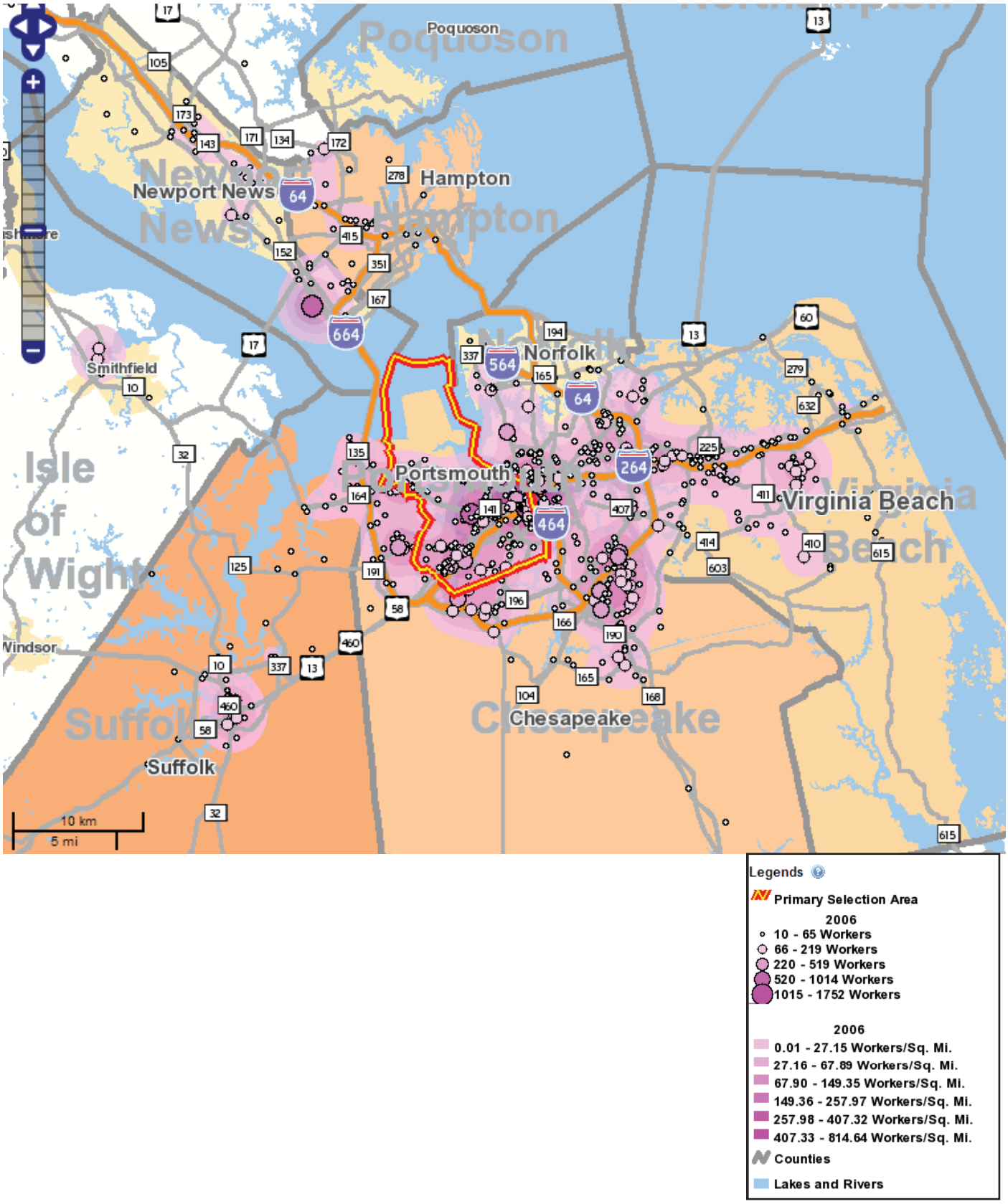
- A commuter cluster exists near Virginia Wesleyan College.

- Nearly 20,000 Portsmouth residents work within the City limits.

- When in-commuters and those travelling across the City to or from neighboring inland municipalities (Suffolk, Chesapeake, and Isle of Wight County) combine with regional traffic demands, the transportation network frequently fails due to a lack of the adequate connectivity and capacity to facilitate efficient intraregional traffic flow.

(1) Virginia Employment Commission, Economic Information Services Division. "Portsmouth City: Community Profile." 1/21/09. Available at: http://www.alex.vec.virginia.gov/lmi/pdfs/communityprofiles/5104000740.pdf. Cited 1/28/09.

Figure 4.6 Commute Shed of Portsmouth Workers



Commuting by Portsmouth Residents to Regional Jobs: *The "Commute Shed"*

Figure 4.6 shows where people who live in Portsmouth worked in 2006.

- Military and federal workers are not shown (data is not available yet). Refer to the employer surveys section for additional information about federal employees.

- Out-commuters represent the largest segment of the Portsmouth population, with nearly 30,000 city residents (forty-one percent) working at locations outside of Portsmouth.

- Over 30 percent (30%) of Portsmouth residents work in Norfolk, Virginia Beach, or communities on the other side of the James River, necessitating at least one major water crossing via the Downtown Tunnel, Midtown Tunnel, Monitor-Merrimac Bridge Tunnel, Hampton Roads Tunnels, or the James River Bridge.

- Greenbrier Mall and adjacent office and industrial parks are substantial concentrations of employment in Chesapeake.

- A concentration exists along the I-264 corridor leading into Virginia Beach.

- Chesapeake Square Mall has a cluster.

- Downtown Newport News has a concentration.

Figure 4.7 Commute Shed and Employment Density of Portsmouth Workers

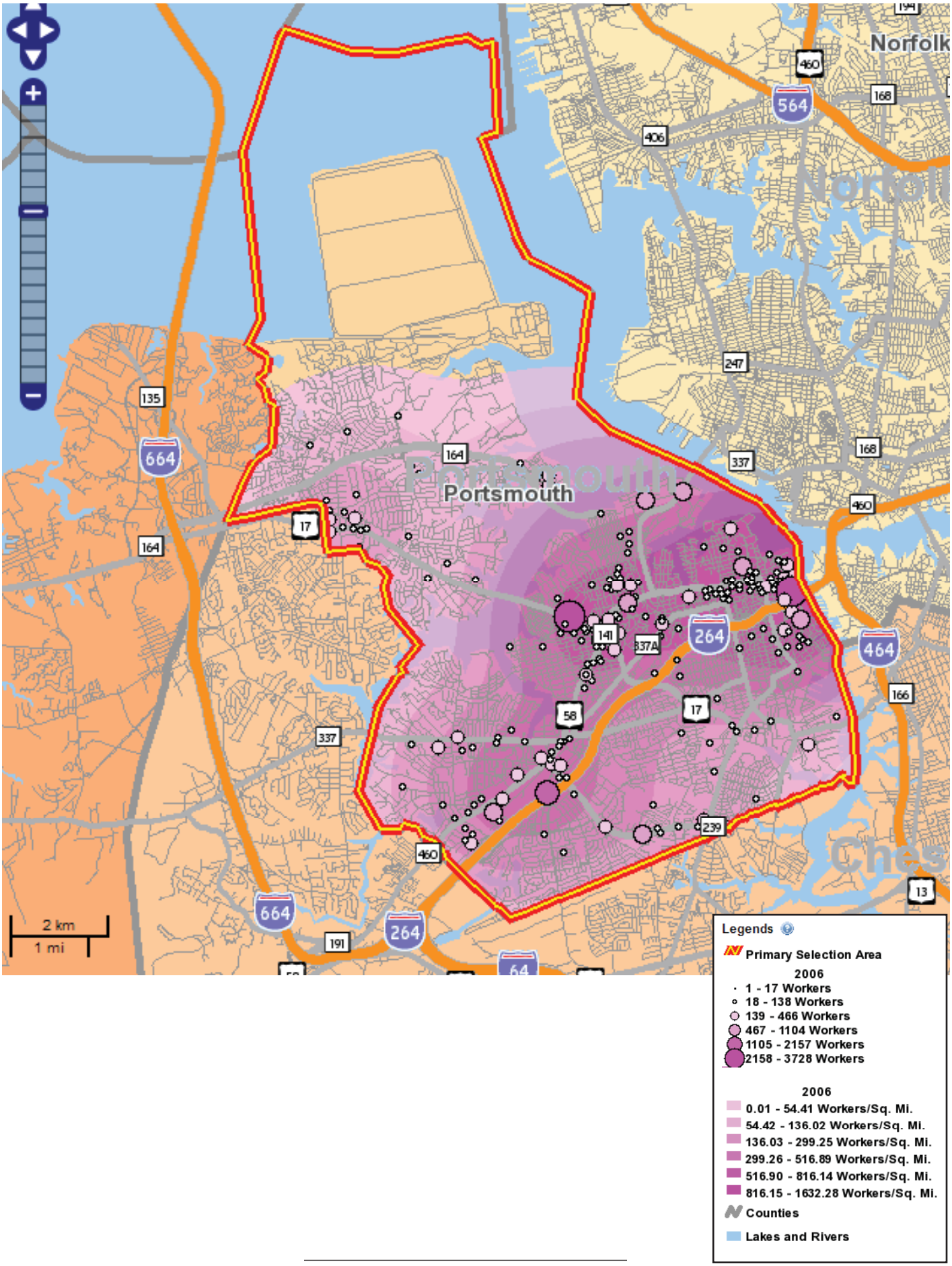
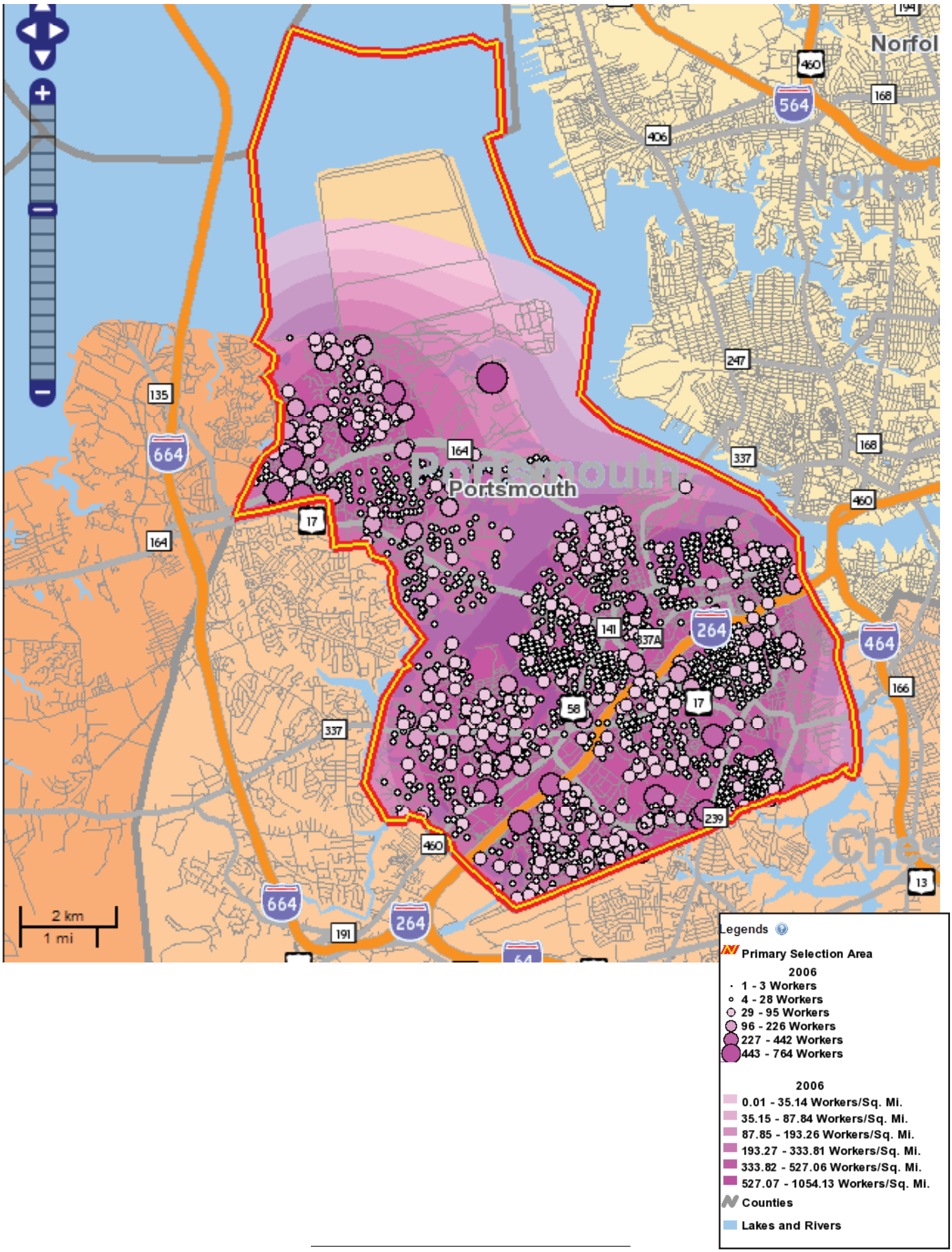


Figure 4.8 Residential Distribution of Portsmouth Workers



How do people get to work?

The 2005–2007 estimates from the American Community Survey (ACS) show that:

- Twenty-seven percent (27%) of the Portsmouth workforce has access to only one vehicle, while less than four percent (4%) have access to no vehicle (Figure 4.9).
- Nearly ten percent (10%) of commuters carpool (Figure 4.10).
- Eight percent (8%) work at home or telecommute (Figure 4.10).
- About five percent (5%) of workers cumulatively use transit, walk, or bike to work (Figure 4.10).
- Many people commute outside the peak hour. Due to the around the clock shifts at several facilities, many start times are before or after the typical "rush hour" of eight a.m. to nine a.m. (Figure 4.13)

Non-Drivers

As defined by the HRPDC in its 2008 report, "The Location of Non-Drivers in Hampton Roads", non-drivers are adults who did not consider themselves to be drivers in response to the National Household Travel Survey. According to the study, there are 10,979 non-drivers in Portsmouth, comprising 16 percent of the Portsmouth population. Only Norfolk has a higher percentage of non-drivers (17 percent) in the 16-county HRPDC study area.

The study estimated the number of non-drivers for each TAZ (Transportation Analysis Zone) in Portsmouth. A TAZ is generally equivalent to a Census block group. While non-drivers exist in moderate numbers in every neighborhood in Portsmouth, a few neighborhoods have higher concentrations. These areas include Olde Towne, Port Norfolk, Western Churchland, and the area bounded roughly by PortCentre Parkway on the east, Portsmouth Boulevard on the south, Frederick Boulevard on the west, and I-264 on the north – primarily Prentiss Park.

Figure 4.9 Vehicles Available to Workers Ages +16

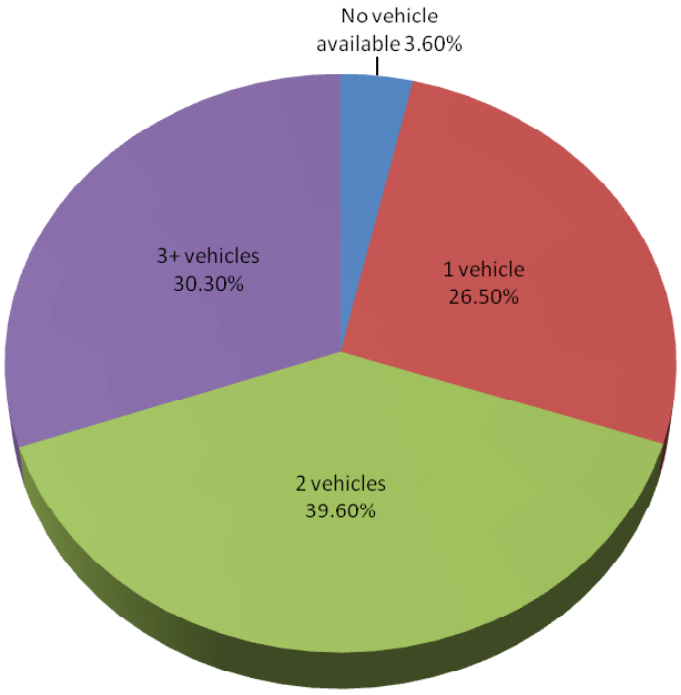
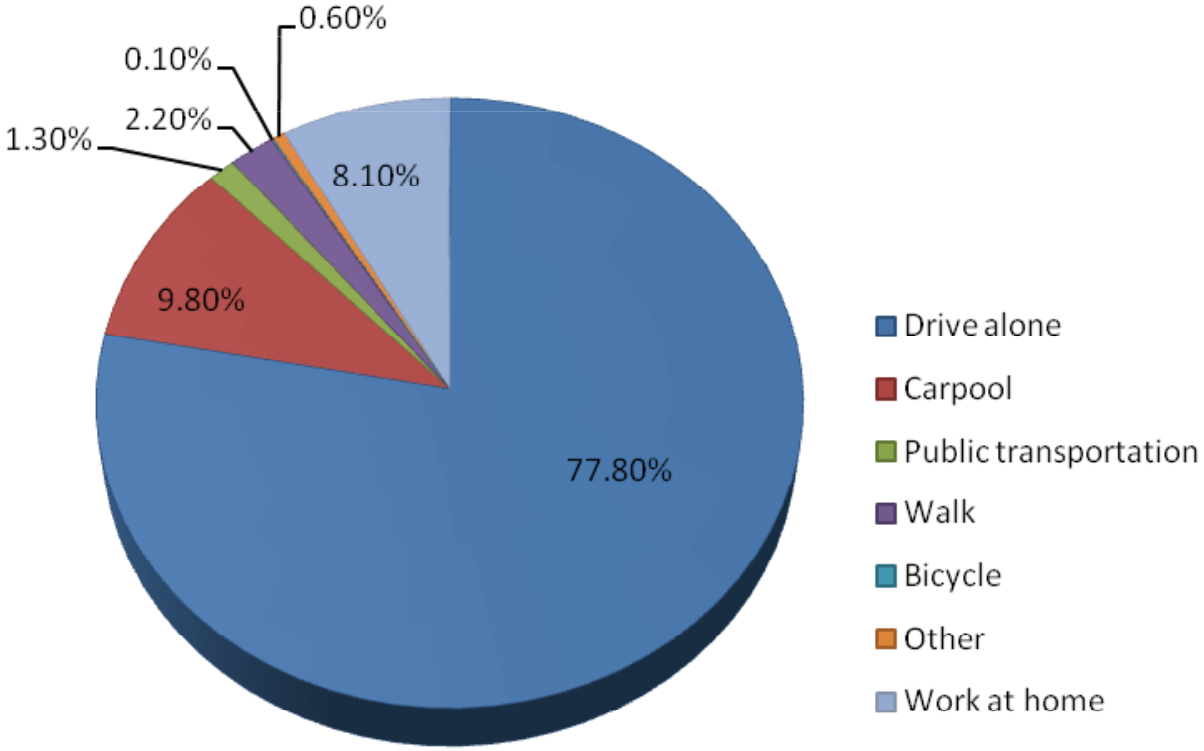


Figure 4.10 Means of Transportation to Work



How long does it take to get to work?

