Middle Peninsula Planning District Commission
2035 Regional Long Range Transportation Plan

Final Technical Report

January 2012

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CHAPTER 1 – INTRODUCTION

The *Middle Peninsula Planning District Commission 2035 Regional Long Range Transportation Plan* (the Plan) provides a blueprint for the development and maintenance of a rural multi-modal transportation system that supports existing and projected travel demands to the year 2035 and complements previously established metropolitan area plans throughout the State. This Technical Report provides details on the identification of existing transportation needs, forecasting of future travel demands, identification of future travel needs, and the development of transportation improvement recommendations for the region's transportation system. Recommendations were developed to satisfy both current and future needs. The Middle Peninsula Planning District Commission adopted this Plan for use as a regional and local planning tool on January 25, 2012.

Purpose and Scope

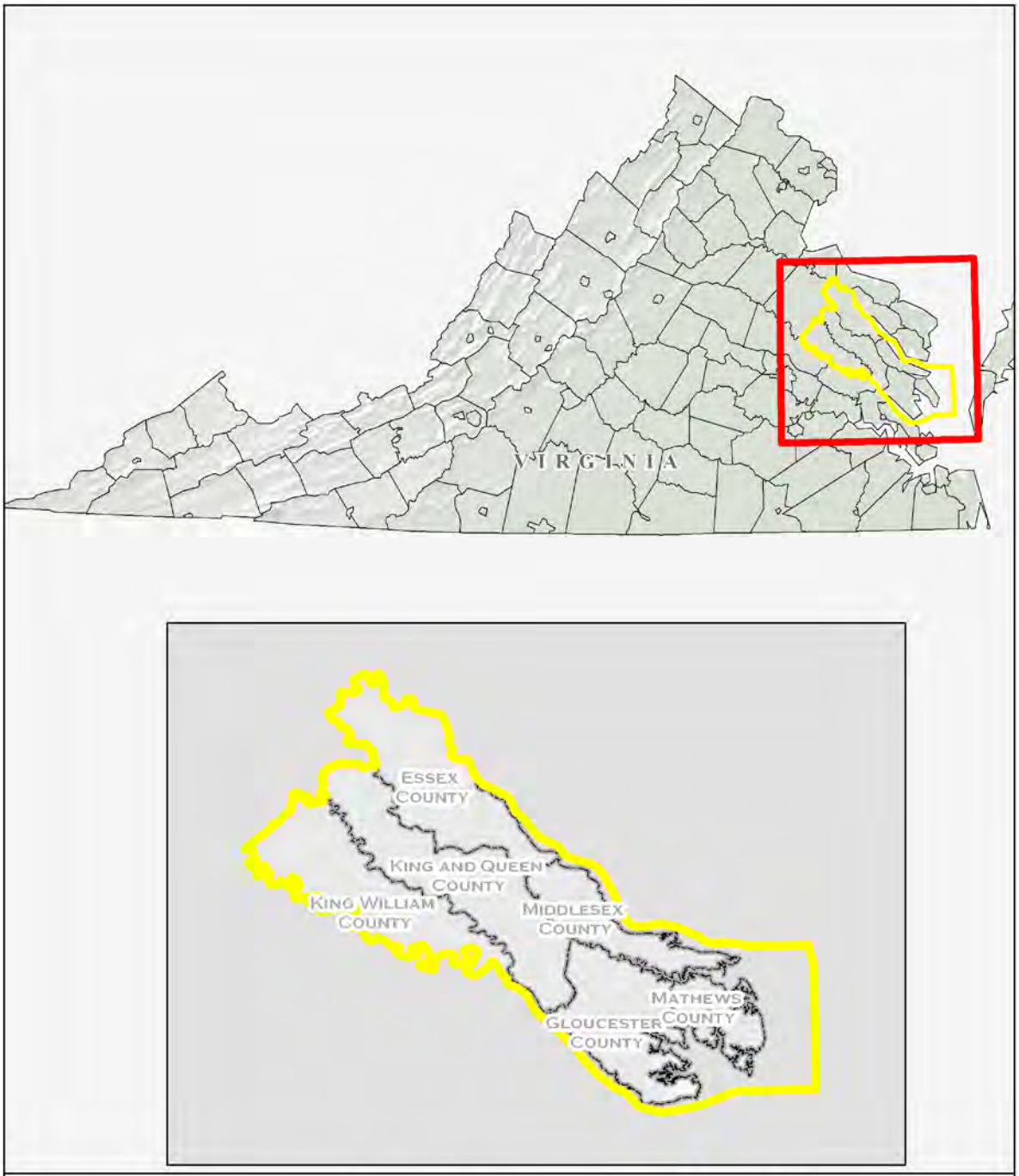
The Plan was developed as a cooperative effort between the Virginia Department of Transportation (VDOT), the Middle Peninsula Planning District Commission (MPPDC), and the member jurisdictions represented. The purpose of the study was to evaluate the region's rural transportation system and recommend a set of transportation improvements that could best satisfy existing and future travel needs. The study identified needs for all modes of transportation, and interaction between modes where a reduction in vehicle trips might be possible.

Improved transportation systems remain vital to Virginia's, as well as the region's, continued economic growth and development. The provision for the effective, safe, and efficient movement of people and goods is a basic goal of all transportation programs in the Commonwealth of Virginia. This guiding principle, together with consideration of environmental issues, local mobility needs, and associated development policies, was the basis for the development of this transportation Plan.

The region, its member localities, and VDOT will use this Plan when initiating or evaluating requests for specific transportation projects. The list of recommendations will also be used in the statewide transportation planning process in order to better quantify the magnitude of statewide needs.

Study Area

The MPPDC serves the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex, and the Towns of Tappahannock, Urbanna, and West Point (Exhibit 1). The Middle Peninsula is a predominantly rural area with denser development occurring in the southeast portion of the region in Gloucester County. The geography of the MPPDC is primarily influenced by waterways including the Rappahannock, Mattaponi, Pamunkey, and York rivers, and the Chesapeake Bay. The region lies on the edge of three larger metropolitan areas, Fredericksburg, Richmond, and Hampton Roads. The transportation network is influenced by the waterways, which generally travel northwest to southeast; many of the primary arterials also run in this direction. The majority of the MPPDC is rural, however, part of Gloucester County lies within the Hampton Roads Transportation Planning Organization (HRTPO) area. For this Plan's purposes, Gloucester County is included in its entirety, but the road network within the HRTPO was not analyzed. There are two state-recognized Native American Reservations located in the Region: the Mattaponi Indian Reservation and the Pamunkey Indian Reservation.


VIRGINIA
ESSEX COUNTY
KING AND QUEEN COUNTY
KING WILLIAM COUNTY
MIDDLESEX COUNTY
MATHEWS COUNTY
GLOUCESTER COUNTY
2035
RURAL LONG RANGE TRANSPORTATION PLAN
Essex, Gloucester
King and Queen,
King William, Mathews
and Middlesex
Counties
EXHIBIT 1
LOCATION MAP
Miles
0
50
100
N

I-95 passes just west of the region and I-64 runs northwest to southeast just south of the region. The roadways of the region tend to run in a northwest to southeast direction due to the location of waterways within and between the counties. Primary corridors running generally east to west include US 360, VA 14, VA 30, and VA 33. The main north-south corridors are US 17 and VA 14 (Exhibit 2).

There are two state-recognized Native American Reservations located in the Region: the Mattaponi Indian Reservation and the Pamunkey Indian Reservation. The Mattaponi Reservation stretches along the borders of the Mattaponi River in King William County and today encompasses approximately 150 acres. The Pamunkey Reservation is located on the Pamunkey River, adjacent to King William County and covers approximately 1,200 acres.

Demographic Overview

The Middle Peninsula region has experienced steady population growth, which is expected to continue. Total population was estimated in 2008 at 89,237. Beginning in the 1970s, Gloucester County population began to grow more rapidly than the other counties, rising from 30% of the region's population to just over 40% by 2008. This trend is expected to continue. All of the counties experienced growth in population between 2000 and 2008; Essex and King William Counties experienced the most growth. By 2030, only Mathews County is expected to have minimal growth. Gloucester and King William Counties are expected to have the most growth by 2030 of 43% and 41%, respectively.

Exhibit 3. Current and Projected Population

	1990	2000	2008	2000-2008	2010	2020	2030	2008-2030
Essex County	8,689	9,989	10,732	7.4%	10,969	11,960	12,974	20.9%
Gloucester County	30,131	34,780	36,109	3.8%	40,474	46,013	51,824	43.5%
King and Queen County	6,289	6,630	6,935	4.6%	6,891	7,187	7,564	9.1%
King William County	10,913	13,146	15,765	19.9%	16,187	19,119	22,227	41.0%
Mathews County	8,348	9,207	9,418	2.3%	9,097	9,077	9,068	-3.7%
Middlesex County	8,653	9,932	10,277	3.5%	11,012	12,055	13,181	28.3%
Middle Peninsula	73,023	83,684	89,237	6.6%	94,630	105,411	116,838	30.9%

Sources: US Census, 1990, 2000; Weldon, 2009; and VEC, 2009.

The three largest employment sectors within the region are government, retail trade, and health care and social assistance (VEC, 2010). The unemployment rate in region's jurisdictions ranged from 5.0% to 8.4% in November 2009. Median household income in the counties had a range of $35,941-$49,876 in 2000, which was in general below the median in the Commonwealth in 2000, $46,677 (VEC, 2008).

Please note that this demographics section was developed before all results from the 2010 Census were made available. The current population data and projections will be used when updating this plan in the future.