The American Community Survey (from the US Census) provides estimated commute data through 2007. In Portsmouth:

- The median travel time to work is 23 minutes, on par with the regional average of 22.8 minutes
- More than twenty-five percent (25%) of all commutes taking less than 15 minutes.
- Over two-thirds of commutes take less than 30 minutes.
- Only ten percent (10%) of commute trips average 45 minutes or longer.
- Less than five percent (5%) are greater than one hour.
- Transit trips can take longer. While more than seventy percent (70%) of transit riders commute less than 30 minutes (similar to driving), there is a much greater percentage of transit riders who take 45 minutes or more to reach their destination that car drivers, indicating that transfers and long-distance trips may be increasing travel times for transit commuters.

Figure 4.11 Time Leaving Home to Go to Work

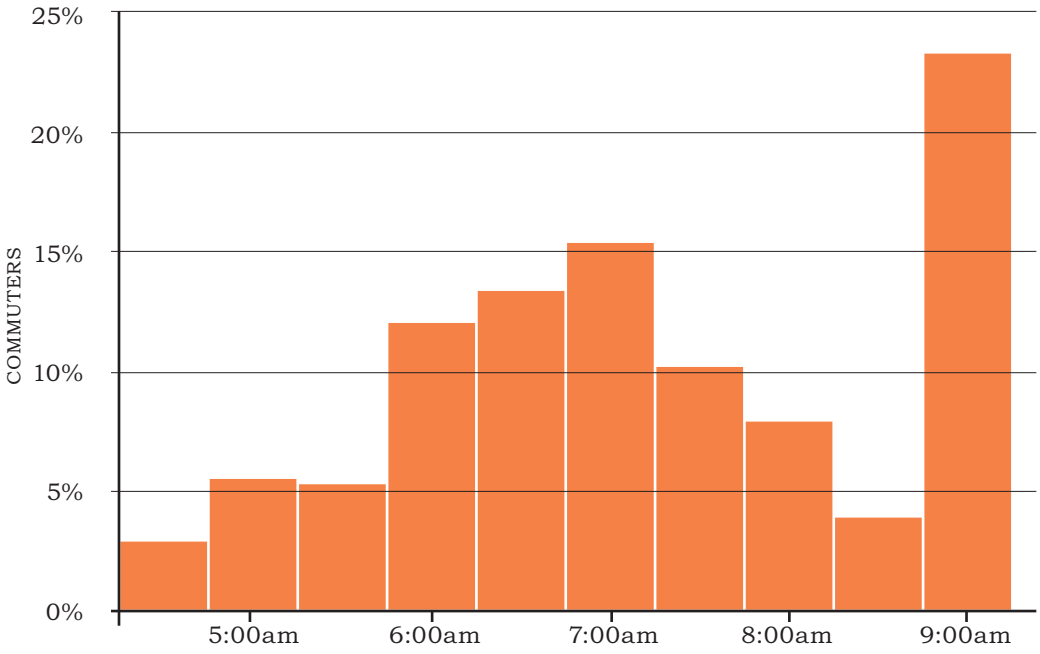
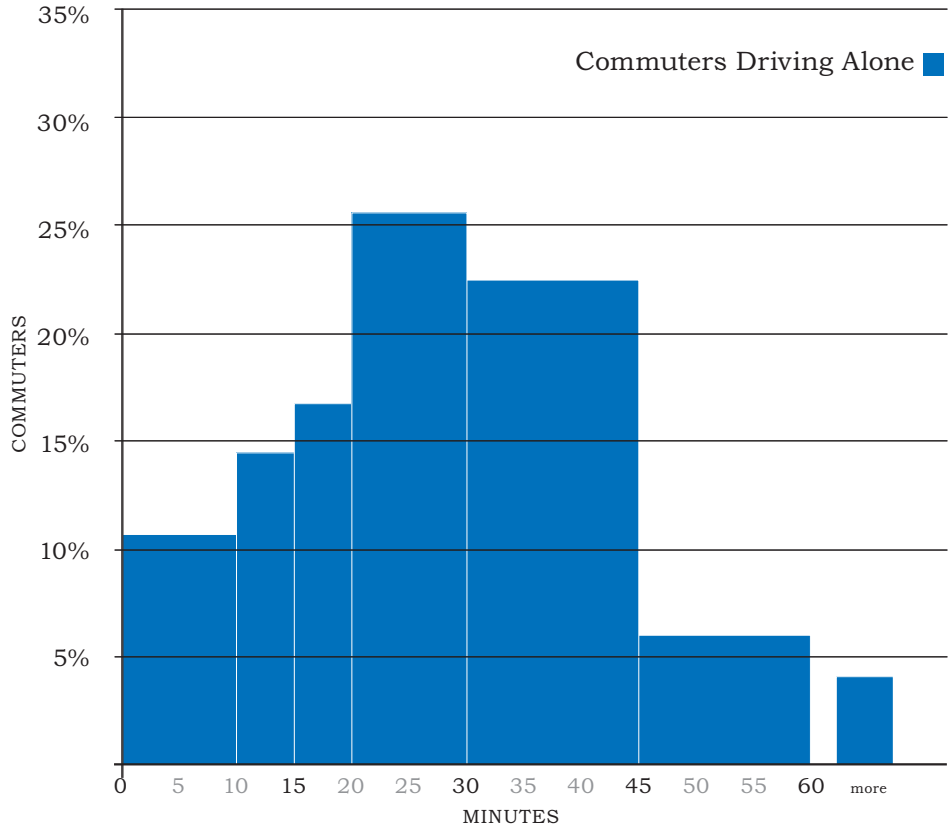
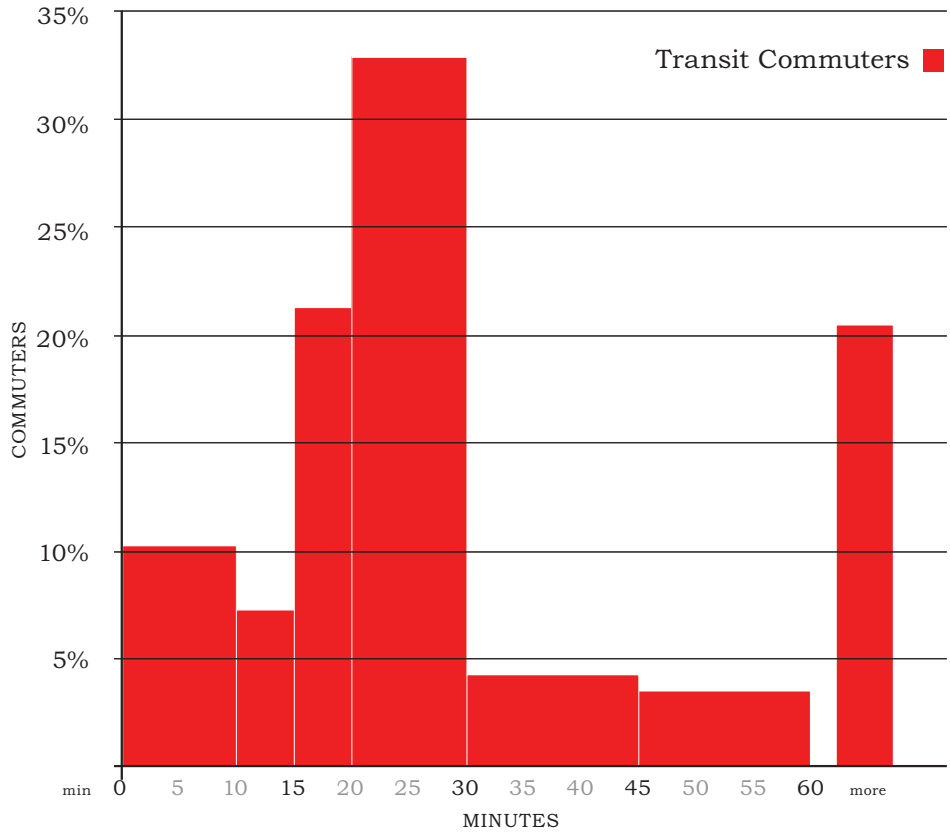


Figure 4.12 Length of Time for Commute





Travel Survey Data

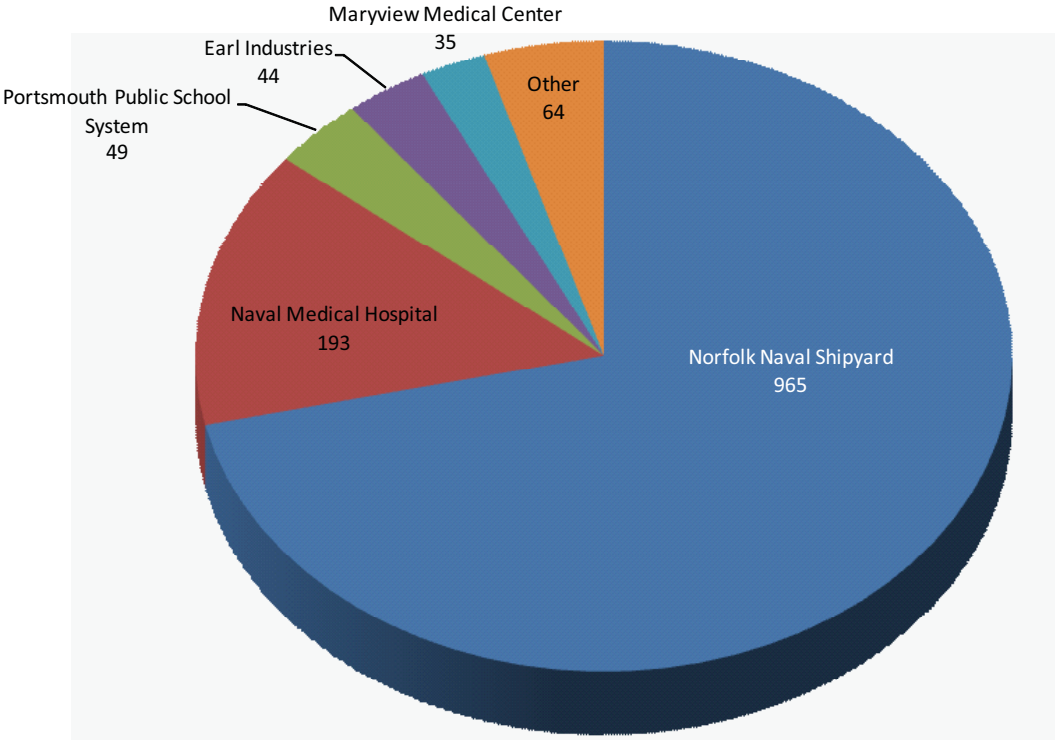
As part of the planning process, surveys were distributed to employees through the eight major employers in Portsmouth. The survey was also available online. In addition to the survey, home zip codes of workers at the Norfolk Naval Shipyard were provided by the Navy for analysis.

Employee Travel Surveys

Print and web-based versions of a work travel survey were sent to eight major employers in the Portsmouth area. The survey questions were designed to solicit information about the commuting patterns of employees, as well as their opinions on alternative commute choices. Data was collected from the surveys of 1,350 respondents in December 2008 through February 2009.

Shown in the Figure 4.13, the majority of the responses were received from the Norfolk Naval Shipyard and the Naval Medical Hospital, with over 1,150 submissions. Other employers with notable response rates were the Portsmouth Public School System, independent contractors located at or near the shipyards (i.e. Earl Industries and CDI Marine), Maryview Medical Center, and the US Coast Guard.

Figure 4.13 Survey Responses by Employer



Respondents to the Employee Travel Survey do not include any navy personnel whose ship may be in the yard or private contractors. Private contractors represent about 3,000 people.

Where do Shipyard employees live?

With approximately 7,500 employees and several affiliated businesses and contractors, the shipyard has a profound economic and transportation impact of the City of Portsmouth and the Hampton Roads region.

- Most workers at the shipyard live in communities on the south side of Hampton Roads, particularly Portsmouth, Chesapeake, Suffolk and Virginia Beach (Figure 4.14)

- A significant number of employees also live on the peninsula north of the James River.

- The commute shed spreads north into Gloucester and King and Queen Counties, west to Southampton County and Greensville, and south into counties in northeastern North Carolina, with a considerable number of employees in Pasquotank and Currituck counties.

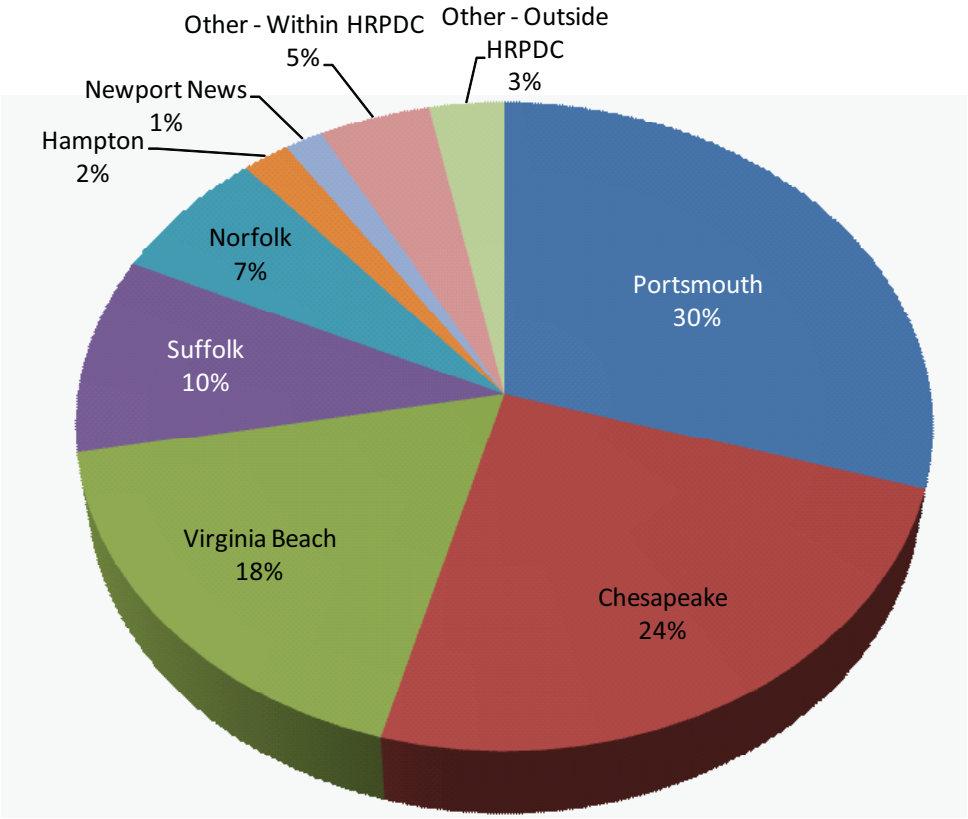
Where do respondents live?

- Nearly ninety percent (90%) of the respondents live in the five Southside cities in the region (Portsmouth, Chesapeake, Virginia Beach, Suffolk, and Norfolk)

- Only eight percent (8%) live in the peninsular communities across the James River or areas further north and west.

- Only three percent (3%) responded that they live outside the region, defined here by the communities outside the Hampton Roads Planning District.

Figure 4.14 Survey Responses by Home Locator



How many days do they commute?

- Most workers commute five days a week (84 percent of total responses).
- The respondents were more likely to be working six days a week (nearly ten percent) rather than a four-day, 10-hour work schedule used by many employers in the region. This means that more travel is required to work the same number of hours.

How do they get to work?

- Commuters driving alone represent the majority of work trips for the studied employers (eighty-four percent of respondents, ninety-two percent of 5+-day commuters).
- There are a significant number of employees (fifteen percent) who choose to use alternative transportation modes, whether ridesharing, transit, non-motorized modes, or some other combination of modes (Figure 4.15).
- For those respondents who commute less than five days a week or who use some com-bination of modes, driving alone only represents fifty-four percent (54%) of the responses, with nearly a third using rideshare or transit opportunities.
- The average number of passengers per vehicle is just over 1.5, with approximately thirteen percent (13%) of those surveyed choosing to commute with others (Figure 4.16).

How long does it take to get to work?

- The average commute time given by survey respondents was 32.7 minutes inbound and 38.5 minutes returning home (Figures 4.17 and 4.18).
- The longer travel times (than the city and regional averages) reflect the significant number of employers living outside the region and in Virginia Beach.
- Half the workforce has travel times less than 30 minutes for both commutes (sixty-two percent (62%) in morning, forty-nine percent (49%) in the afternoon).