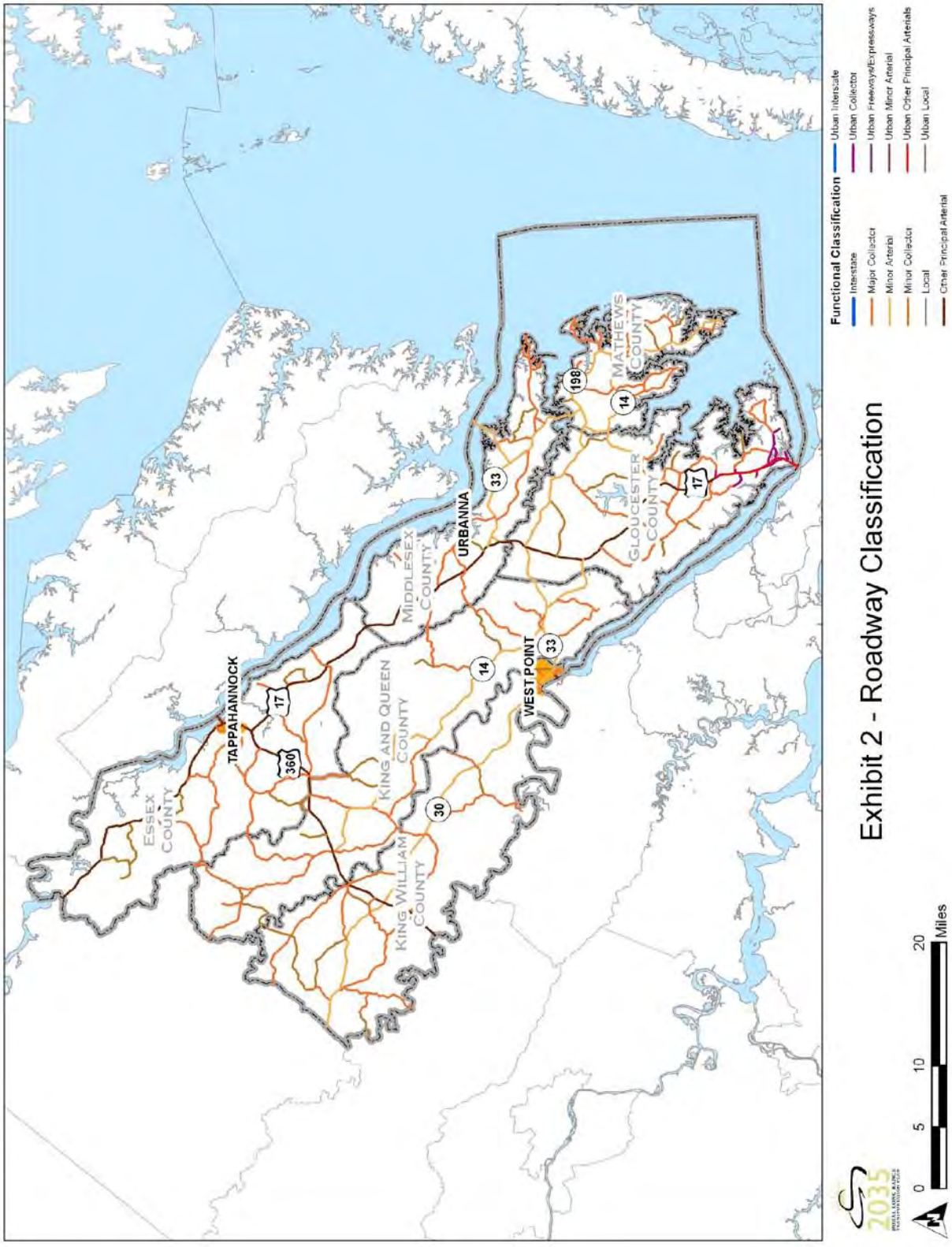


Exhibit 2 - Roadway Classification
Functional Classification
Interstate
Major Collector
Minor Arterial
Minor Collector
Local
Other Principal Arterial
Urban Interstate
Urban Collector
Urban Freeways/Expressways
Urban Minor Arterial
Urban Other Principal Arterials
Urban Local
ESSEX COUNTY
KING AND QUEEN COUNTY
KING WILLIAM COUNTY
MIDDLESEX COUNTY
GLOUCESTER COUNTY
MATHEWS COUNTY
TAPPAHANNOCK
URBANNA
WEST POINT
17
360
30
14
33
198
0
5
10
20
Miles
2035

CHAPTER 2 - STUDY APPROACH AND ANALYSIS METHODS

The Transportation Plan was developed as part of a structured approach including:

- Development of regional transportation goals and objectives,
- Public involvement,
- Data compilation and collection,
- Data analysis,
- Identification of transportation deficiencies and recommendations, and
- Environmental overview.

Goals and Objectives

Common Rural Regional Long Range Plan Goals

It is important for each region to develop transportation goals and objectives to serve as a guide for future development. These goals directly and indirectly affect transportation in the individual PDCs. Goals with direct impacts upon transportation include improvements to various modes of travel, greater multi-modal coordination, and enhanced ridesharing opportunities. Goals with indirect impacts upon transportation include designated growth and development areas, preservation of conservation areas, and the enhancement of tourism.

Each of the 20 PDCs in Virginia that include rural areas within their boundaries established goals and objectives as a part of this project. Similar concepts within the goals of the PDCs were found and used to shape common regional long range plan goals to address rural transportation planning across the Commonwealth. The goals and objectives served as a guide in the transportation needs assessment and development phases of the Plan. These goals are also consistent with the goals of *VTrans 2035*:

Goal 1. Enhance the connectivity of the existing transportation network within and between regions across all modes for both people and freight.

Objectives

Enhance access and connections to ports, airports, transit stations, or other modal facilities, as well as between neighborhoods and subdivisions, in order to enhance and optimize the efficiency of the region's transportation system.

Encourage the development of passenger rail service in regions where it is limited or unavailable.

Improve roadways and intersections on key trucking corridors.

Support existing and expand fixed-route rural transit, park and ride lots serving designated growth areas, and demand-responsive services.

Ensure adequate access to major activity centers for vehicles, mass transit, pedestrians, and bicyclists.

Evaluate alternative transportation modes during the development of transportation plans.

Goal 2. Provide a safe and secure transportation system.

Objectives

Identify dangerous transportation mode/user conflicts within the transportation system.

Increase safety awareness of users and providers of transportation systems.

Use traffic calming measures at appropriate locations.

Use intelligent transportation systems, such as variable message signs, on appropriate roadways.

Increase visibility on roadways as an additional safety measure.

Goal 3. Support and improve the economic vitality of the individual regions by providing access to economic opportunities, such as industrial access or recreational travel and tourism, as well as enhancing intermodal connectivity.

Objectives

Encourage projects within all modes of transportation that improve the global competitiveness of the region.

Encourage regional transportation planning, investment, and projects that support new and/or expanding economic development opportunities.

Develop individual bicycle and pedestrian trails within the PDCs that have been identified as priorities for tourism and recreation as well as coordinating with local park and recreation plans and the small urban area plans.

Designate additional scenic byways as needed to promote tourism.

Emphasize commercial rail as an increasingly important means of goods movement.

Promote and establish attractive gateway/entrance corridors.

Goal 4. Ensure continued quality of life during project development and implementation by considering natural, historic, and community environments, including special populations.

Objectives

Design and build developments and transportation facilities that are compatible with the aesthetic, historic, and physical characteristics of area localities.

Minimize transportation impacts to historic, cultural, and environmental resources and local communities.

Include public awareness and outreach in planning and development of projects.

Develop a set of design criteria, including landscaping, setbacks, and buffers, specifically for rural roadways that improve mobility and safety while keeping rural aesthetic conditions intact.

Formulate and adopt Context Sensitive Design criteria in transportation planning and project development.

Goal 5. Preserve the existing transportation network and promote efficient system management in order to promote access and mobility for both people and freight.

Objectives

Coordinate transportation planning between jurisdictions and between PDCs to improve

mobility.

Support the implementation of traffic flow measures to alternative routes through the region in times of highway accidents, congestion, and lane closures.

Support and expand alternative passenger transportation efforts such as public transit, transit programs for the elderly or disabled within and between regions, ride sharing, and other alternative transportation options.

Consider congestion management techniques in transportation planning, such as using secondary roads, inter-parcel connection, and shared commercial streets/entrances.

Ensure corridor preservation by identifying and preserving right-of-way for future transportation improvements.

Goal 6. Encourage land use and transportation coordination, including but not limited to, development of procedures or mechanisms to incorporate all modes, while engaging the private sector.

Objectives

Promote the coordination of transportation improvements as land use changes and focus the majority of improvements within designated growth areas.

Within designated growth areas, encourage mixed-use developments with adequate internal circulation systems to minimize the length and number of vehicular trips and optimize traffic flow.

Promote street design in proposed new developments that facilitates non-motorized trips and investments in an interconnected transportation network (transit and bicycle/pedestrian facilities).

Consider innovative land development patterns and site designs to prevent additional congestion and improve accessibility.

Coordinate planning and development with Indian Tribal governments, governmental transportation agencies at all levels, and environmental land use plans and regulations.

Middle Peninsula PDC Goals and Objectives

While it is crucial for the well-being of the general public and important for economic development purposes to have a safe and efficient statewide and regional fully integrated multi-modal transportation system, it is also recognized that each region has its own unique perspective on how this can best be accomplished. Rural transportation planning in the MPPDC is guided by the Rural Technical Committee (RTC), which was formed in Fall 2006. The RTC has reviewed the needs of the region and formulated goals and objectives for the region. Information contained here served as a guide in the transportation needs assessment and development phases of the Plan. These goals and objectives, when combined with the analysis of the transportation network, support the Plan recommendations.

Goal 1. Support the economic vitality of the region, especially by enabling global competitiveness, productivity, and efficiency.

Goal 2. Increase the safety of the transportation system for motorized and non-motorized users.

Measures/Strategies

Recent crash rates in the region.

Crash locations in the region.

Goal 3. Increase the security of the transportation system for motorized and non-motorized users.

Measures/Strategies

Increased safety for bicycle and pedestrian facilities along existing routes.