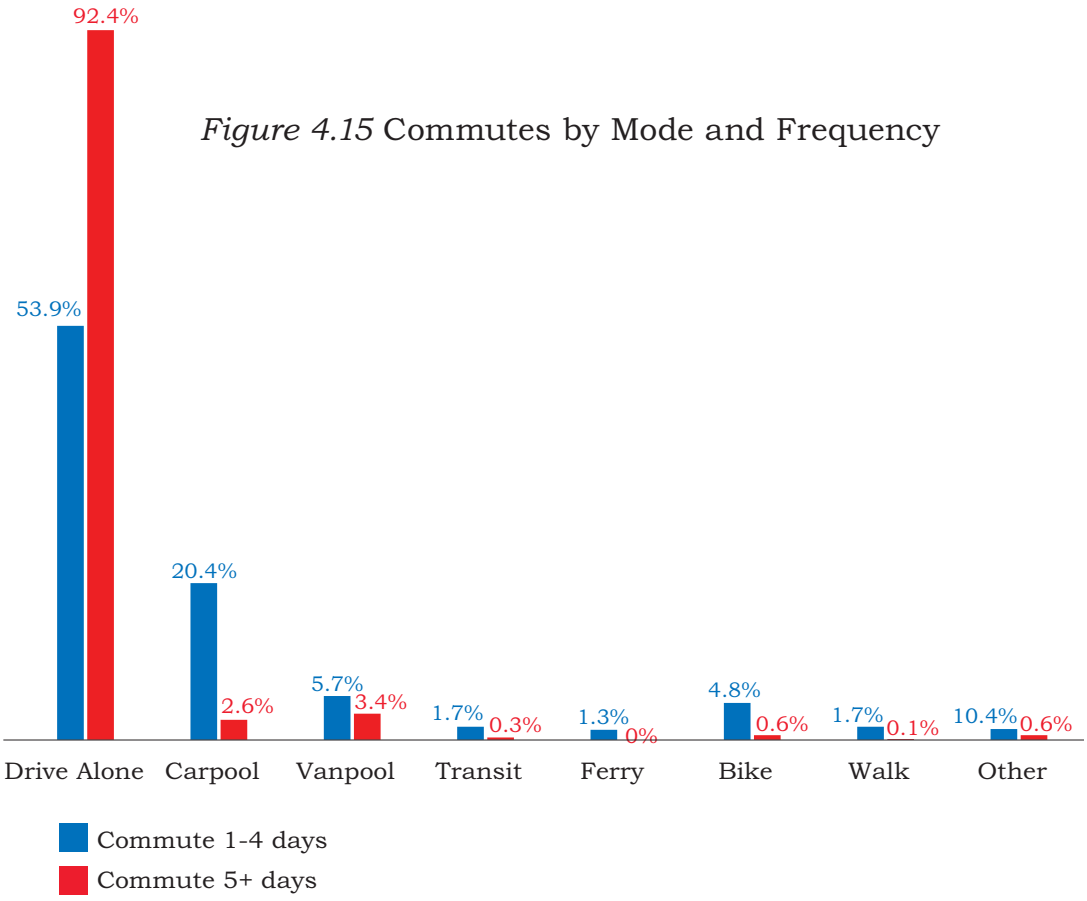


Figure 4.15 Commutes by Mode and Frequency

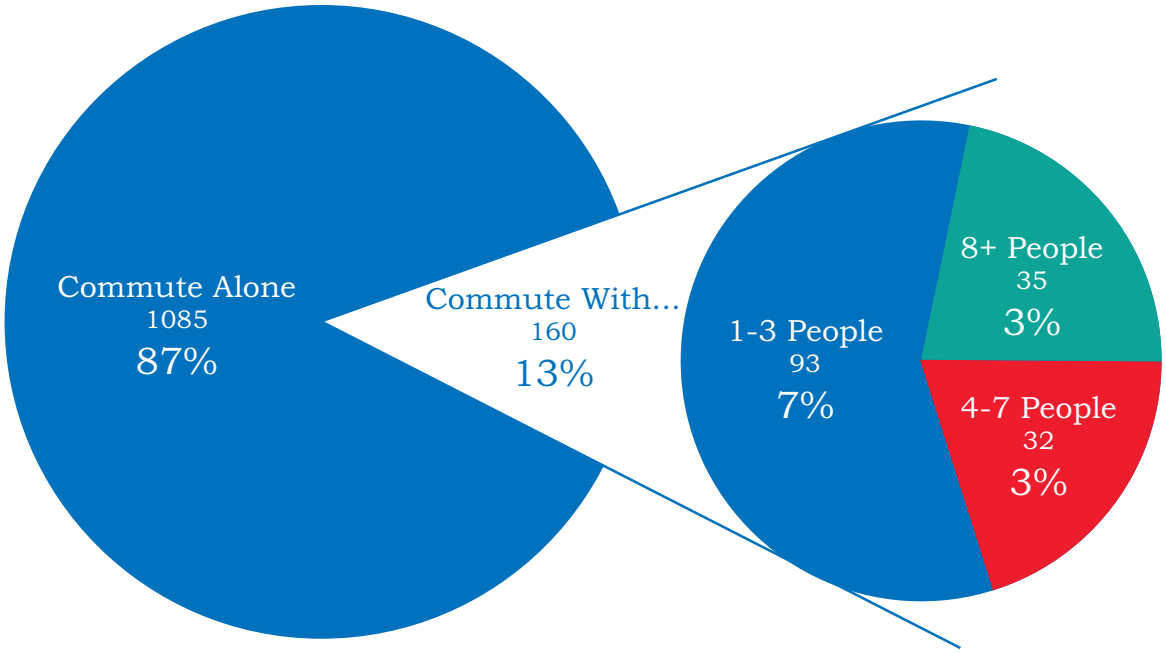
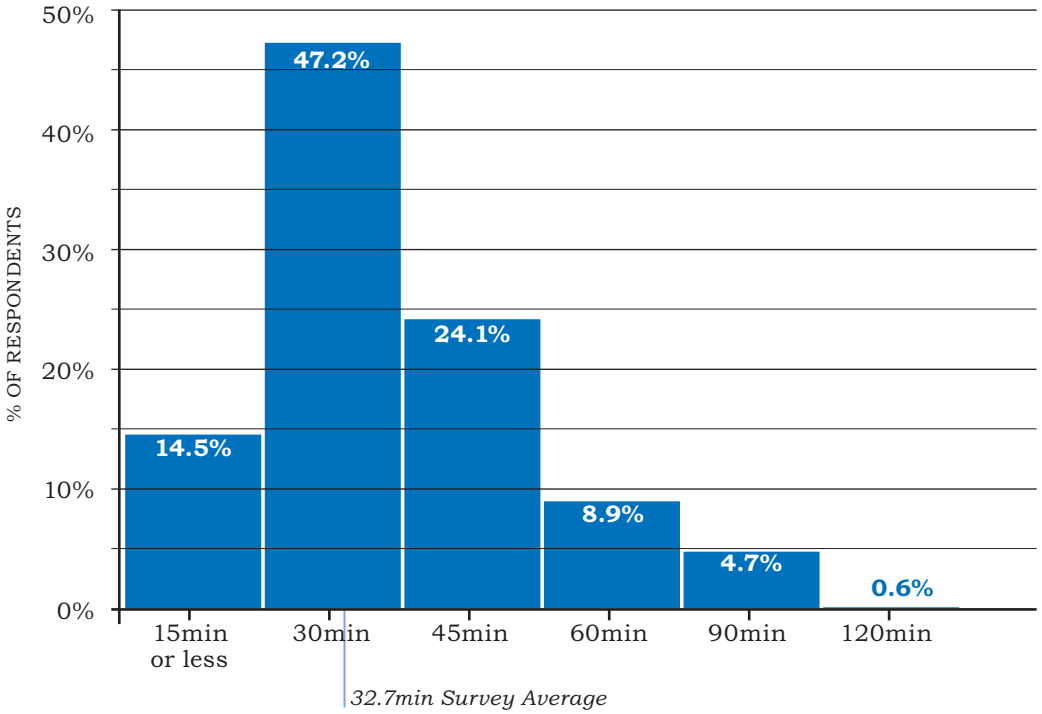


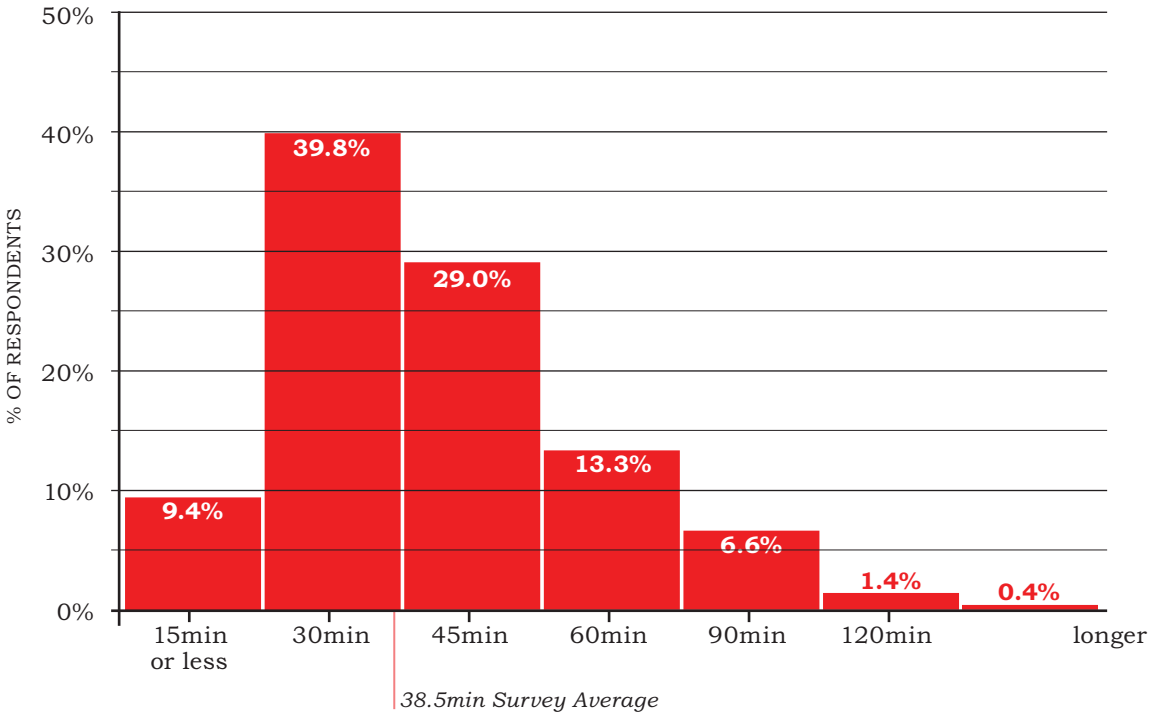
Figure 4.16 How Many People
Do You Typically Commute With?

Figure 4.17 Distribution of Morning Commute Times



Time	Time Leave Home	Time Arriving at Work
Before 5am	4%	1%
5 - 5:30	11%	3%
5:30 - 6	23%	10%
6 - 6:30	23%	25%
6:30 - 7	24%	21%
7 - 7:30	7%	28%
7:30 - 8	2%	5%
8 - 8:30	1%	2%
8:30 - 9	0%	1%
After 9am	3%	4%
Average	6:22:43 AM	6:56:22 AM

Figure 4.18 Distribution of Evening Commute Times



Time	Time Leave Work	Time Arrive Home
Before 2:30pm	3%	3%
2:30-3pm	8%	3%
3-3:30	7%	5%
3:30-4	29%	8%
4-4:30	34%	25%
4:30-5	7%	27%
5:00-5:30	7%	14%
5:30-6	2%	7%
After 6pm	3%	7%
Average	3:44:00 PM	4:18:21 PM

What routes do they use to commute?

- Forty-nine percent (49%) use the I-264/Downtown Tunnel to get to work. The water crossing is one of the most congested segments in the Hampton Roads transportation system, and causes delays on both sides of the tunnel and at nearby interchanges.

- Other corridors routinely traveled included US 17/George Washington Highway, High Street/Frederick Boulevard, Portsmouth Boulevard, and VA 164 Western Freeway, as well as the local street network.

- About half of the respondents indicated they always travel the same route both to and from work while half use different routes (Figure 4.19).

- Traffic congestion was listed as the top reason for changing travel route (85%), followed by time of day (47%), personal or home-related issues (31%), and work-related issues (11%). Weather, carpooling logistics, variety, bridge/tunnel issues, safety, and transit/ferry schedules were also listed.

- Portsmouth Boulevard, US 17/George Washington Highway, High Street/Frederick Boulevard, I-264/Downtown Tunnel, and US 13/58/460 Military Highway topped the list of alternate routes workers consider to get to and from work (Figure 4.20).

Figure 4.19 Routes Routinely Used by Respondents for Commute

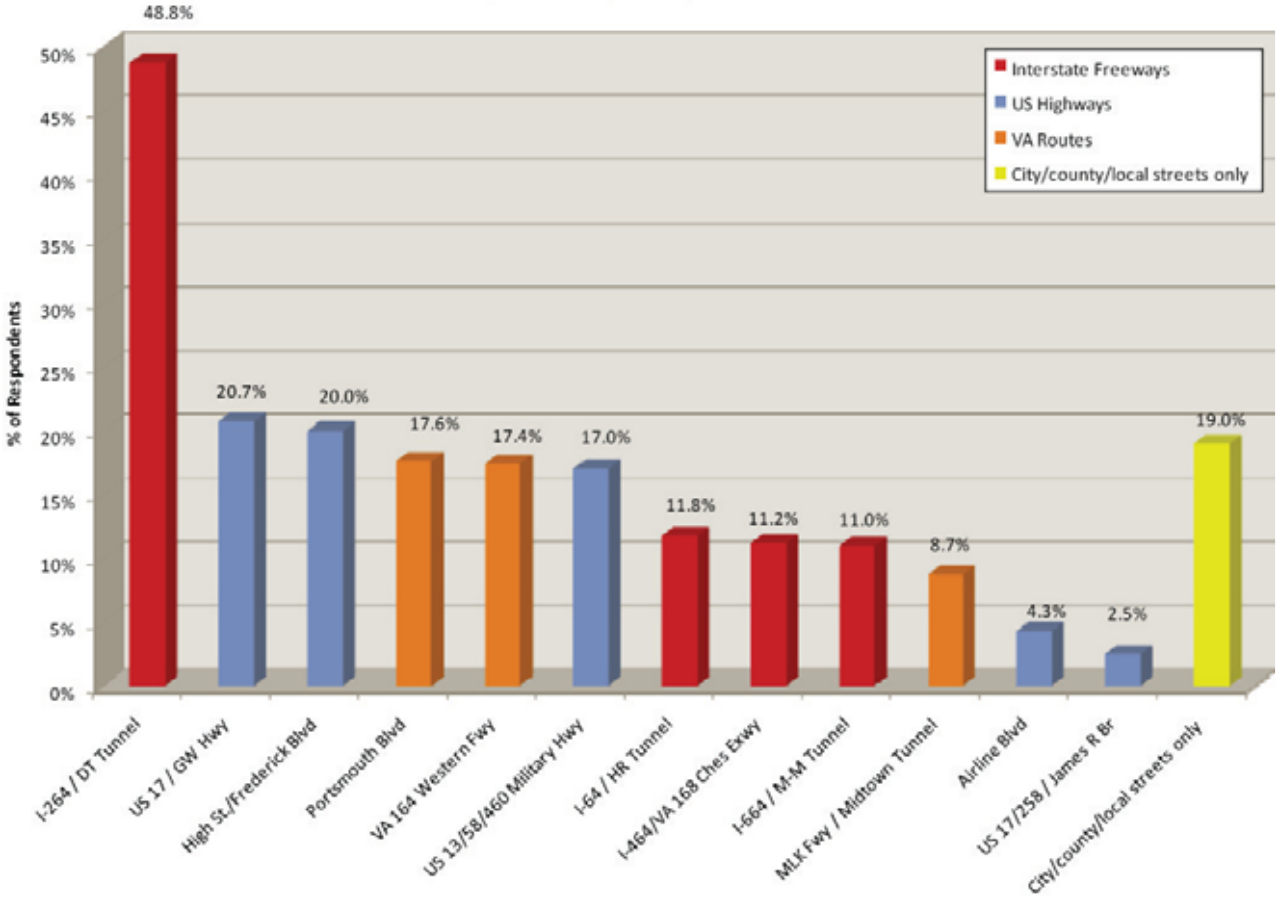
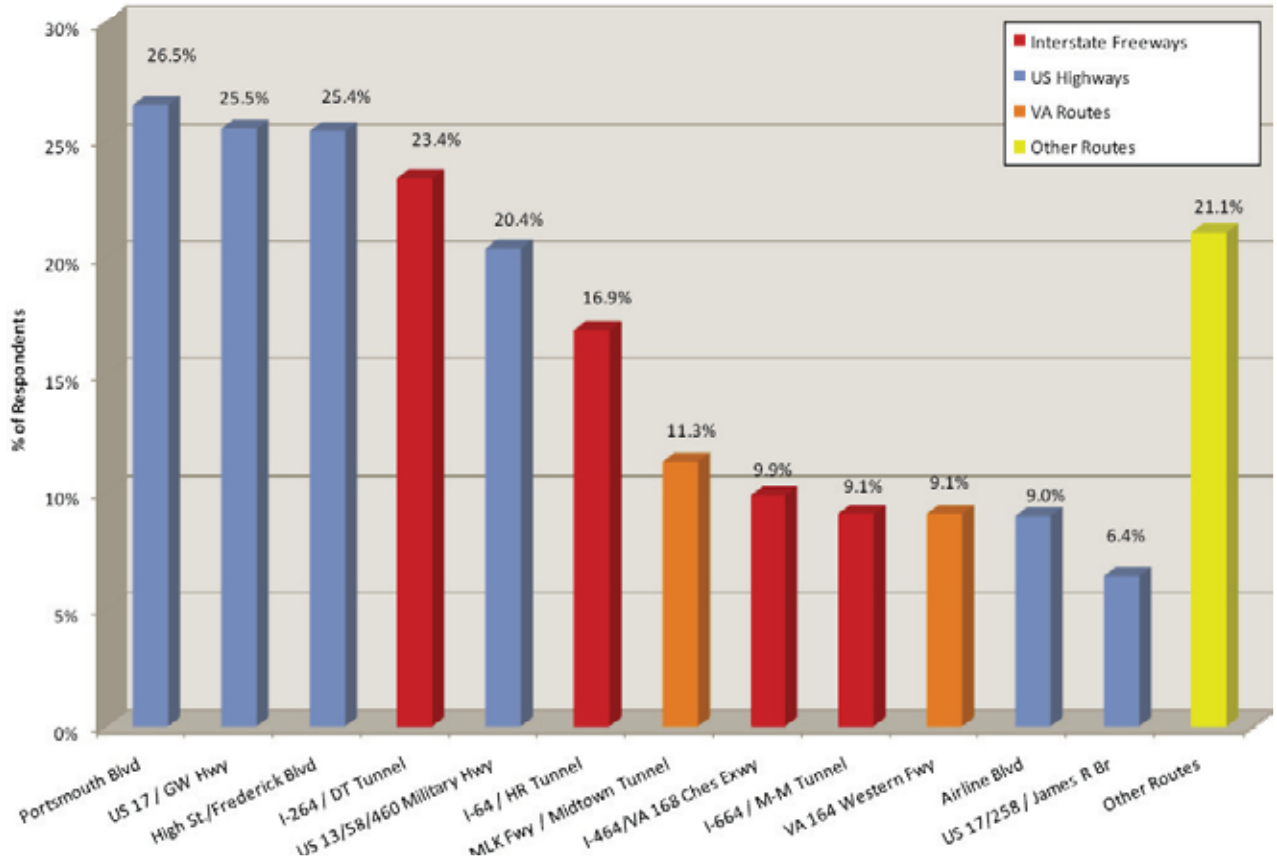


Figure 4.20 Alternate Routes Used by Respondents for Commute



Do they stop along the way? If so, where?

- Thirty-four percent (34%) of respondents noted that they make regular stops during the daily commute.
- Of those making stops, thirty-nine percent (39%) stop to purchase food or drink at a restaurant or shop or to pick-up/drop-off children at school or child care operations.
- Thirty-one percent (31%) stop at a convenience store to pick up items.
- Other stops included tending to errands, shopping, picking up or dropping off carpool riders, and attending activities in personal schedules, whether they be social, family, religious, recreational, educational, medical or occupational.

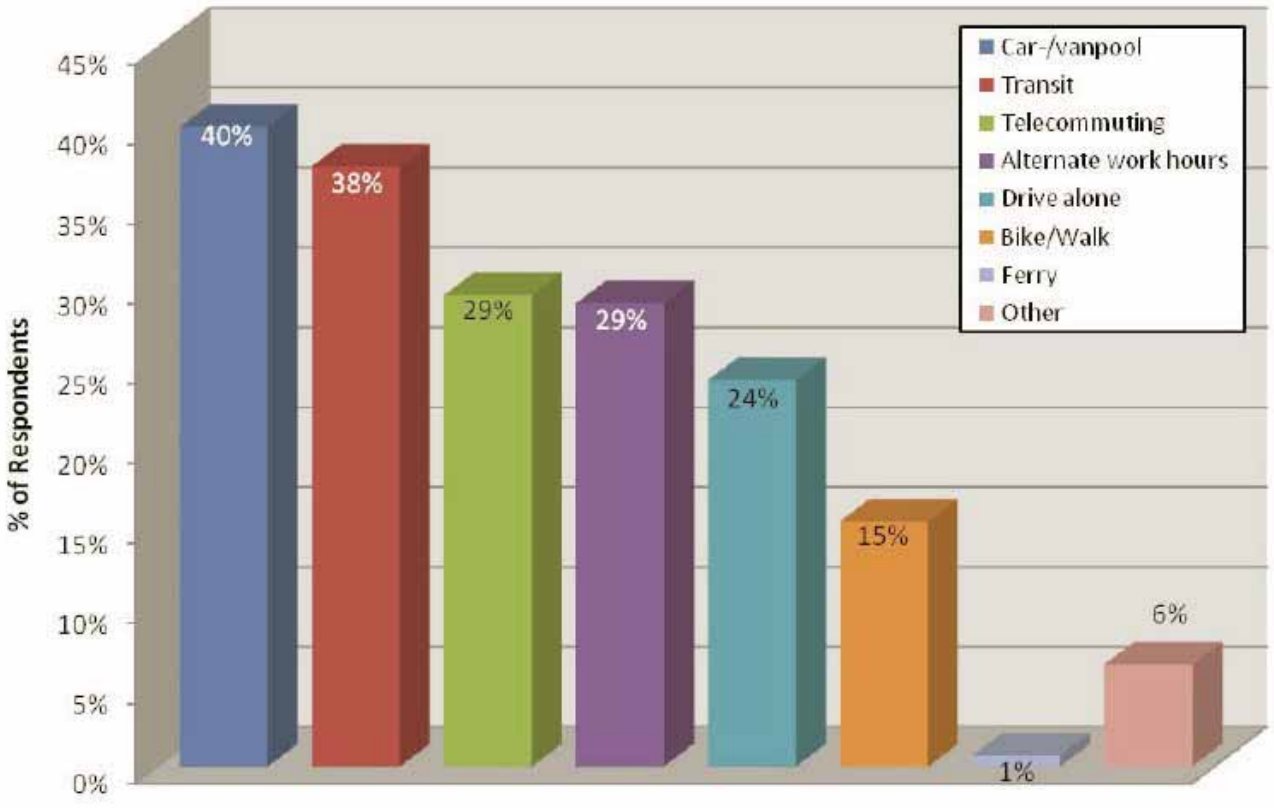
Figure 4.21 Reasons to Stop During Commute

Reason for Stops during Commute	**% of Responses**
Purchase beverage/food at fast food restaurant/shop	39%
Drop off/pick up kids from school/child-care	38%
Purchase item at convenience store	31%
Tend to errands, appointments, and/or shopping	16%
Drop off/pick up commuters in car-/vanpool	6%
Attend social/family/church activity	4%
Attend gym/recreational activity	4%
Attend school/job-related activity	1%
Other	4%

How willing were survey respondents to try alternatives to driving alone?