Provide a more pedestrian friendly/walkable community in urban areas.

Address alternative forms of transportation in communities.

Goal 4. Increase the accessibility and mobility of people and freight.

Measures/Strategies

Assess enhancement of freight movement using current daily truck volumes.

Provide for long range mobility for persons and goods in order to serve regional employment needs.

Enhance inter-regional connections in order to access intermodal facilities and major activity centers.

Encourage walkable communities to increase the mobility of non-drivers.

Increase availability of regional transit providers.

Utilize any available funding to increase transit service providers in the region.

Goal 5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and locally planned growth and economic development patterns.

Maintain and enhance connectivity between state and local roads that support rural economic growth.

Study alternative routes to enhance local traffic movement and relieve pressure on arterials and collectors.

Consider recreational travel and tourism in transportation planning.

Evaluate the overall social, economic, and environmental effects of transportation decisions.

Evaluate the effect of transportation decisions on land use and land development.

Focus on transportation enhancements such as: designating roads as scenic byways; utilizing available landscape programs; access management; and setbacks and buffers on scenic roads to protect vistas.

Goal 6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

Utilize existing rights-of-way.

Promote greenway corridors and trails for connectivity across the region.

Acquire new rights-of-way for future uses.

Goal 7. Promote efficient system management and operation.

Improve system performance and preservation through: methods to address under and over utilized facilities; preservation of rights-of-way; transportation needs identified through analysis of existing/future conditions; methods to expand and enhance transit services; and improvements that reduce traffic flow and emissions.

Enhance the efficient movement of people and goods: current level of service; current volume to capacity ratio; current passenger car equivalents; and alternative traffic routing.

Goal 8. Emphasize the preservation of the existing transportation system, where appropriate.

Planning coordination to include: coordination with local government officials and Indian Tribal governments; local, county, metropolitan, and state transportation plans; and environmental land use plans and regulations.

Present conditions measures: bridge conditions (both current state and life of bridge) and road conditions.

Public Involvement

The advancement and acceptance of the study depended greatly upon outreach to the public, local governing bodies, and the PDCs. An effective and efficient communications effort must be well-planned and flexible. Public involvement elements incorporated into this study included:

- Development of a Public Involvement Plan,
- Information sharing with the general public and public officials through meetings and use of the VDOT website,
- Provision of media relations through the development and use of press kits, press releases, and the coordination of media-related events,
- Focus groups to determine needs of the traditionally underserved, and
- Public meetings and public hearings.

Events held to date include the public meeting introducing the project to the public on November 21, 2008. A meeting was held to present the draft Plan to the public on May 5, 2011. Comments on the draft Plan obtained from the public meeting have been addressed in this report. A full list of the comments appears here.

Comment	Response
Updated Census data needs to be used.	Only Total population and race data are available from the 2010 Census for counties and census tracts. The other data presented (Disabilities and Low-Income) are not available in the decennial census.

Comment	Response
The bypass around Tappahannock in Essex County (Rec. # 31) will result in the death of businesses in town. However, the road width through town is insufficient and should be widened with the minimum amount of relocations. This is a hurricane evacuation route and bottlenecks occur.	The bypass will alleviate bottlenecks but is at sufficient proximity to the town that it should not adversely affect the economy of the town. The bypass would be the best solution to hurricane evacuation. The turn lanes proposed as a part of Rec. #22 and #24 would also alleviate some bottlenecks in the town.
The regional goals should be revised.	The regional goals were produced through a regionally collaborative process combining participants and stakeholders from both the public and private sectors.
Bike planning needs to be addressed better.	The Middle Peninsula is one of a few regions in the entire Commonwealth that has a specific bike focus group that developed a regional plan. The focus group took a realistic look at existing roadway facilities and future improvements to enhance bicycling to the extent possible in a rural environment.
The airports in the region are too close together. They should have been better planned.	The Virginia Department of Aviation makes recommendations on issues such as airport overlap. The airport overlap is analyzed based on travel time not necessarily distance between existing airports.
The plan was developed using Sustainable Development Agenda 21 framework.	The plan was modeled on the long range plans used for small urban areas and metropolitan areas within the Commonwealth not any part of the Sustainable Development Agenda 21 framework.

Comment	Response
The plan affects individuals' property rights.	The plan provides recommendations for the transportation network that could be adopted by local and state agencies. If any projects were approved that could affect individual properties, effects on all aspects of the environment would be assessed before the project was constructed. Public involvement would also be a part of the environmental process.
The plan is unnecessary and bike paths are unneeded. A transportation plan should be about safety.	Transportation planning is necessary for the environmental planning and construction process. Bicycle planning is an important component to the transportation network.
The PDC should be dissolved and the money used for local planning instead.	Regional planning is important to balance local needs with regional and state needs.
Fixing and repairing the existing roads is not addressed.	Many of the recommendations address these concerns, and these concerns only, e.g., sight-distance, geometric deficiencies, shoulder and lane-width.
There has been no public involvement.	A previous meeting was held on November 21, 2008.
The meeting time and place were inconvenient. Meetings should have been held in each jurisdiction. The meetings were unpublished.	One meeting per PDC was used in order to minimize cost to the taxpayers. Standard VDOT advertisement times and locations were used.

Data Compilation and Collection

An extensive effort was made to compile and collect data to be used in the study analysis. The information obtained and how it was used follows:

- Socioeconomic, US Census, and employment data was used not only to determine where trip origins and destinations occur, but also to assist in determining those areas where the greatest demands for improvements might take place.
- Previously identified needs from other studies (by mode of travel) were reviewed to determine how the needs were identified and recommendations defined, and as a tool to identify those potential improvements that are still applicable.
- Capital improvement programs (by mode of travel) were needed to gain insight on modal deficiencies receiving top priority for improvement through the assignment of funding. These funded improvements automatically qualify for the top tier of needs due to their

advanced status as active projects.

- Facility inventory (by mode of travel) was used to determine what currently exists and to help assess how much of the inventory may be deficient.
- Roadway accident data were used in the determination of high accident locations in need of improvement to reduce the levels of occurrence.
- Freight generator inventory information was crucial both in the determination of work activity destination centers and the goods movement analysis.
- Location and attributes of major activity centers and high growth areas were necessary to assist in the determination of areas likely having the greatest current needs and where additional needs might exist in the future.
- Location and attributes of water and sewer infrastructure proved useful as a tool in determining areas within the MPPDC where future growth can be anticipated.
- Data on commuting patterns and labor market trends were used in the determination of trip origins and destinations and the analysis for ridesharing potential.
- Mapping of disadvantaged population groups was used in the determination of recommendations for improvements to accommodate those groups.
- Summaries and copies of existing regional and local plans and studies provided insight on regional and local development scenarios and proposals for the accommodation of transportation needs.
- Aerial photography was used for a myriad of needs from determination of development patterns to serving as a check on mapping accuracy.
- Traffic count data (roadway segments and intersections) were necessary to determine existing needs for both mobility and safety, and to serve as the basis for determination of future traffic growth and how that growth could best be accommodated.

All information and data obtained were reviewed for sufficiency in extent and quality through the consideration of its comprehensiveness, age, and degree of geographic coverage. Through this review, identification was made of the extent to which the available data supported analysis that either quantified or qualified transportation and safety concerns, along with regional goals and objectives. The information and data obtained were supplemented with input received from meetings held with local elected and other government officials and the general public, whereby additional transportation and safety concerns were discussed.

CHAPTER 3 – TRANSPORTATION DATA ANALYSIS

Data for each mode was analyzed for the current and forecast year conditions.

Roadways

Traffic data collected for the priority locations were incorporated into the VDOT Statewide Planning System (SPS) data base. Traffic forecasts were developed for 2035 based on appropriate trend lines obtained through a "best fit" of traffic count historical data points and further modified with consideration given to available information on projections for growth areas and water and sewer line extension. Forecast year peak hour to daily travel demand ratios generally followed existing peak hour to daily volume ratios, unless available information indicated a different ratio was appropriate.

Roadway analysis consisted of four separate reviews:

- Roadway link-level mobility performance, measured through Level-of-Service (LOS) analysis. Relevant information available in the VDOT SPS database and other travel data collected for this Plan was reviewed for reasonableness for both the base year and forecast year conditions. Deficiencies noted from the database and additional analysis, coupled with information received at public meetings and from local officials, constituted those roadway locations considered deficient based on mobility.
- Safety and accidents. Safety and crash database information and input from local officials and the public were used to identify twenty locations within the MPPDC for which field safety assessments were conducted. The assessments identified physical features, traffic control features, operational issues, and other factors contributing to safety concerns.
- Structure sufficiency. Any structure with a current sufficiency rating of less than 50 (out of 100) was considered deficient and in need of structural upgrade or replacement. Sufficiency evaluates factors such as load, visual structural deficiencies (cracks, concrete visibly missing), adequacy of the foundation, and the remaining life of the superstructure including pavement condition).
- Roadway geometric sufficiency. Roadway segments were reviewed for geometric sufficiency, such as insufficient lane or shoulder width; inadequate horizontal or vertical alignment, passing sight distance, and/or crossover spacing; and availability of turn lanes.

Roadways analyzed for all four categories of deficiencies were those assigned a Federal Functional Classification as an arterial or collector, which together generally comprise between 30-40 percent of total jurisdictional mileage. There are currently 240 miles of arterials and 414 miles of collectors within the MPPDC. The remaining mileage, functionally classified as local roadways, was not included in this study.

The MPPDC, in conjunction with the local jurisdictions, prepared a list of roadway detailed study locations based on reviews of available data sources, input at public meetings, and information provided by local and regional officials. The list is based on roadway performance measures, safety considerations, or a combination of the two. Some priority locations had current improvement recommendations from recent studies and required no further analysis. Other priority locations required a new or updated analysis. Within the MPPDC, twenty detailed

study locations were identified and traffic count data (24 hour machine counts and/or peak hour intersection turning movements) were collected at these locations (Exhibits 4 and 5).