- Over seventy-five percent (75%) indicated that they would consider another travel mode instead of driving alone (Figure 4.22).
- Forty percent (40%) would consider carpool or vanpool options.
- Telecommuting and alternate work schedules, which would include employer-based programs, both had high response rates (29%–30%).
- Thirty-eight percent (38%) of the workers surveyed listed transit as an option, but many cited light rail as a qualifier.
- Fifteen percent (15%) (156 responses) indicated that they would consider non-motorized options for commuting—predominantly by bicycle. That number, however, was low compared to the number of respondents who stated that they currently walk (679 responses), bike (309), or run/jog (270) for recreation.
- Eleven percent (11%) of the 131 surveyed stated that they would consider moving closer to work in order to be able to bike, run, or walk to work.

Figure 4.22 If Realistically Available, What Commute Alternatives Would you Consider?



Summary of Employee Comments

For those respondents who would consider moving closer to work in order to walk, bike, or run to work, concerns for personal safety and the lack of reliable, timely transit options were the two most frequent reasons that showed up in the general comments. Safety concerns included crime and community safety, intolerant motorists, vehicular speeds, and roadway/sidewalk maintenance. The respondents continually commented the need for better public transportation including regional light rail options, greater frequency and more routes for bus transit, longer ferry service hours, ferry service to the Naval Shipyard, more park & ride opportunities (particularly to the shipyard), and on-time service. Comments included requests for bikeways (paths and lanes) along major corridors such as George Washington Highway, Victory Boulevard, High Street, Frederick Boulevard, Portsmouth Boulevard, and the Downtown and Midtown Tunnels. One worker expressed the idea to convert the Jordan Bridge to a pedestrian and bicycle only facilities and provide a park & walk/bike lot on the Norfolk side.

Summary of Implications of Travel Data

The travel pattern data shows that average travel times to Portsmouth jobs are similar to regional travel times, but that some employers, such as the Shipyard, may draw workers from longer distances, and consequently have longer travel times.

Clearly, regional arteries are important for commuters who live or work in the City. More than half of city residents have to leave the City to work, and sixty percent (60%) of people employed in Portsmouth travel into the City each day.

Significant numbers of commuters to Portsmouth have to use one of the Elizabeth River or Hampton Roads bridges or tunnels.

The survey results suggest that commuters may be willing to try a different mode, especially carpools, vanpools, and transit. Fifteen percent (15%) of survey respondents say they would be willing to walk or bike to work.

CHAPTER 5

EXISTING CONDITIONS & TRENDS

This chapter discusses the existing conditions and trends that affect the transportation system in Portsmouth. The following travel modes are addressed:

Pedestrians

Bicycles

Public Transportation

Vehicles and Parking

Freight and Ports

For each mode, issues, funding sources, current projects, planning frameworks, and future opportunities are discussed.

High Street at Middle Street in Olde Town.

Pedestrians

In the United States, forty percent (40%) of all trips are less than two miles and twenty-eight percent (28%) are less than one mile. The average healthy adult can easily walk a mile in about 20 minutes. Unfortunately, there are few places in urban and suburban America where it is enjoyable—or even possible—to simply walk a mile in safety and comfort. "I live three minutes from my work, but I can't walk there!" was a typical refrain heard during the public workshops conducted in December 2008.

Much of the urban planning and infrastructure development that has taken place in the United States since World War II has neglected to address the needs of pedestrians. A lack of sidewalks, architecture geared to the automobile, and a perceived cultural stigma too often made walking a transportation mode of last resort. However, walking seems to be gaining in popularity as the price of gas has risen and cities have once again become fashionable places to live, work and play. Also, public awareness of the health benefits that come from daily exercise has grown. Fortunately, it is possible to remedy many of the past failures to accommodate pedestrians through "complete street" improvements such as sidewalks and crosswalks, as well as improved urban design and more compact development patterns.

According to the results of the citizen survey and comments made during the December public workshops, many Portsmouth residents would like to walk more than they do today for a variety of purposes, including commuting, recreation and shopping. Eighty-two percent (82%) of Portsmouth residents surveyed believe it is somewhat or very important to promote the use of alternative modes of transportation in the City. Fifty-five percent (55%) of respondents said that future funding for bicycle and pedestrian projects should be greater or much greater in the next five years.

Pedestrian Existing Conditions and Issues

Many Portsmouth neighborhoods have good sidewalk networks and are quite walkable (Figure 5.1). Primarily developed before World War II, these neighborhoods include Olde Towne and surrounding residential areas. With its historic buildings and density, Olde Towne is a joy to explore on foot. Many persons who live near downtown can leave their cars at home when traveling to work, running errands, and going out in the evenings. There are also several examples of traffic calming devices in Olde Towne—including chicanes, diverters and bump outs—that slow traffic and make the neighborhood safer for pedestrians.

While physical barriers and dangerous road crossings make it difficult to walk between different neighborhoods, residents of areas like Port Norfolk and Cradock have the option of walking to destinations within their neighborhoods, such as corner stores, libraries, schools, parks and friends' houses. Several of the newest public and private housing developments (e.g., New Port and Westbury) also have sidewalk networks linking residences to various destinations.

Walkable communities, however, are not the norm in Portsmouth. In spite of the growing interest in walking, numerous barriers prevent Portsmouth residents from doing so. These barriers include wide streets with high traffic speeds; large, high-volume intersections; and public safety issues such as poor street lighting. Most post-war residential neighborhoods do not have complete sidewalk networks. While residents can take advantage of the wide roads and low traffic volumes on internal streets to go for recreational strolls within their neighborhoods, it is much more difficult to walk to destinations such as schools, stores, and parks.

Some of the most common obstacles to walking in Portsmouth are wide streets and intersections, high-speed roadways, and a lack of pedestrian facilities across physical barriers such as highways and bodies of water. For example, Cavalier Manor residents have pointed out that without improvements they will not be able to walk to the new Tidewater Community College campus on Victory Boulevard. Pedestrians who wish to cross the High Street Bridge over the Western Branch of the Elizabeth River must use a sidewalk that is too narrow for two people to comfortably pass each other. Moreover, sidewalks leading to the bridge are either non-existent or in disrepair.

High Street

Pedestrian Planning and Project Development

Most of the recent pedestrian improvements in Portsmouth have been traffic signal upgrades. Every year, the City replaces approximately five traffic signals with new technology. Pedestrian countdown timers are standard equipment on the new signals. Around Maryview Hospital, the City has installed audio equipment to assist blind pedestrians. The City has also been installing flashing crosswalk signals near schools to make it easier for children to walk to school. Under the current arrangement, schools pay for the installation and the City's Engineering and Technical Services Department maintains them. Where sidewalks do exist in residential neighborhoods, they are primarily four feet wide. This width is barely adequate for two people walking side by side, so the City has increased the standard for new sidewalks to five feet.

The Department of Utilities and Public Works handles ADA ramp requests with dedicated funds and federal money. The Department of Engineering and Technical Services does not have money dedicated to paint crosswalks outside of the regular striping program. Currently, the striping program is tied to the paving program, which was recently reduced by nearly one half. **The City also invests about $100,000 annually in sidewalk improvements.** Priority Improvement Areas are ranked to receive improvement funds which could be used to fill sidewalk gaps. Currently there are thirty-eight Priority Improvement Area projects addressing a number of infrastructure issues such as drainage, lighting and sidewalks.

Safe Routes To School (SRTS) is a federally-funded program to enhance the pedestrian environment in ways that will encourage children to walk to school. SRTS programs are run by a coordinator who usually works for the school board or a city's transportation department. At this time, the City of Portsmouth does not operate a SRTS program. This program could provide money for enhancements such as sidewalks, crosswalks, signals, and crossing guards.

The Bicycle and Pedestrian Safety (BPS) program of the **Virginia Department of Transportation (VDOT)** is intended to fund projects such as sidewalk and crosswalk completion and enhancement. Because the program is intended to complement projects developed under the SRTS program, BPS funds could be used as an additional funding source on top of the SRTS funds the City is eligible to receive. The BPS program is typically funded as a ten percent (10%) set-aside out of the statewide **Highway Safety Improvement Program (HSIP)** program. For FY2009-10, this amount is expected to be $3 million statewide with a typical ten percent (10%) city match per project.

These programs show that there is a great deal of federal and state funding available for pedestrian safety enhancements and sidewalk construction. The VDOT Suffolk office has expressed interest in helping Portsmouth to identify potential BPS projects and write grant requests.

Additionally, VDOT has adopted several policy guidelines in recent years that will have a significant impact on pedestrians. First, VDOT has adopted a policy to include consideration of pedestrians in every project. This move toward "complete streets" thinking is a positive step, but not yet a legal requirement. Second, VDOT is in the process of adopting access control guidelines that will improve pedestrian safety by reducing the number of curb cuts that will cross sidewalks. Unlike the complete streets guidelines, the access control guidelines will be legislatively mandated by the Commonwealth upon final adoption. While these guidelines will be enforced on only a handful of VDOT-controlled roads within Portsmouth, they could be a good model for the City to adopt.

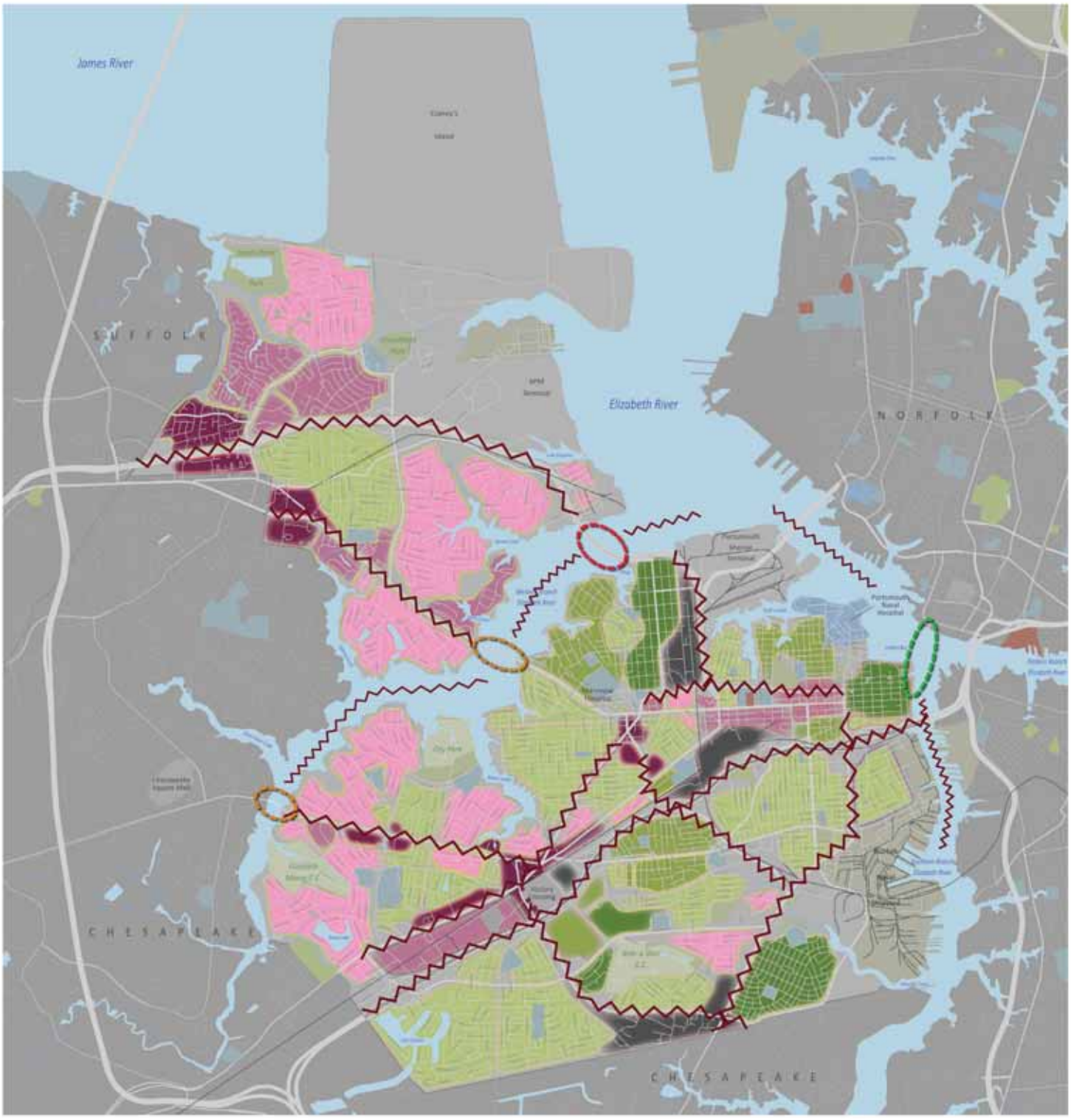
New Port at Victory

Frederick Blvd.

London Blvd. east of Elm Ave.

Victory Blvd. at George Washington Hwy.

Figure 5.1 Pedestrian Barriers and Walkability



Pedestrian Barriers and "Walkability"

- Highly Walkable - Sidewalks, Mixed Uses and Interesting Streetscapes
- Walkable - Sidewalks, Some Mixed Uses
- Walkable - Sidewalks or Low Traffic Volume and Speeds
- Pedestrian Unfriendly - No Sidewalks, Low Traffic Volumes and Speeds
- Pedestrian Unfriendly - No Sidewalks, High Traffic Volumes and Speeds
- Hostile to Pedestrians - No Sidewalks, Single Uses, Highly Car-Oriented, Insular
- Little or No Public Access for Pedestrians
- Mixed Land Uses
- Residential Land Uses
- Commercial Land Uses
- Industrial Land Uses
- Pedestrian Barriers
- Good Pedestrian Access Across Barriers
- Adequate Pedestrian Access Across Barriers
- Legal but Poor Pedestrian Access Across Barriers

0 1 2
Miles

Source: Observation, City of Portsmouth

Pedestrian Opportunities

There are several opportunities to increase the number of Portsmouth residents and visitors who walk for short trips by improving the pedestrian environment. These opportunities include:

- Refocusing the City's sidewalk improvement program to address critical gaps and barriers.
- Taking advantage of VDOT funding available for pedestrian enhancement projects, including Safe Routes To School and Bicycle and Pedestrian Safety program money.
- Creating greenway trails on the abandoned railroad rights-of-way that crisscross Portsmouth. Constructing a network of greenway trails could encourage more recreational walking, thus benefiting public health and quality of life.
- Expanding the use of traffic calming devices to create safer, more livable communities.
- Adopting a complete streets policy and design guidelines for roadway restriping and reconstruction projects.
- Designing the new High Street Bridge and similar critical transportation links to comfortably and safely accommodate pedestrians.

East of the Clifford St. Bridge

Bicycles

Bicycles are an extremely efficient form of transportation, particularly for short trips up to five or more miles in length. As gas prices rose in 2008, traffic counts from across the country indicated that more and more Americans were using bicycles for their commutes and errands. Improvements to bicycle infrastructure can produce significant benefits at relatively little expense. These benefits include reduced congestion, improved air quality, and a healthier populace.

According to a study of Portland, Oregon residents by the Bicycle Transportation Alliance, one percent (1%) of the general population consider themselves fearless cyclists who will bike "anywhere, on any road", seven percent are confident cyclists who will ride regularly on most bike lanes or streets, and sixty percent (60%) are "concerned" potential cyclists who would bicycle for commuting and recreation if there were low- or no-traffic routes available. This study indicates that there is a latent demand for bicycle-friendly infrastructure that can significantly affect the way people travel in urban and suburban communities.

Bicycle System Existing Conditions

Portsmouth enjoys many characteristics that make for a great bicycling city. It is very flat with mild temperatures. Neighborhoods are fairly dense and the City is compact. Traffic on residential streets is generally quiet and many roads can accommodate cyclists. However, according to the 2000 Census, only three-tenths percent (0.3%) of the population commuted to work by bicycle—barely half the national average. The prevailing mindset of transportation planning in the Hampton Roads region has been that cycling is purely a recreational activity. However, bicycling potentially could be a viable option for commuting as well as recreation.

Modest improvements to bicycle infrastructure in Portsmouth include short bike lanes on Clifford Street near City Park, London Boulevard from Peninsula Avenue to Effingham Street, and a signed bicycle route on the Western Freeway Bridge (Figure 5.2). Bicyclists also take advantage of the ferry service provided between downtown Portsmouth and Norfolk by HRT. The ferry service took on even more importance after the Jordan Bridge closed in November 2008, as it is now the only opportunity for bicyclists and pedestrians to cross the Elizabeth River without waiting for a bus to shuttle them. While these pieces of bicycle infrastructure are appreciated, they fall far short of creating a robust bicycle network.

In spite of the lack of a bicycle network, anecdotal observations and public surveys indicate that the number of cyclists on Portsmouth streets is growing. As gas prices rose in 2008, many Portsmouth residents began to bicycle. However, the City was not prepared for this influx of riders. According to one survey, the three-tenths percent (0.3%) bicycle mode share in 2000 had grown to two-tenths percent (0.2%) by the end of 2008. While this is a small portion of total trips, it nevertheless represents an over six hundred percent (600%) increase in bicycle riding in eight years. Forty-eight percent (48%) of Portsmouth residents surveyed said that they are somewhat likely or very likely to use bicycle paths and lanes if they are provided. It is assumed that much of the growth in bicycling has come from residents who ride bikes for either financial (because it is an inexpensive alternative to driving), environmental, and/or health reasons. But there is still much that can be done to attract Portsmouth residents who would like to ride bikes more often but don't because of safety concerns.

The bicycle mode share will remain low without physical improvements such as bike lanes and greenways. In addition, the City can provide education and encouragement to get more people onto bikes. Many cities actively encourage bicycle riding through school programs and financial incentives because they recognize the benefits bicycles bring to transportation, public health, and quality of life.