Exhibit 4. Roadway Detailed Study Locations

Jurisdiction	Detailed Study Location
Essex County	VA 659 (Desha Road) from VA 618 to VA 627
Town of Tappahannock	Intersection US 17 with US 360 from US 360 to VA 627
	Intersection US 17 with VA 657 (Marsh Street)
Gloucester County	VA 606 (Fary's Mill Road) from VA 198 in Harcum to US 17/VA 14 in Ark
	VA 610 (Pinetta Road) and VA 614 (Hickory Ford Road) to Belroi Road
	VA 198 (Glenn's Road and Dutton Road) from US 17 at Glenn's to Mathews County line
King and Queen County	VA 635 (Bradley Farm Road) from Essex County line to VA 721 (Newtown Road)
	VA 602 (Mount Olive Road) from Middlesex County line to VA 614 (Devil's Three Jump Road)
	VA 634 from VA 636 to US 360
King William County	VA 30 (King William Road) from VA 613 to VA 617 East
	Intersection of VA 629 (Walkerton Road) and VA 30
	VA 629 (Acquinton Church Road) and VA 618 (Acquinton Church Road) from VA 30 to US 360
Town of West Point	VA 30 from VA 33 to Magnolia Avenue
Mathews County	VA 626 (Halliford Road) from VA 198 to VA 666
	VA 660 (E. River Road) from VA 618 to the last fork with VA 617
	VA 3 from VA 3/VA 198 in Dixie to the John Andrew Twigg Bridge
Middlesex County	VA 3/VA 33 then VA 3 from VA 3/VA 33 in Hartfield to VA 624 in Topping
	VA 603 (Farley Park Road)from King and Queen County line to VA 612
	VA 3 (Twiggs Ferry Road) from VA 33 (Stampers Bay Road) over the Twiggs Ferry Bridge to Mathews County
Town of Urbanna	Intersection of Urbanna Road/Virginia Street and Rappahannock Avenue