Figure 5.2 Bicycle Routes and Barriers

Afton Square


Bicyclist on the Paddlewheel Ferry

Bicycle System Planning and Project Development

Bicycle network development is relatively inexpensive compared to other transportation improvements. Except for trail construction, most of the expense comes from design, paint, signage, traffic signals, and the provision of bicycle parking. One of the most affordable ways to create a bicycle network is to re-stripe existing roads to accommodate bicycle lanes. However, because Portsmouth only re-stripes roads when they are repaved and the City's paving interval is decades long, it could be a very long time before a bike lane network is completed by using this method.

Fortunately, there are many funding sources available to speed the implementation of a bicycle network. One of the largest sources of funding is VDOT via formula money received from the federal government for pedestrian and bicycle safety projects. When choosing whether to fund a project, VDOT gives priority to projects designated in a plan and which provide connections in a larger non-motorized transportation network. The VDOT funding process stresses the importance of having a well-planned network as opposed to a piecemeal implementation of bike lanes or other facilities.

Transportation agencies and MPOs can encourage bicycling by including non-motorized options in their local Transportation Demand Management funding programs. The Hampton Roads Metropolitan Planning Organization currently has an alternative modes specialist.

John Tyler Elementary School

George Washington Hwy at Victory Blvd.

Frank D. Lawrence Stadium at IC Norcum High School

Bicycle System Issues

There are many issues that make it difficult to bicycle in Portsmouth ranging from infrastructure gaps to cyclist behavior.

- Overall, Portsmouth lacks bicycle facilities that would comfortably accommodate casual, less-experienced cyclists. This leads to irresponsible riding behavior such as illegally riding on sidewalks and against traffic (because cyclists think that it is safer to be visible than to ride with the flow of traffic).

- Many neighborhoods are arranged on a traditional street grid with low traffic volumes that are conducive to bike riding. However, the grid is interrupted in many places by barriers such as major roads, dangerous intersections, and bridges that are impassable for bicycles. These barriers can be remedied by a variety of infrastructure techniques ranging from low cost (e.g., stop signs) to expensive (e.g., new bridge construction).

- There are few bike racks or other secure places to park bicycles. Olde Towne has no bicycle racks, forcing cyclists to lock their bicycles to street furniture and trees (which can be severely damaged by such behavior).

- There is a lack of public education and enforcement of proper riding behavior and helmet use. Education and enforcement can help to legitimize cycling as a mode of transportation.

Bicycle System Opportunities

Specific opportunities to improve conditions for bicycling in Portsmouth include the reconstruction of the High Street Bridge over the Western Branch and the re-striping of Mt. Vernon Avenue to provide bike lanes. Looking more broadly, a variety of infrastructure components can be used to develop a more complete bicycle network that will encourage Portsmouth residents to bicycle more often. These infrastructure opportunities include:

- Installing five-foot wide bike lanes on many of the Portsmouth's wide streets as part of the City's ongoing paving program.

- Creating Bicycle Boulevards along Portsmouth's quiet residential streets to encourage more cycling. Bicycle Boulevards are low-traffic streets with traffic calming elements and intersections improvements that allow cyclists to travel at an unhurried pace. Several hundred miles of these safe and stress-free routes have been installed in Portland, Ore., Berkeley, Cal., Vancouver, British Columbia, and other cities.

- Creating greenways with multi-use pedestrian and bicycle paths. Portsmouth has a number of rail corridors that could be converted to greenways (e.g., the soon-to-be abandoned Churchland rail line, which could be integrated with a greenway planned to run from Suffolk to Norfolk).

- Installing bicycle racks (using available funding programs) at city buildings, schools, commercial centers, and other cycling destinations.

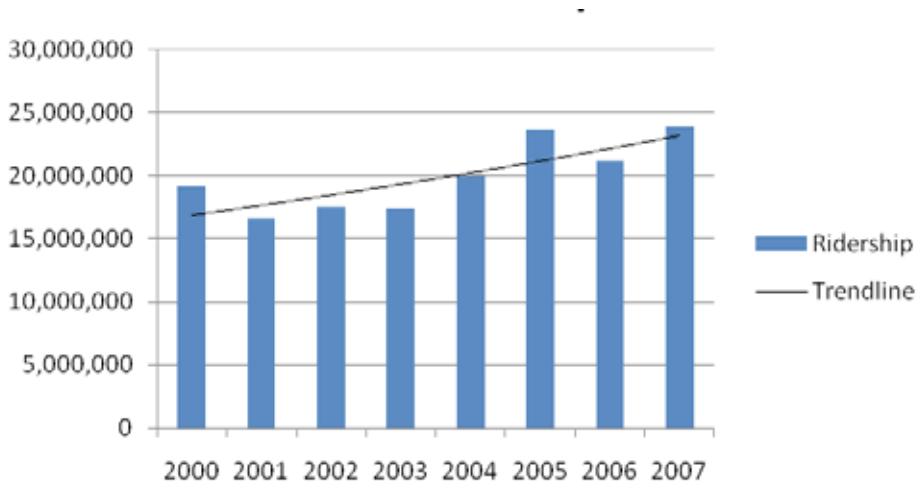
Paddlewheel Ferry at High St. Landing

Public Transportation

2008 was a banner year for public transportation in the United States. Across the nation, transit agencies reported record high ridership and unprecedented growth rates as Americans drove less and less. In the third quarter of 2008, vehicle miles traveled on the nation's highways decreased by 4.6 percent while public transportation ridership grew by 6.5 percent compared to the third quarter of 2007. This trend continued even after gas prices fell sharply from the recent record highs. Public transportation service in Portsmouth will need to be significantly enhanced to accommodate continued increases in demand.

Transit service provides a valuable form of transportation for the citizens of Portsmouth—particularly those who cannot drive or do not have access to an automobile. It can help reduce traffic congestion and improve air quality. High quality public transportation can also have a powerful positive impact on land use by supporting compact, mixed-use development patterns.

Figure 5.3 HRT Ridership



Public Transportation Existing Conditions

Public transportation and "Handi-Ride" services in Portsmouth and the Tidewater region are provided by Hampton Roads Transit (HRT). HRT's transported 1,028,783 riders in Portsmouth in 2006—the latest year for which figures are available. (Figure 5.3) Those services include seven standard bus routes, one MAX suburb-to-suburb service, the Paddlewheel Ferry service, and the downtown loop shuttle. With the exception of the Paddlewheel Ferry and the Portsmouth Loop shuttle, these services converge at transit transfer points located at Victory Crossing, Midtown and Olde Towne. The following is an overview of the individual transit services offered by HRT in Portsmouth (Figure 5.4).

Fixed-Route Bus Service: Most routes operate Monday through Friday with limited service on Saturdays. Sunday service is only provided on Route 45 between Victory Crossing and downtown Norfolk. All other routes operate limited services on Saturday. Routes 41, 44, 45 and 47 are the busiest routes, with Route 45 carrying twice as many riders as the next most popular route. After the Jordan Bridge closed in November 2008, HRT inaugurated the Jordan Bridge Limited route to provide an express link across the South Branch of the Elizabeth River in place of the decommissioned Jordan Bridge. Due to a lack of ridership, the Jordan Bridge Limited ceased operations in January 2009.

The Portsmouth Loop shuttle: The Portsmouth Loop shuttle service links the Elizabeth River Ferry, downtown destinations, and the Naval Medical Center Portsmouth. The goal of the service is to encourage hospital workers and visitors to explore Olde Towne restaurants and shops without having to park twice. Inaugurated in 2008, the Loop originally offered 15-minute headways throughout most of the day. During the winter months from January to April the service runs on a 30-minute schedule to connect with the Paddlewheel Ferry service.

The Paddlewheel Ferry: The Paddlewheel Ferry provides a critical transportation link between two major activity hubs in the region: downtown Portsmouth and downtown Norfolk. While it is heavily used by tourists, the ferry is an attractive alternative to commuting by car or bus through the tunnels at peak times. The ferry is the only option for pedestrians and bicyclists to cross the Elizabeth River since the Jordan Bridge closed. Service operates every half-hour starting at seven a.m. on weekdays and ten a.m. on weekends. The last departure time depends on a variety of considerations including season, special events, and day of the week. HRT has had some difficulty in coordinating the Portsmouth Loop shuttle with the ferry service.

MAX Service: Initiated in 2008, the MAX service is HRT's first regional bus service created to serve riders traveling between cities in the Hampton Roads region. This service provides a public transportation option designed to draw "choice riders" by mimicking the travel patterns of suburban commuters who use the regional highway system. MAX Route 962 links Suffolk, Portsmouth, and downtown Norfolk with express service from Monday through Friday. The only stop in Portsmouth is located at the Victory Crossing Transit Transfer Point.

HRT recently introduced a new fare system intended to eliminate transfers and to reduce the amount and variety of fare media. This system offers streamlined daily, weekly, and monthly passes at attractive prices. The adult cash fare for a single trip is $1.50 and the new GO 1-day pass offers unlimited trips and transfers for $3.50. Similar passes are available for one week and one month.

Vanpool outside Portsmouth City Hall

Relationship Of Transit Service To Land Use

The Future Land Use Map from the Destination 2025 Comprehensive Plan envisions a combination of activity centers and mixed-use corridors as the focus of new development in Portsmouth. In order to fully realize the goals of the maps, these activity centers and mixed-use corridors should be served by multi-modal transportation infrastructure and high-frequency transit service. Figure 5.5 contrasts the current transit routes and service frequencies with the Destination 2025 proposed land uses to determine areas in need of transit improvements.

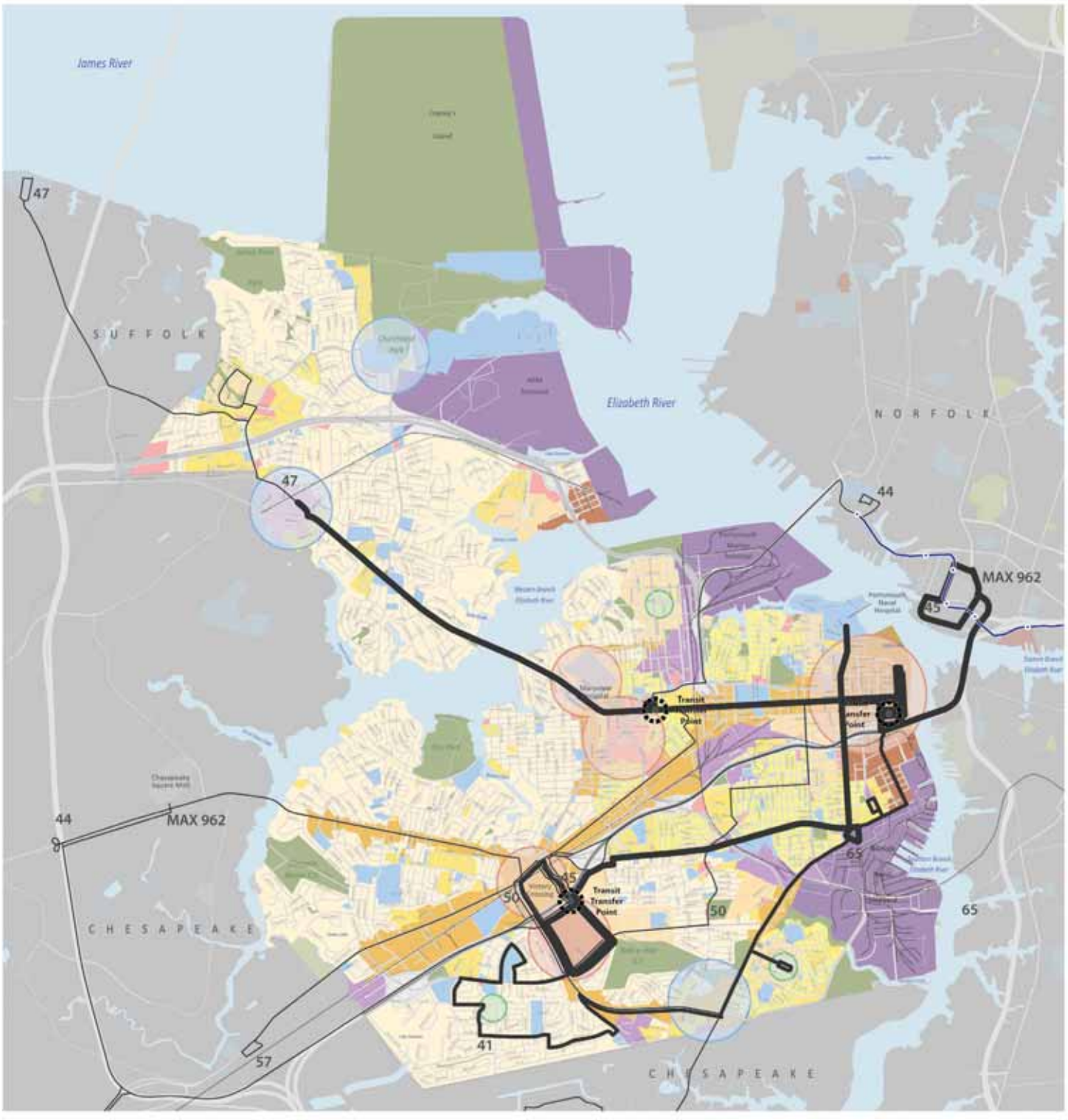
Most of the bus service in Portsmouth is oriented toward bringing passengers to Downtown Portsmouth and Victory Crossing. At least some service is provided to most other activity centers. Notable exceptions are the Churchland Park and Port Norfolk neighborhood activity centers, which have no transit service. Bus service to the large residential area in northern Churchland is sparse and infrequent, with only hourly peak service on the Route 47 extension to Tidewater Community College. Route 44 runs on MLK Freeway from London Boulevard to the Midtown Tunnel, bypassing the Port Norfolk neighborhood and employment opportunities at the Portsmouth Marine Terminal. In Midtown, there is no service directly to Wal-Mart and other commercial development along Frederick Boulevard and Airline Boulevard. Portsmouth Boulevard, Turnpike Road and large portions of Airline Boulevard are identified as mixed use corridors in the proposed land use map from Destination 2025. However, these corridors either have no transit service or only hourly service available.

The area south of I-264 and east of Frederick Boulevard has the highest concentrations of non-drivers in Portsmouth. These neighborhoods, including Prentiss Park, Cradock, and the Norfolk Naval Shipyard, are served by several bus routes, including Routes 45 and 41, which offer 30-45 minute service frequencies. Route 50, on the other hand, offers only hourly service running through the heart of some of Portsmouth's poorest neighborhoods.

There is direct transit service between Downtown Portsmouth and outlying activity centers. However, it is not possible to travel between Churchland and Victory Crossing without transferring between routes. As development occurs in activity centers and along mixed-use corridors, direct transit service should be created to link these uses without forcing riders to transfer.

Figure 5.4 Transit Routes

Figure 5.5 Transit Weekday Headway with Future Proposed Land Use



Public Transportation Planning and Project Development

HRT service is funded in three equal parts by fare box revenues, the contributor cities, and a combination of state and federal funds. There is no regional funding source, a common practice in many large metropolitan areas. Portsmouth's transportation planner develops a service plan every year and makes a proposal to City Council. When Council approves the service plan, funding is released to HRT. HRT then provides a pre-determined number of service hours. The most recent annual contribution from the City of Portsmouth was $2.4 million.

Each municipality in the HRT service area is responsible for planning and funding the transit service it requests from HRT. However, this approach is problematic because most commuters in the Hampton Roads area travel across municipal boundaries every day for work or other activities. Existing transit services are not geared to accommodate such trips without time-consuming and sometimes confusing transfers. The MAX service is a good first step toward drawing "choice riders" out of their cars by designing transit routes that match current trip demand.

HRT is currently undertaking two studies of its public transportation services—a Comprehensive Operations Analysis and a Strategic Vision Plan. Scheduled for completion in early 2009, the **Comprehensive Operations Analysis (COA)** will determine where the agency is under performing or under serving its ridership. The report will provide recommendations for short-term improvements and service changes.

The Strategic Vision Plan is a long-range plan looking 25–30 years into the future. This plan will investigate major regional corridors and their suitability for high-capacity transit operations, such as Bus Rapid Transit, Light Rail Transit, and Commuter Rail. HRT is looking for direction from its member cities to determine potential projects, funding sources, operating models, etc. HRPDC is working with HRT to coordinate public transportation and land use planning at a regional scale.

Across the river in Norfolk, HRT is constructing the first phase of the new **Light Rail Transit (LRT)** system known as the **Tide**. Currently, HRT and its consultant for the Strategic Vision Plan are examining options to expand the Tide or other high capacity transit routes in the region. Within Portsmouth, there are a variety of possible corridors for LRT or Bus Rapid Transit (BRT) service, but no alignments have been advanced at this point.

Public Transportation Issues

Making service more customer-friendly and accessible is critical to boosting ridership. Personal safety concerns, unpleasant transfers, irregular frequencies, limited service, a large array of fare types, and circuitous routes are just some of the issues that keep people from using public transportation in Portsmouth. Following are some of the key issues:

Cleanliness and Safety: The physical condition of the bus stops is a critical factor in providing quality transit service. Many citizens note the distance to bus stops and the general lack of continuous sidewalks, shelters, and lighting when they get there. In particular, the City's Behavioral and Healthcare Services Department shared its concern that many of its elderly or mobility-impaired consumers have a difficult time physically navigating routes to transit stops. Other residents stated that bus stop signage is often poorly visible and contains no schedule information.

Limited Service Hours and Frequency: On most routes, service hours are very limited and focused around the nine-to-five work day. Because of the limited hours, many Portsmouth residents who commute long distances for work must take the first bus in the morning and the last bus home at night. Occasionally, riders miss the last bus and have to find alternate means of travel home. Most routes run only one bus per hour, which limits their usefulness to potential passengers. (Figure 5.5)

Ferry Service: On weekdays, the first ferry run is at seven a.m.—too late for many Portsmouth commuters. The first ferry run on the weekends is at ten a.m., which hampers tourists and cyclists who use the service for recreation.

Limited Service Area: HRT bus routes cover much of Portsmouth south and east of the Western Branch of the Elizabeth River including Olde Towne, Victory Village, and Midtown. However, there is a lack of accessible service to areas north of High Street and particularly to the northern parts of Churchland where some residents would have to walk nearly three miles to catch the Route 47 bus.

Transit Transfer Points: Transit Transfer Points are an important component of HRT's service concept because they offer centralized locations where patrons can transfer between bus routes. However, the current schedules are poorly coordinated and the actual transfer points are perceived to be unsafe, poorly-lit, unattractive, and sometimes inaccessible. The Cavalier Boulevard and McLean Street transfer point is particularly deficient. Located in an abandoned area on the opposite side of I-264 from the nearest destination (Victory Crossing Shopping Center), it is poorly lit and lacks sidewalks to connect the various bus routes. Several HRT passengers suggested moving the transfer point to the central access road in the Victory Crossing Shopping Center.

Public Transportation Opportunities

The following are opportunities to improve public transportation in Portsmouth:

- Expanding LRT service from Norfolk to Portsmouth is a growing interest for the City. There is an opportunity to include rail transit in the long-discussed Midtown Tunnel expansion, but no preferred alignment has been determined yet.

- A land-swap is a potential incentive for contractors to build a LRT alignment in Portsmouth.

- HRT and the City can continue to work with schools and employers to develop pass programs that will reach potential transit users. Tidewater Community College has shown support for developing programs to encourage faculty and students to take transit and leave their cars at home.

- Regional land use planning efforts should be linked with public transportation planning.

The planning relationship with HRT provides an opportunity for the City of Portsmouth to play a leading role in creatively thinking about how to deliver public transportation services in the region. Potential improvements range from overall service concepts and route design to better passenger information systems such as improved online information, mapping, and individualized route planning. The following are a few low-cost techniques that could boost transit ridership:

1. Improve the schedule—the product HRT provides to its consumers—to make transit a more attractive alternative. Possibilities include improving the timed-transfer experience and instituting regular interval schedules throughout the day on all transit lines in Portsmouth.

2. Relocate and improve Transit Transfer Points by placing them in safe, well-used locations and adding amenities such as restrooms, telephones, and passenger information kiosks.

3. Improve the link between buses and ferries to make the latter a more feasible alternative to congested tunnel traffic.

Victory Crossing

Afternoon Traffic

Vehicles and Parking

The Hampton Roads region is known for serious traffic congestion. Because the region is divided by major waterways, tunnels and bridges create chokepoints on the regional road network, including Elizabeth River crossings to and from Portsmouth. With the recent closure of the Jordan Bridge and ongoing repairs to the Military Highway Bridge in Chesapeake, traffic congestion at the Elizabeth River crossings has only grown worse. The only relief is that Vehicle Miles Traveled (VMT) decreased six and one-tenth percent (6.1%) in the Southeast region from November 2007 to November 2008.

Figure 5.6 Traffic Volumes

Traffic Volumes
2006 Average Annual Daily Traffic (AADT)

- 0 - 2000
- 2001 - 5100
- 5101 - 9100
- 9101 - 14000
- 14001 - 22000
- 22001 - 34000
- 34001 - 51000

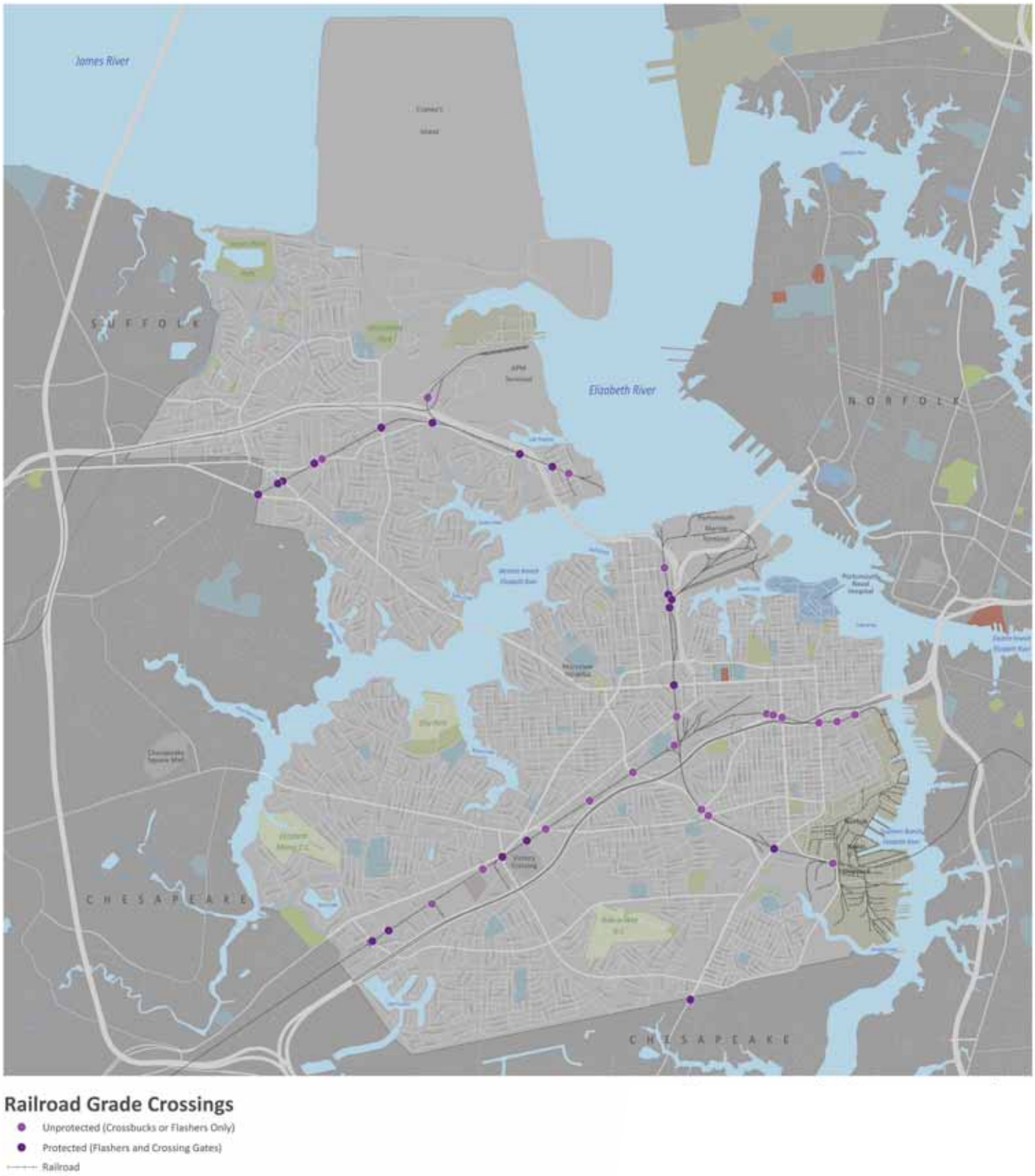
0 1 2
Miles
Source: VDOT 2006 Traffic Counts

Vehicular System Existing Conditions

With the exception of the congested arteries of I-264 and the Midtown Tunnel, the City's road network functions reasonably well (Figure 5.6). It is generally possible to traverse the City in 20 to 25 minutes during peak periods and 15 to 20 minutes off-peak. However, there are a few congestion "hot spots" during peak hours, including the Midtown area, Effingham Street, London Boulevard, and locations where Downtown Tunnel traffic backs up onto city streets (Figure 5.8). Large military employers like the Portsmouth Naval Medical Center and the Norfolk Naval Shipyard generate significant traffic, especially during shift changes.

In terms of Level of Service (LOS)—a measure of traffic congestion—most of the streets receiving poor grades of LOS "E" or "F" experience congestion related to highway back-ups. Notable poorly performing streets include those leading to I-264 and the Downtown and Midtown Tunnels (Figure 5.8). Railroad crossings are another cause of traffic backups in Portsmouth, in particular, the Frederick Boulevard crossing of the CSX railroad (Figure 5.7).

Figure 5.7 Railroad Grade Crossings



Regional Travel Model Congestion Forecast

Kimley-Horn and Associates evaluated HRPDC's regional vehicular travel model to forecast traffic congestion in Portsmouth for the year 2030. In order to do so, projected volumes from the 2000 model were compared to actual Annual Average Daily Traffic (AADT) volumes from 2007 to determine the accuracy of the earlier model. Most projected volumes from the 2000 model are comparable to the 2007 AADTs, but there are significantly higher volumes on Portsmouth Boulevard, Western Freeway, Victory Boulevard, and Effingham Street. 2007 daily traffic for the Midtown Tunnel, Martin Luther King Freeway, and Poindexter Street are lower than the 2000 model projected they would be. The reported LOS may be worse than projected for Portsmouth Boulevard, Western Freeway, Victory Boulevard, and Effingham Street. LOS E/F conditions currently exist on portions of High Street, County Street, Portsmouth Boulevard, the Downtown and Midtown tunnels, George Washington Highway, Elm Street, and the Interstate network.

Due to growth in the number of households and jobs through 2030, volumes are projected to increase and levels-of-service to decline to LOS E/F along I-264, Western Freeway (Route 164), Deep Creek Boulevard, and in the Midtown area within the City limits (Figures 5.8 and 5.9). Outside the City limits and the Beltway, there is projected to be significant growth in congestion to the west along I-664, US Route 17 from the James River Bridge into Portsmouth, Nansemond Parkway to Portsmouth Boulevard, Military Highway to I-264, George Washington Highway, and I-464 in Norfolk to the Downtown Tunnel. The increase in traffic is related to the projected increase in households in Chesapeake, Suffolk, and Isle of Wight County as well as increases in employment just west of Portsmouth along the US 17 and Portsmouth Boulevard corridors.

In conclusion, the Hampton Roads Regional Model projects that traffic volumes will remain high on the main freeways and increase on many of the main arterials in the Hampton Roads region, but that traffic on Portsmouth's street system will remain relatively level.

The 2030 model includes the road and highway projects listed in the HRPDC 2030 Long Range transportation plan, including such Portsmouth projects as the second Midtown Tunnel tube, the MLK extension and interchange, the widening of Portsmouth Blvd west of I-664, and the addition of HOV lanes on I-64 from Greenbrier Parkway to I-464. The model does not include proposed toll projects to widening the interstates around Portsmouth.

Figure 5.8 2000 Congestion

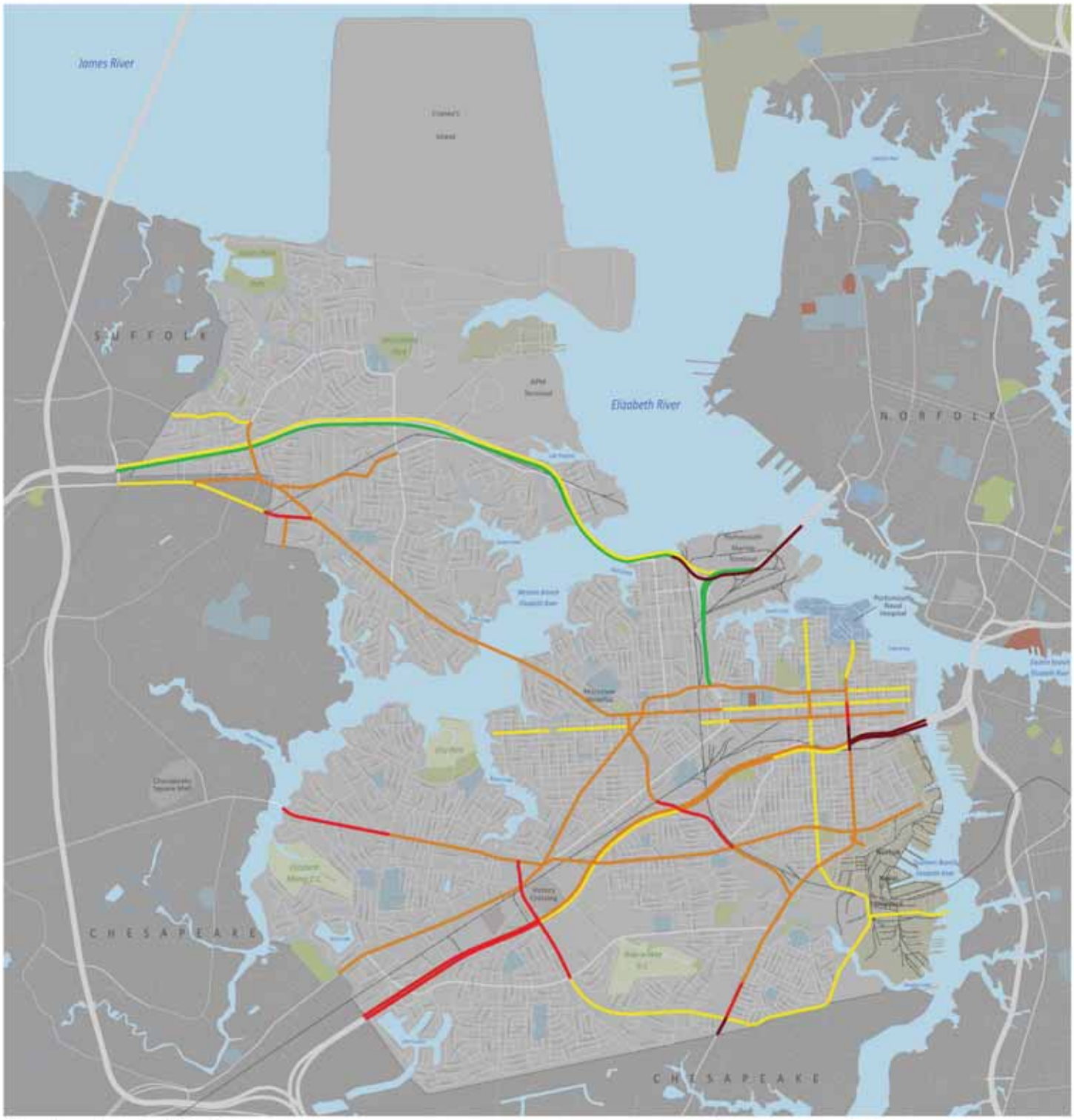


Figure 5.9 2030 Projected Congestion

Vehicular System Safety and Crash History

Traffic safety is a key component to any successful transportation plan. A thorough examination of crash history and traffic patterns can predict key locations where improvements will be beneficial to both motorists and the community. According to data published by VDOT, the cost of an average crash to the community is typically $43,533. This cost includes medical care, emergency services, victim work loss, employer cost, traffic delay, property damage, and the overall quality of life. The costs for various types of crashes are provided in Figure 5.12.

A traditional approach to determining locations for safety countermeasures involves studying the number and type of crashes in a location as well as the location's associated crash rate.

This section of the report analyzes intersections experiencing the highest numbers of crashes in the City of Portsmouth based on 911 emergency calls for crashes at the intersections. The following section outlines the analysis methodology.

High Occurrence Crash Intersections

The locations considered for safety improvements in the Portsmouth Master Transportation Plan are shown in Figure 5.13. The summary of crash data shown in the table represents reported crashes at the specified locations from 2005 through 2007. These locations also are identified in Figure 5.14.

Contributing factors to a location's high crash occurrence may include driver error, intersection design, access considerations, and traffic congestion. Many of the locations identified with high crash occurrence also are the locations where recurring congestion exists. A direct relationship exists between traffic congestion and crash frequency, which justifies the ongoing efforts to provide adequate funding for transportation projects that minimize traffic congestion. Driveway access in proximity to intersections also can contribute to crash frequency by increasing unexpected conflict points near the intersections.

A preliminary review of the crash history was performed for the twenty highest crash intersections in the study area. KHA reviewed detailed crash data provided by Portsmouth Police Department in order to determine causal factors, overall severity, and top crash types for each intersection. Field investigations were performed to confirm existing conditions, identify design features, and observe driver behavior. These field observations provided insight to potential patterns and revealed conditions that could be enhanced through geometric changes or enhancements to traffic control.

The following sections detail crash statistics, potential causal factors, and recommended countermeasures for the twenty identified intersections.

Figure 5.10 Crash Intersections

Rank	Intersection	Total Crashes	Crashes w/Police Data	Top Crash Type	Entering Vehicles (MEV)	Crash Rate
1	George Washington Hwy & Victory Blvd	53	12	Angle	43.80	121.00
2	Frederick Blvd & Deep Creek Blvd	44	16	Rear End	30.00	146.65
3	Frederick Blvd & Portsmouth Blvd	29	13	Angle	24.97	116.16
4	County St & Elm Ave	27	12	Angle	N/A	N/A
5	George Washington Hwy & Frederick Blvd	24	7	Angle	42.16	56.93
6	High St & Elm Ave	24	6	Angle	N/A	N/A
7	Airline Blvd & Frederick Blvd	23	12	Angle	42.71	53.86
8	Frederick Blvd & Turnpike Rd	21	10	Angle	44.57	47.12
9	Airline Blvd & Portsmouth Blvd	20	7	Angle	33.40	59.88
10	Airline Blvd & Victory Blvd	19	10	Rear End	30.71	61.86
11	Portsmouth Blvd & Turnpike Rd	19	8	Rear End	22.34	85.06
12	Effingham St & Bart St	19	5	Rear End	N/A	N/A
13	Effingham St & South St	18	14	Rear End	N/A	N/A
14	London Blvd & Constitution Ave	18	6	Rear End	24.97	72.10
15	High St & Virginia Ave	18	1	Angle	N/A	N/A
16	Elm Ave & George Washington Hwy	17	5	Angle	31.10	54.67
17	Greenwood Dr & Stratford St	16	7	Angle	12.37	129.31
17	London Blvd & Elm Ave	16	7	Rear End	N/A	N/A
19	Victory Blvd & Greenwood Dr	15	11	Angle	27.10	55.35
20	Portsmouth Blvd & Deep Creek Blvd	15	10	Angle	20.37	73.65
	Intersection Totals	**470**	**197**	**Angle**	**N/A**	**N/A**


VICTORY BLVD
GEO WASHINGTON HWY

A. George Washington Highway At Victory Boulevard

The intersection of George Washington Highway and Victory Boulevard experienced 53 total crashes over the 3-year analysis period. Of the 12 crashes with complete data, the most common crash type was angle (9 occurrences). A majority of these collisions (5 of 9) occurred as vehicles were attempting to make left turns across oncoming traffic. With 40,000 vehicles per day (vpd) this intersection, the crash rate is 121 crashes per million vehicles entering (MVE) the intersection.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- numerous driveways and access points at the intersection, increasing conflict points and complicating operations; and
- potential visual obstructions at the intersection corners (landscaping, signage, and utility poles).

B. Frederick Boulevard & Deep Creek Boulevard

The intersection of Frederick Boulevard and Deep Creek Boulevard experienced 44 total crashes over the 3-year analysis period. Of the 16 crashes with complete data, the most common crash type was rear-end (8 occurrences). A majority of these collisions (4 of 8) occurred on the northbound approach. The average traffic volume for this intersection is 27,400 vpd with a crash rate of 146.7 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- proximity to the intersection of Frederick and Portsmouth Boulevards;
- proximity to the rail crossing of Deep Creek Boulevard adjacent to the intersection;
- absence of left-turn lanes on Frederick Boulevard;
- propensity for motorists to take refuge in the intersection between the Frederick Boulevard medians;
- access to the gas station/convenience store of the southwest corner of the intersection;
- absence of pedestrian crosswalks and significant pedestrian activity; and
- left-turn prohibitions on northbound Frederick Boulevard.

C. Frederick Boulevard & Portsmouth Boulevard

The intersection of Frederick Boulevard and Portsmouth Boulevard experienced 29 total crashes over the 3-year analysis period. Of the 13 crashes with complete data, the most common crash type was angle (11 occurrences). A majority of these collisions (9 of 11) occurred as vehicles attempted left turns in front of oncoming traffic and involved at vehicle traveling northbound on Frederick Boulevard. The average traffic volume for this intersection is 22,800 vpd, translating to a crash rate of 116.2 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- proximity to the intersection of Frederick and Deep Creek Boulevards;
- proximity to the rail crossing of Portsmouth Boulevard adjacent to the intersection;
- access to the gas station/convenience store of the northwest corner of the intersection;
- absence of left-turn lanes on northbound Frederick Boulevard; and
- absence of pedestrian crosswalks and significant pedestrian activity.

D. County Street & Elm Avenue

The intersection of County Street and Elm Avenue experienced 27 total crashes over the 3-year analysis period. Of the 12 crashes with complete data, the most common crash type was angle (11 occurrences). All of these collisions were right-angle, or “T-bone”, crashes. Nine involved crashes between northbound vehicles colliding with vehicles traveling on County Street, and several took place during the night when the signals were in flash mode. Daily traffic volumes were not available for the intersection; therefore sufficient data is not available to calculate the crash rate.

Based on visual observation during the field work, potential causes for crashes at this location include:

- absence of directional arrow on the eastbound approach;
- shorter set-back on the houses fronting Elm Avenue to the south;
- short setback and front-door parking of the store on County Street in the northeast corner;
- absence of backplates and bottom span wire securing the signals from wind; and
- absence of street lighting.

E. George Washington Highway & Frederick Boulevard

The intersection of George Washington Highway and Frederick Boulevard experienced 24 total crashes over the 3-year analysis period. Of the 7 crashes with complete data, the most common crash type was angle (5 occurrences). All five involved vehicles turning left from northbound George Washington Highway onto Frederick Boulevard and being impacted by southbound vehicles. The average traffic volume for this intersection is 38,500 vpd. On average, the intersection experienced 56.9 crashes per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- protected/permissive signal phasing on the northbound left-turn approach;
- full access driveways for the establishments on the east side of the intersection;
- absence of a left-turn lane or a left-turn prohibition on the southbound approach;
- proximity to the entrance to the Norfolk Naval Shipyard complex; and
- potential site distance problem from the northbound left turn lane around vehicles in the southbound left lane.

F. High Street & Elm Avenue

The intersection of High Street and Elm Avenue experienced 24 total crashes over the 3-year analysis period. Of the 6 crashes with complete data, the most common crash type was angle (3 occurrences), with one right-angle crash, one left turn crash, and one right turn crash. In addition, two crashes involved cyclists. Daily traffic volumes were not available for the intersection; therefore sufficient data is not available to calculate the crash rate.

Based on visual observation during the field work, potential causes for crashes at this location include:

- significant pedestrian and bicycle activity between local businesses and bus stops near the intersection;
- wear and tear on the existing lane striping;
- proximity of access drives to the intersection; and
- location of stop lines for right turns in front of pedestrian warning signage.

Figure 5.11 Crashes by Intersection

G. Airline Boulevard & Frederick Boulevard

The intersection of Airline Boulevard and Frederick Boulevard experienced 23 total crashes over the 3-year analysis period. Of the 12 crashes with complete data, the most common crash type was angle (7 occurrences). A majority of these collisions (5 of 7) occurred when vehicles turned left in front of oncoming traffic. There were also four rear-end crashes, occurring on different approaches of the intersection. The average traffic volume for this intersection is 30,500 vpd, equating to a crash rate of 59.9 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- presence of right-turn slip lanes with yield conditions;
- skewed intersection geometry;
- potential site distance impediments with landscaping on the northwest corner and Frederick Boulevard median to the north; and,
- shared northbound left-through movement.

H. Frederick Boulevard & Turnpike Road

The intersection of Frederick Boulevard and Turnpike Road experienced 21 total crashes over the 3-year analysis period. Of the 9 crashes with complete data, the most common crash types were angle and rear-end collisions (3 occurrences each). All three angle crashes involved left turns where the oncoming vehicle traveling in the opposite direction may have disregarded the signal. With 40,700 vpd this intersection, the crash rate is 47.1 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- protected/permitted phasing for the westbound left turn movement paired with permitted only phasing for the eastbound left turn movement;
- significant high truck traffic on the southern and eastern legs of the intersection;
- poor pavement conditions; and
- proximity of access driveways to the intersection.

I.,J. Portsmouth Boulevard & Airline Boulevard & Turnpike Road

The intersections of Portsmouth Boulevard with Airline Boulevard and Turnpike Road are less than 600 feet apart in a confusing geometric configuration. The two intersections have experienced 39 total crashes over the 3-year analysis period. Of the 15 crashes with complete data, the most common crash type was rear-end (10 occurrences). A majority of these collisions (5 of 10) occurred on the westbound approach. The average traffic volume for Airline/Portsmouth intersection is 30,500 vpd, equating to a crash rate of 59.88 MVE; the Turnpike/Portsmouth intersection processes 20,400 vpd and has a crash rate of 86.0 crashes per MVE.

O. High Street & Virginia Avenue

The intersection of High Street and Virginia Avenue experienced 18 total crashes over the 3-year analysis period. The single crash with complete data was an angle crash with a vehicle turning left from southbound Virginia Avenue in front of a vehicle traveling westbound on High Street. Daily traffic volumes were not available for the intersection; therefore sufficient data is not available to calculate the crash rate.

Based on visual observation during the field work, potential causes for crashes at this location include:

- proximity of the rail crossing of High Street just east of the intersection; and
- percentage of truck traffic using the intersection.

P. Elm Avenue & George Washington Highway

The intersection of Elm Avenue and George Washington Highway experienced 17 total crashes over the 3-year analysis period. Of the 5 crashes with complete data, the most common crash type was angle (4 occurrences). All four involved northbound vehicles colliding with vehicles making conflicting movements, with two crashes involving southbound vehicles turning left, two westbound through vehicles. Approximately 28,400 vehicles traverse this intersection on a daily basis and based on the three-year crash history, the crash rate is 54.7 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- parked vehicles blocking sight distances for eastbound Elm Avenue;
- split phasing for Elm Avenue and the impacts on delay with the closure of the Jordan Bridge;
- worn condition of striping in and around the intersection;
- proximity of the residential street intersection on Elm Avenue just north of the intersection;
- absence of pedestrian crosswalks; and
- skewed geometry of the intersection.

Q. Greenwood Drive & Stratford Street

The intersection of Greenwood Drive and Stratford Street experienced 16 total crashes over the 3-year analysis period. Of the 7 crashes with complete data, the most common crash type was angle (6 occurrences). A majority of these collisions occurred in the median break on Greenwood Drive or while crossing the median. Note that the intersection is unsignalized, with stop control on the Stratford Street approaches. The average traffic volume for this intersection is 11,300 vpd. Over the study period, the crash rate was 129.3 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- absence of left-turn storage on Greenwood Drive; and
- percentage of truck traffic on Greenwood Drive.

K. Airline Boulevard & Victory Boulevard

The intersection of Airline Boulevard and Victory Boulevard experienced 19 total crashes over the 3-year analysis period. Of the 10 crashes with complete data, the most common crash type was rear-end (6 occurrences). These crashes occurred on all four intersection approaches. Approximately 28,000 vehicles traverse this intersection on a daily basis and based on the three-year crash history, the crash rate is 61.9 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- proximity and grade from the rail crossing of Victory Boulevard south of the intersection;
- proximity of the access drive just to the west for the industrial/office complex on the northwest corner of the intersection and the exit movements made by employees from the site; and
- potential site distance impediments from parking and landscaping for the retail site on the northeast corner.

L.,M. Effingham Street & South & Bart Streets

The segment of Effingham Street from South Street to the I-264 EB/Downtown Tunnel ramp experiences severe congestion daily as delays in the tunnel and on I-264 cause traffic to back-up down the ramp and on Effingham Street. Thirty-seven (37) crashes have been reported by Portsmouth motorists at South and Bart Streets alone over the 3-year analysis period. Of the 17 crashes with complete data, the most common crash type was rear-end (9 occurrences), indicative of the delays and queuing that occurs in the area. The peak hour congestion in the area is the main cause of crashes in the area, but other contributing factors may include short turn lanes, poorly-planned median openings and access drives, and the absence of pedestrian crossings.

N. London Boulevard & Constitution Avenue

The intersection of London Boulevard and Constitution Avenue experienced 18 total crashes over the 3-year analysis period. Of the 6 with complete data, there were equal number of rear-end, angle, and fixed object crashes (2 occurrences each). The average traffic volume for this intersection is 22,800 vpd, translating to a crash rate of 72.1 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- excessive speeds for sight distances on eastbound London Boulevard coming from the MLK bridge;
- proximity of the intersection with two one-way local streets just north of the intersection;
- absence of pedestrian crosswalks; and
- potential confusion and misuse of the westbound right-turn lane as part of the exit lane to northbound MLK Expressway on the west side of the intersection.

R. London Boulevard & Elm Avenue

The intersection of London Boulevard and Elm Avenue experienced 16 total crashes over the 3-year analysis period. Of the 7 crashes with complete data, the most common crash type was rear-end (4 occurrences). The other three were left-turn angle crashes. Daily traffic volumes were not available for the intersection. Therefore, sufficient data is not available to calculate the crash rate.

Based on visual observation during the field work, potential causes for crashes at this location include:

- recurring congestion resulting in frustrated and impatient motorists;
- grade transition on Elm Avenue down to London Boulevard;
- presence of numerous access drives on corner properties, particularly the southwest corner;
- potential for display vehicles for business on northeast corner blocking sight distances; and,
- considerable pedestrian and bike traffic using the intersection with the only marked crosswalk west of the intersection mid-block.

S. Portsmouth Boulevard & Deep Creek Boulevard

The intersection of Portsmouth Boulevard and Deep Creek Boulevard experienced 15 total crashes over the 3-year analysis period. Of the 10 crashes with complete data, the most common crash type was angle (4 occurrences), with all four involving vehicles turning left in front of oncoming traffic. The average traffic volume for this intersection is 18,600 vpd, translating to a crash rate of 73.7 per MVE.

Based on visual observation during the field work, potential causes for crashes at this location include:

- skewed geometry of the intersection;
- numerous access driveways near the intersection; and,
- recurring congestion resulting in frustrated and impatient motorists.

T. Victory Boulevard & Greenwood Drive

The intersection of Victory Boulevard and Greenwood Drive experienced 15 total crashes over the 3-year analysis period. Of the 12 crashes with complete data, the most prevalent crash type was angle (6 occurrences), three involving left-turning vehicles and three involving right-angle crashes due to failure to yield the right-of-way. The average traffic volume for this intersection is 24,800 vpd with a crash rate of 55.35 per MVE.

Based on visual observation during the field work, the project team could not identify any specific geometric or signalization issues with the intersection or any physical obstructions limiting sight distances or create driver distraction. The team assumes drivers travelling too fast for conditions, driver inattention, or frustration due to congestion to be potential causal factors.

Another dangerous intersection not represented in the police department data is the intersection of Frederick Boulevard and the westbound off ramp from I-264. This intersection has no traffic signal, although one may be warranted due to traffic volumes and speed.

Figure 5.12 Enforcement Areas

Enforcement and Traffic Calming

The Portsmouth Sheriff's Office writes the majority of moving violations in the City. Most tickets are for speeding or failure to obey. The Sheriff's Office has targeted the following areas for traffic violation enforcement based on citizen complaints in the recent past (Figure 5.12):

- Victory Boulevard (800 and 3000 blocks)
- Cavalier Boulevard and Greenwood Drive (truck issues)
- Mt. Vernon Avenue (300-600 blocks—citizen complaints)
- Carolina Avenue (citizen complaints)
- Elliott Avenue (3000 block and from Deep Creek Blvd to McLean Street—citizen complaints)
- Elmhurst Lane between Greenwood Drive and Portsmouth Boulevard

The City of Portsmouth has installed traffic calming devices—including chicanes, diverters and neck downs—in several locations in Olde Towne. Such devices are designed to slow traffic, improve neighborhood quality of life, and make the streets safer for all users. The Destination 2025 Comprehensive Plan Transportation Element calls for the City to develop traffic calming standards and procedures to mitigate the impacts of undesirable cut-through traffic on residential neighborhoods. There are a number of opportunities to expand the use of traffic calming techniques in Portsmouth including Mt. Vernon Avenue, Greenwood Drive, near schools and in mixed-use districts.

Parking

The City of Portsmouth requires high amounts of parking for most zoning classifications. However, even during the Christmas season, parking lots at Portsmouth shopping centers are only seventy to eighty percent (70%–80%) full. Based on suburban standards, the requirements are arguably too high. Only the D-1 downtown zoning district does not have parking requirements. Recently, the City has shown some flexibility in parking requirements by allowing a twenty percent (20%) reduction in required parking for a mixed-use loft project downtown.

In 2006, the City and its consultant, Kimley-Horn Associates, completed the Downtown Parking Master Plan. The City has implemented many recommendations from this plan including a two-hour parking limit. There is strong interest in "context-sensitive" design solutions when the need arises to replace outdated parking structures or build new ones. For example, "wrapped" parking structures are garages that blend in with the surrounding context because they incorporate retail, residential, and/or office uses facing the street. While the County Street garage is aging and in need of repair, more should be done to take advantage of the excess capacity in the Middle Street Garage before constructing a larger replacement facility.

In terms of neighborhood parking, Olde Towne residents assert that there is a lack of enforcement of the residential parking sticker program and that Coast Guard and High Street business employees park illegally in residential zones.

Vehicular System Planning and Project Development

In 2007, the Hampton Roads Transportation Authority (HRTA) was formed by nine independent cities and three counties in the Hampton Roads governments region to implement several improvements to the regional transportation system. A combination of taxes and tolls was to be used to fund these improvements. On February 29, 2008, the Virginia Supreme Court ruled the HRTA's ability to levy taxes and fees unconstitutional because the Virginia General Assembly could not delegate its taxing powers to an unelected body. As a result, the HRTA did not start collecting the taxes and fees outlined in General Assembly legislation (HB 3202). While the HRTA is now evaluating other options for project development and funding, it is still possible that several of the road-tolling efforts it proposed will go into effect, including the Midtown Tunnel and Downtown Tunnel.

The Midtown Freeway/MLK Extension is the highest profile road construction project currently planned in Portsmouth. (Figure 5.13) The goal of this project is to provide a grade separated highway connection from I-264 to improve through traffic flow and reduce the number of trucks using local streets. VDOT has determined a preferred alignment for the project, which will extend the MLK Freeway from its current terminus at London Boulevard to I-264 by elevating it across High and County Streets. On and off ramps will be provided at High Street.

A major regional transportation initiative, the proposed Hampton Roads Third Crossing (HRTC) has been prioritized in the 2030 Hampton Roads Long-Range Plan by the Hampton Roads Planning District Commission (HRPDC). As currently envisioned, the HRTC would be a multi-phase project that would provide a water crossing of the James River and Elizabeth River between I-664 and I-564, a widening of I-664 from Hampton to Bower's Hill, and a connection traversing Craney Island from the proposed water crossing to Route 164. Although the HRTC project phases are intended to be completed consecutively, only the first phase is included in the 2030 Hampton Roads Long-Range Plan.

VDOT and the City are working together on a phased project to reconstruct Turnpike Road from Alexander Corner to Constitution Avenue. The first phase of reconstruction will run from Frederick Boulevard to Constitution Avenue and is currently in the design phase.

Recently, a private infrastructure developer approached the Cities of Portsmouth and Chesapeake with an offer to construct a new Jordan Bridge—with accommodation for pedestrians and cyclists—in return for the ability to toll drivers. The City supports this effort.

The City has been upgrading traffic signals at the rate of about five intersections every year at an average cost of $18,000 each. The new signals are video controlled, which allows for improved management of traffic flow through automation and Central Signal Control. However, the Central Signal Control software is outdated and the City cannot add new intersections or make major control changes to the system due to the lack of support of the software. Most of the 120 video camera signal installations have been paid for through the City's paving fund, but at least 45 were funded with federal Congestion Mitigation and Air Quality (CMAQ) grants. The most recent full signal installation was at Bart Street and Airline Boulevard. This signal was paid for by Wal-Mart at a cost of $200,000.

Figure 5.13 Transportation Construction Projects

Vehicular System Issues

- At-grade railroad crossings continue to have an impact on traffic flow in Portsmouth.

- Parking requirements and garage construction can have a significant impact on traffic flow, urban design, and quality of life.

- While traffic in Portsmouth generally flows well, there are areas where daily congestion degrades the transportation network. These areas include the highway network near the Downtown and Midtown Tunnels, Alexander Corner, the intersection of George Washington Highway and Victory Boulevard, and portions of the High Street corridor.

- Parking lot entrances and exits as well as numerous driveways contribute to access management issues on City streets. Surplus curb cuts can increase congestion and the occurrence of crashes.

Vehicular System Opportunities

- New bridge construction, including the High Street Bridge over the Western Branch will provide the opportunity to accommodate future traffic volumes and all road users including bicyclists and pedestrians.

- A private infrastructure developer recently approached the Cities of Portsmouth and Chesapeake with an offer to construct a new Jordan Bridge with accommodation for pedestrians and cyclists in return for the ability to toll drivers. The City supports this effort. If the new Jordan Bridge project moves forward, there is an opportunity to improve Frederick Boulevard and link it to the new bridge via a new parkway.

- VDOT is in the process of adopting access control guidelines that will improve traffic flow on VDOT-controlled roads by reducing the number of curb cuts and potentially dangerous turning movements. The guidelines could be a good model for the City to adopt for roads under its jurisdiction.

- As an urban area with a wide variety of road users, the City of Portsmouth should consider adopting a "Complete Streets" policy for future roadway projects that will require the City to design streets for all users, including cars, transit, bicycles, pedestrians, and persons with disabilities. Existing VDOT policy guidelines for Complete Streets could be a good model for the City to adopt for roads under its jurisdiction, such as Turnpike Road.

Looking towards Portsmouth Marine Terminal

Looking towards Portsmouth Marine Terminal from Bayview Blvd. Path

Freight and Ports

Lying at the heart of global freight flows, Portsmouth's freight and port facilities have an enormous economic impact on the state and region and physical impact on the City. Because of its strategic location along the only 55-foot channel on the East Coast, a significant portion of goods headed to and from the U.S. come through Portsmouth and nearby Hampton Roads ports every day. In 2006, the Virginia Port Authority's four major Hampton Roads facilities handled 16.3 million tons of cargo valued at $36.1 billion. In terms of Virginia jobs, the ports supported 35,665 jobs paying $1.6 billion in compensation within the State . To support this commerce, large trucks and trains haul enormous volumes of goods on roads and rail lines running through Portsmouth and port facilities occupy large portions of the City's waterfront. (Figure 5.14)

For all the value of freight commerce to the region, state, and nation as a whole, Portsmouth and its residents bear a disproportionate share of its burdens in the form of traffic congestion, reduced quality of life, and environmental impacts. It is important to properly balance the beneficial impact of shipping commerce with the protection of the environment and quality of life for residents in Portsmouth. Port activity generates significant environmental impacts, ranging from damage to underwater habitat to air quality impacts caused by diesel-powered vehicles used to handle containers and ship engines that run on bunker fuel without stringent emissions control standards.

Freight System Existing Conditions

The Virginia Port Authority (VPA) monitors and operates what is commonly referred to as the Port of Virginia, encompassing the ports and terminals of the Hampton Roads area as well as the Virginia Inland Port in Front Royal near the District of Columbia. In fiscal year 2008, the Port of Hampton Roads handled 2,144,361 Twenty-Foot Equivalent Units, or "TEUs", making the Port the largest intermodal facility on the U.S. East Coast. Its terminals transfer freight to six direct-service trains connecting twenty-eight major cities each day and more than fifty trucking companies via a transportation network of rail lines, interstate, and local highways. The Port of Hampton Roads is the only port on the East Coast with the ability to improve in the four major areas that will allow continuous expansion—deep channels, intermodal infrastructure, terminal expansion, and cargo base. The Port of Hampton Roads includes the Virginia Port Authority (VPA) and the private APM Terminal.

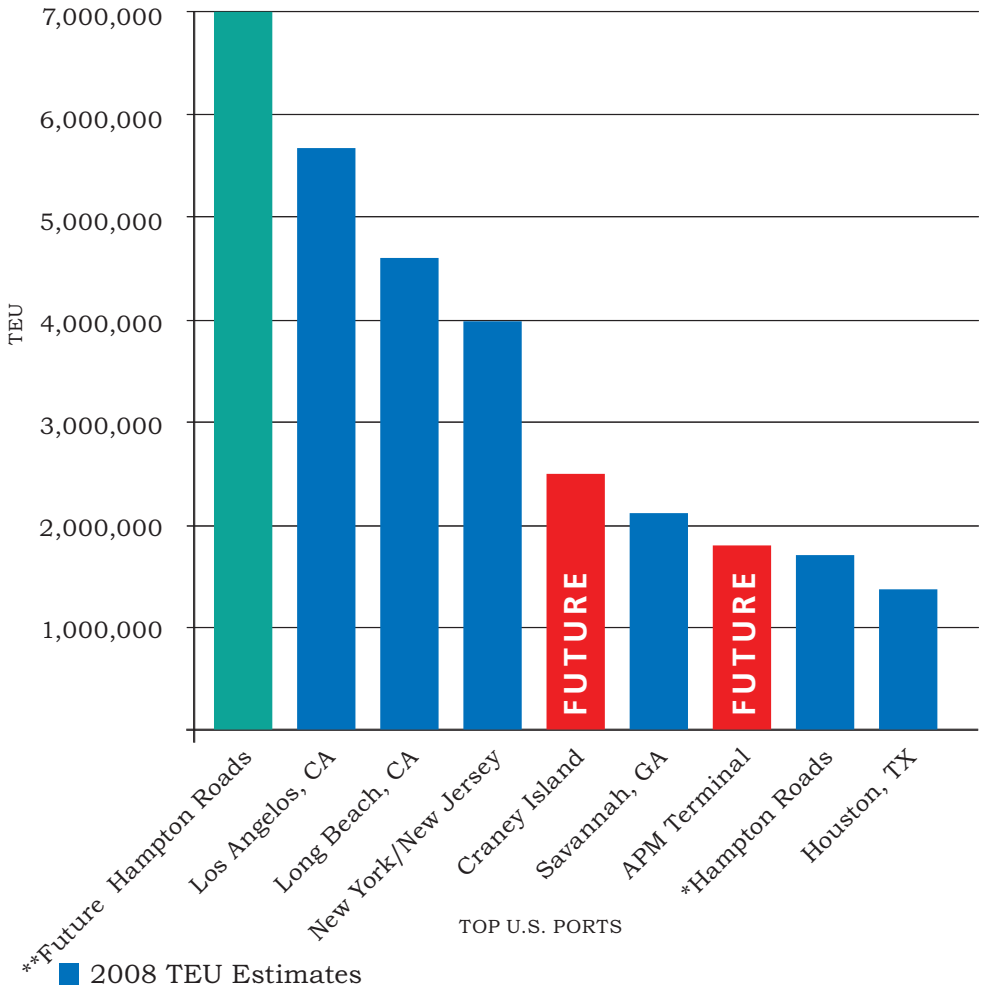
Currently, the City of Portsmouth is home to two major intermodal port terminals: VPA's Portsmouth Marine Terminal and the APM Terminal. In September 2007, APM invested over $500 million in Virginia to construct its new 290-acre container terminal in Portsmouth, just north of Route 164. The privately owned and operated terminal is expected to generate $6.4 billion in economic impact to the Commonwealth over its first fifteen years of operation.

There are numerous commodity and break-bulk port facilities along the City's waterfront in addition to shipyards and marinas. Also located in Portsmouth, the Norfolk Naval Shipyard is one of the world's largest shipyards and is responsible for construction and repair of the U.S. Navy's largest ships and nuclear reactors.

Ports

The ports of Virginia have a significant influence on not only the economy of the Hampton Roads region, but also the roadway and rail network in the area, particularly Portsmouth. The local facilities—Virginia Port Authority's Norfolk International Terminals, Newport News Marine Terminal, and Portsmouth Marine Terminal along with the privately-operated APM Terminals—handle approximately three million twenty-foot equivalent units (TEU) annually, with approximately half (1.6 million) entering or exiting through Portsmouth. With the addition of the Craney Island Marine Terminal (CIMT) and the implementation of improvements at the APM Terminal, the annual capacity has the

Figure 5.14 Annual Capacity of Top U.S. Ports



* = Portsmouth Marine Terminal (PMT) + Newport News Marine Terminal (NNMT) + Norfolk International Terminal (NIT)

** = PMT + NNMT + NIT + APM + CIMT

potential to double to approximately 6 million TEUs by the year 2030. As those two facilities become fully operational, Hampton Roads' collective terminals will be capable of processing more throughput than that of any other port in the United States.

As expected with such volume, truck traffic will become more prevalent along the local roadways in the region. Assuming an equal number of 1- and 2-TEU truck loads, approximately 7,200 trucks are currently traversing through the Hampton Roads region on a daily basis. This number has the potential to increase to approximately 16,000 trucks a day with full build-out of the APM and Craney Island Terminals. Considering the location of Portsmouth with two key east-west routes connecting the ports to I-64 and I-664, it is expected that most of the increased freight traffic will be using the Portsmouth roadway network. The Craney Island Road/Rail Connector (CIRRC) will shift some of the growing capacity to rail and the MLK Freeway Extension will help alleviate freight intrusion on local streets south of the ports. Yet, it is imperative that future transportation improvements outlined in the Portsmouth Master Transportation Plan account for the needs of increased freight traffic by highway and rail, as well as how to keep truck trailers on identified truck routes and off local neighborhood streets.

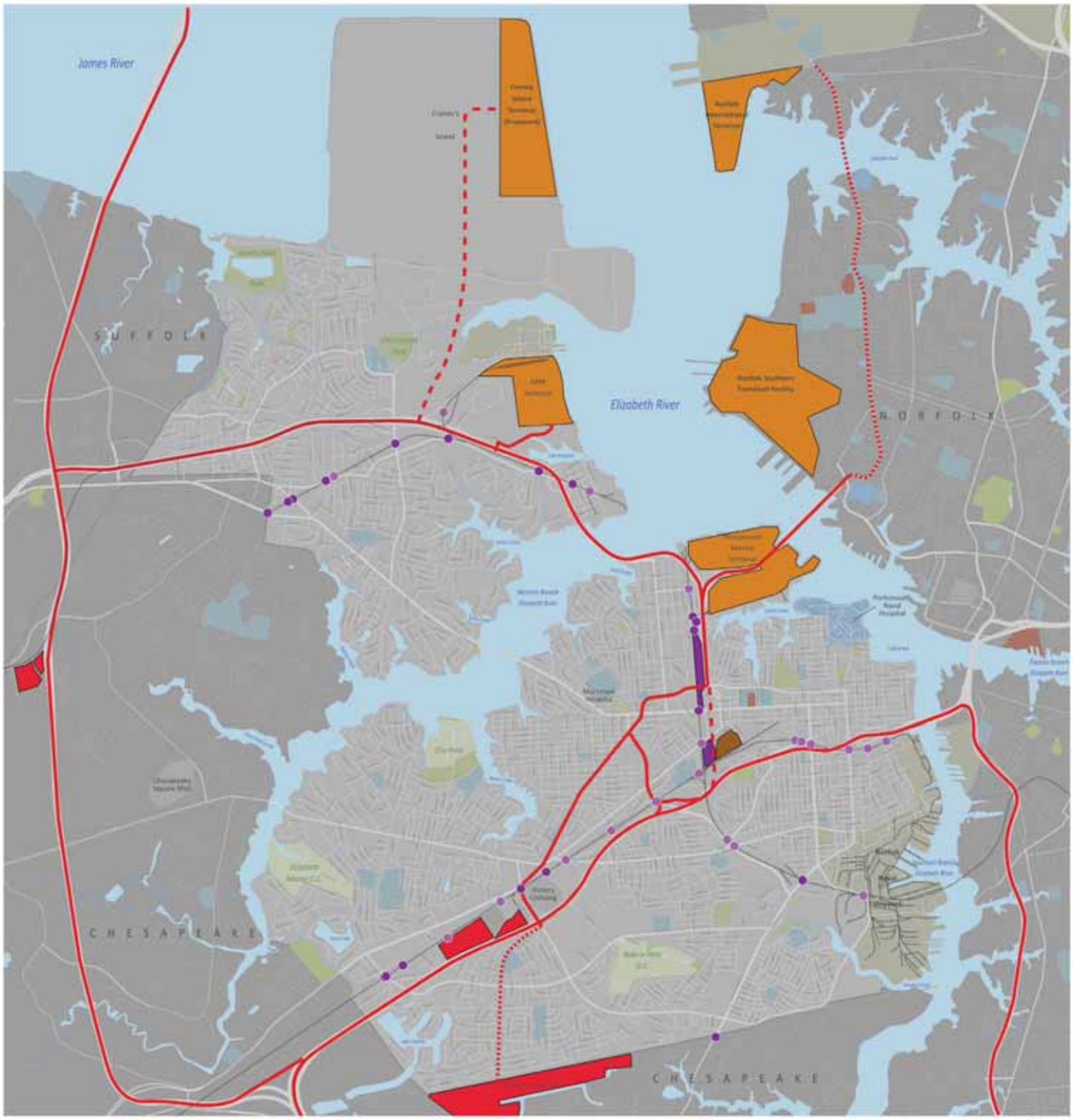
Trucks

With the Portsmouth Marine, APM, and future Craney Island Marine Terminals, countless trucks travel to, from, and through the City of Portsmouth, carrying imports and exports between producers, shipping lines, rail lines, retailers, and end users. Recently, there has been significant growth in the volume of trucks permitted to operate in Portsmouth. The City granted 2,100 truck permits in 2007 and 2,700 in 2008. These numbers likely do not indicate the growth in traffic to and from the APM Terminal because most of those shipments traverse Portsmouth entirely on state roads (Highway 164) and thus do not require city permits.

Each of the port facilities has easy access to interstate and freeway facilities, with direct access to I-664 for the APM Terminal and access to VA 164 and MLK Freeway for the Portsmouth Marine Terminal. One crucial link that is currently missing is the future extension of MLK Freeway south to I-264. The freeway currently ends at High Street, dumping freight vehicles into the local street network. These trucks travel Harbor and High Streets, before choosing routes via Turnpike, Frederick, London, and Airline Boulevards to reach the interstate. Until the MLK extension is constructed, the intrusion of truck traffic into the neighborhoods will continue to present safety, congestion and noise issues, as well as roadway maintenance problems.

Truck traffic in neighborhood settings has also been an issue of debate along Greenwood and Cavalier Boulevards in south Portsmouth. Trailers from Cavalier Industrial Park, located just south of the Cavalier Manor neighborhood in Chesapeake, have used the two streets as a shortcut between the industrial park and I-264. Alternative routes can take up to 45 minutes longer and would severely restrict the number of runs that a local truck could make in one day. Ongoing efforts have been made by the City of Portsmouth and Chesapeake to curb the heavy vehicle traffic through the neighborhood, including prohibiting truck traffic in the area in favor of access to the park via the I-64 interchange at Military Highway. But enforcement is limited because the former Sheriff's Office truck enforcement team was taken over by the Police Department, which lacks trained staff for the task.

Figure 5.15 Port Rail Warehouse Facilities and Truck Routes



Rail Freight

Portsmouth is served by two Class I railroads—CSX and Norfolk Southern (NS). A Class I railroad has revenue of more than $250 million per year. These railroads provide excellent connections to the national freight railroad infrastructure. In addition, the Norfolk & Portsmouth Belt Line Railroad (owned jointly by CSX and NS) provides neutral access to local shippers and interchanges cars among railroads. Other railroads also serve the region, including the Chesapeake and Albermarle Railroad and the Bay Coast Railroad.

As a terminal switching railroad linking rail yards, ports and warehouses with the national rail networks of CSX, Norfolk Southern (NS) and other railroads, the Norfolk & Portsmouth Belt Line Railroad (the Belt Line) performs the majority of daily rail movements in Portsmouth. The railroad owns its track within Portsmouth and shares portions with CSX operations. The Belt Line owns two properties in Portsmouth that it promotes for industrial development. These locations could provide industrial development opportunities for the City of Portsmouth. For example, the Belt Line is working with a European logistics company to develop a transloading facility – transferring goods from ship to warehouse to rail – at the Port Norfolk Yard.

Belt Line operations are hampered by several physical constraints to its infrastructure. Several of the railroad's yards and sidings are inadequate for longer unit trains operated by CSX and NS. There are two locations where the Belt Line could construct siding yards: The existing yard east of Virginia Avenue and north of London Boulevard as well as a parcel running parallel to Frederick Turnpike south of Portsmouth Boulevard. If a roadway connector is built between the MLK Freeway extension and a new Jordan Bridge, the Belt Line will need to be involved at all levels of planning for the project. While much of the railroad's property is single-tracked, there is generally enough room in the right of way for double tracking. The railroad would like to increase top speeds from 10 mph to 25 mph, but this would require the approval and installation of expensive crossing gates. The Belt Line must look to its owners and available grant programs to find funding to remedy these infrastructure choke points.

CSX railroad is actively investing in Portsmouth at present. Currently, CSX operates a container transloading facility and brings several ethanol tank trains into their rail yard near the PRHA Swanson Homes. The containers and ethanol are transloaded to trucks at this location to be delivered throughout the region. CSX plans to construct a second, similar ethanol transloading facility just to the west of the existing facility. This operation poses a safety risk and CSX has trained with emergency responders to respond to an incident. CSX desire is to have PRHA relocate the Swanson Homes out of this industrialized area. CSX will need to keep 1000 feet of rail active to the east of Godwin Street.

If CSX carries out its plans for new transloading facilities, there will be a significant increase in the amount of truck traffic at the intersection of Constitution Avenue, County Street, and Turnpike Road. It is likely that this intersection would need to be completely rebuilt. Such a project should also be evaluated for access to and from the proposed MLK Freeway project. It may be necessary to move the entrance and exit ramps from the MLK Freeway one south in order to better serve the increased truck traffic related to the CSX transloading facility.

Norfolk Southern operates a line that parallels much of the southern boundary of Portsmouth. While not willing to take the lead on such a project, NS would be supportive of the construction of a grade separated crossing of its line at George Washington Highway. Otherwise, NS does not have any specific plans to improve infrastructure or increase operations within Portsmouth at this time.

Constructoin of new railroad track in the median of the Western Freeway

Recreational Boating and Marinas

Portsmouth is well-positioned to attract a larger amount of recreational boating activity and the economic benefits that come with it. Located at the zero-mile marker of the Intracoastal Waterway, the City can become a world-class maritime center for recreational boating – in line with Newport, Rhode Island and Annapolis, Maryland. Extending all the way to Florida, the Intracoastal Waterway is a navigable inland water route used by cargo shippers as well as recreational boaters traveling up and down the East Coast.

There are public access marinas located at the nTelos Pavilion, High Street, Harbor Court, Craford Bay, Scott's Creek, the Western Branch of the Elizabeth River, and various other creeks and inlets in the City. However, only the marina near the nTelos Pavilion is publicly-owned. Public transportation service between the marinas and commercial districts would increase the utility of these facilities to visiting boaters.

Freight System Planning and Project Development

A project is currently underway to create a rail link between the APM Terminal and other railroads in Suffolk via the median of Route 164. This project, known as the Commonwealth Railway Mainline Relocation Project (or Centerline Rail), will provide a direct link from the APM Terminal and future Craney Island terminal to connections with Norfolk Southern and CSX railroads. It will reduce truck traffic to and from the new port facility, thereby improving air quality, reducing congestion, and limiting safety conflicts between automobiles and trucks in the Churchland area. It will also make it possible for the existing rail corridor to be used as a greenway for bicyclists and pedestrians—a vital open space and transportation opportunity for the surrounding area.

The Heartland Corridor project is a national railroad infrastructure project that will improve the attractiveness and efficiency of the region's ports while removing excess truck traffic from the roads. The project will focus on upgrading Norfolk Southern's rail line between Virginia and Ohio to accommodate double-stack container trains, potentially decreasing the number of trucks on Portsmouth roadways. When completed, the project will make Hampton Roads ports more attractive to shippers by reducing rail shipping time to Chicago and the Midwest.

The VPA and the U.S. Army Corps of Engineers are partnering to construct the Craney Island Eastward Expansion. The Craney Island Eastward Expansion will effectively extend the life of Craney Island as a dredged material placement area and provide land for the construction of a 4th state-owned marine terminal—the Craney Island Marine Terminal (CIMT). CIMT will provide an additional 2.5 million TEUs capacity per year—more than doubling the current capacity of the Port of Virginia—along with significant economic benefits that will span the Commonwealth and beyond. The extent to which the region can maximize benefits created through the construction of CIMT is dependent on developing a compatible and efficient transportation infrastructure. Integral to this infrastructure is the construction of a multi-modal link between US Route 164, the Commonwealth Railway "Centerline", and the CIMT.

Regional transportation plans have accounted for the future construction of a dedicated corridor from CIMT to Route 164, including concepts vetted and approved by the Virginia Department of Transportation (VDOT) and incorporated in the Department Hampton Roads Planning District Commission 2030 Long Range Transportation Plan and 2001 Hampton Roads Third Crossing Final Environmental Impact Statement (FEIS). However, initial alignments for the connection predated the construction of the new APM Terminal, including a dedicated interchange for the facility, and thus affirmed the need to identify alternative locations and alignments for the dedicated connection.

Accordingly, the VPA is working with VDOT to design and construct a road and rail connection between Route 164 and the planned Craney Island terminal. The Craney Island Road and Rail Connector (CIRRC) is essential to providing the additional transportation capacity needed to handle the increase in cargo that will emerge with the opening of the CIMT. The CIRRC is scheduled to be complete by the end of 2013 to support the Phase 1 construction of CIMT. As an initial step in gaining access to Route 164, VDOT has requested the VPA perform an interchange modification report (IMR) to identify a feasible and functional alignment for the proposed connection between Route 164 and the future CIMT. Therefore, the purpose of the CIMT-IMR is to gain concurrence from VDOT and the Federal Highway Administration (FHWA) with respect to the proposed conceptual geometric design of the Craney Island interchange with Route 164.

The Craney Island Marine Terminal has been designed to accommodate a connection with the proposed Hampton Roads Third Crossing (HRTC). A major regional transportation initiative, the HRTC has been prioritized in the 2030 Hampton Roads Long-Range Plan by the Hampton Roads Planning District Commission (HRPDC). As currently envisioned, the HRTC is a multi-phase project that would provide a water crossing of the James River and Elizabeth River between I-664 and I-564, a widening of I-664 from Hampton to Bower's Hill, and a connection traversing Craney Island from the proposed water crossing to Route 164. Although the HRTC project phases are intended to be completed consecutively, only the first phase is included in the 2030 Hampton Roads Long-Range Plan.

Freight System Issues

- The economic development potential of the Hampton Roads freight system should be balanced with residents' quality of life concerns. For example, balance should be found between the needs of shippers to travel through the City of Portsmouth and the desire of residents that their neighborhoods be free of the safety and noise issues related to truck traffic.

- Railroad grade crossings continue to impact the free flow of traffic in Portsmouth.

- Trucks traveling from the ports to local warehouse facilities and Interstate highways must often use City streets to make connections. Specific examples include the gap between the MLK Freeway and I-264 and residential streets in Port Norfolk and Cavalier Manor.

Freight System Opportunities

- Projects such as the MLK Freeway Extension and an expanded Midtown Tunnel can reduce the impact of trucks on the regional road network but they must be balanced with neighborhood quality of life concerns.

- In addition to Portsmouth's role as a hub of commercial shipping, there is an opportunity to make the City a widely known recreational boating destination similar to Newport, RI or Annapolis, MD. This strategy would build on Portsmouth's location at the zero-mile marker on the Intracoastal Waterway and its abundant marinas and services for recreational boaters.


EXIT