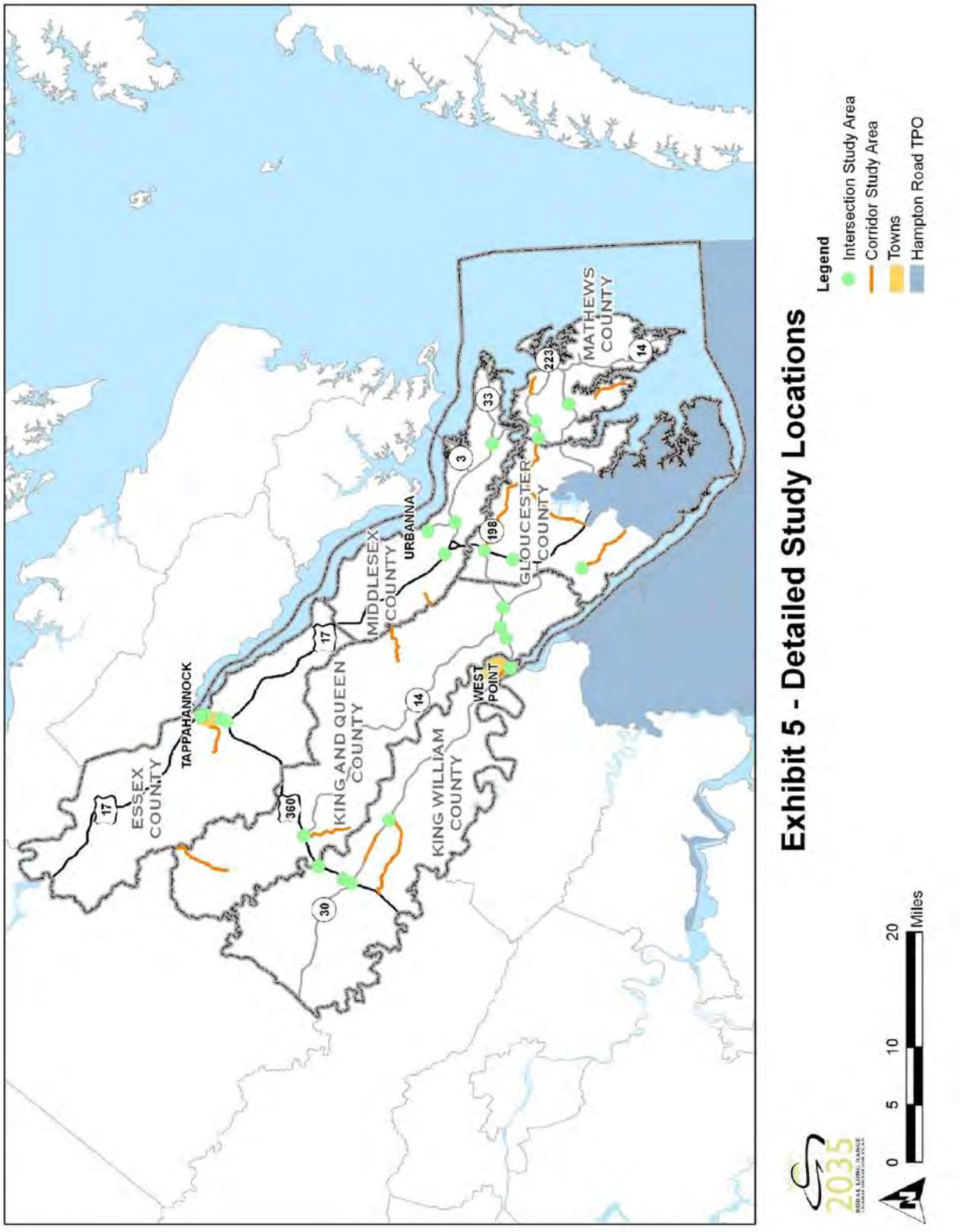


Exhibit 5 - Detailed Study Locations
Legend
Intersection Study Area
Corridor Study Area
Towns
Hampton Road TPO
ESSEX COUNTY
TAPPAHANNOCK
KING AND QUEEN COUNTY
MIDDLESEX COUNTY
URBANNA
KING WILLIAM COUNTY
WEST POINT
GLOUCESTER COUNTY
MATHEWS COUNTY
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Public Transportation

Fixed-route service is not widely available in the Middle Peninsula. Bay Transit buses offer fixed-route service in the Town of West Point, and a fixed-route trolley service is offered in the Town of Urbanna during the summer months and on some holiday weekends. In May 2011, Bay Transit reported that they were currently providing regular routes to the Rappahannock Community College campus in Glenns (Gloucester County). Providing additional fixed-route service in the Region would be beneficial, but would contain extra costs.

Demand-responsive transit is provided by Bay Aging, a non-profit organization, through Bay Transit. Bay Transit serves the entire PDC as well as three counties in the Northern Neck and two in the Richmond Regional PDC. The price is $1 one-way within one county. The service does not cross jurisdictional lines. To go from one county to another, a rider must make two demand-responsive requests each way, with a transfer at the county line. The price is then $2 each way. The service is 6 am to 6 pm Monday through Friday. Ridership for 2006 is in Exhibit 6. The Middle Peninsula area contains approximately 55% of the total service area population of Bay Transit.

Exhibit 6. Bay Transit Ridership, Fiscal Year 2006

Jurisdiction	Vehicles	Rides
Essex County	2	19,952
Gloucester County	3	38,663
Mathews County	1	6,189
Middlesex County	1	7,644
King William/ King and Queen County/ West Point	2	12,268
Total	9	84,716

Organizations that do not serve the general public but do serve the transportation needs of specific disadvantaged groups include ARC of the Peninsula, the Virginia Department of Rehabilitative Services, and the Middle Peninsula/Northern Neck Community Services Board. In addition, the United Way Volunteer wheels program is a volunteer network of drivers who use privately owned vehicles for transport.

The Virginia Department of Rail and Public Transportation (DRPT) recently completed a Coordinated Human Service Mobility Plan for each PDC in the Commonwealth. The plan for the Middle Peninsula examined and analyzed the existing fixed-route transit and demand-responsive transit services and identified strategies to address existing unmet transit needs of the region's population (DRPT, 2008). The Plan identified unmet transportation needs in the region that included the following:

- Expanded transportation options and capacity to improve access within and outside of the region, evenings and weekend service, and access to educational programs;
- Additional service vehicles, including better accessible vans and larger vehicles;
- Better brand image and marketing of human services transportation to riders, local government, and businesses;

- A clearinghouse of services and related information that could also coordinate stakeholders;
- Coordination with 211 service;
- Ability to tap into non-traditional funding sources and to expand the breadth of available sources; and
- Provision for more bicycle racks on buses.

Disadvantaged population groups were not only studied as a part of the DRPT Mobility Plan but also studied as a part of this Plan's process in order to determine deficiencies in the transportation network which affect these groups. For the purposes of this Plan, disadvantaged groups include persons with low-income, minorities, the elderly, and persons with disabilities. US Census 2000 data at the block group level were examined in order to determine locations and densities of all of these groups. These are graphically displayed in Exhibits 7-10. This information was reviewed to identify potential areas of service expansion for all transit providers.

Bicycle and Pedestrian Facilities

The MPPDC, through the Middle Peninsula Regional Bike Plan Focus Group, developed the Middle Peninsula Regional Bicycle Facility Plan in 2004. The plan represents a realistic look at existing roadway facilities and future improvements to enhance bicycling to the extent possible in a rural environment. Mathews County has several Class III or shared road facilities. In addition, there are several roadways that are a part of rides designated by bike groups. The Bike Plan Focus Group recommended routes that had been proven to be good cycling facilities. The group examined safety, funding constraints, and the quality of rides in a more subjective manner than is possible using a purely technical process such as relying on only the objective data obtained from lengthy studies. Most of the recommendations in this plan concern routing and signage.

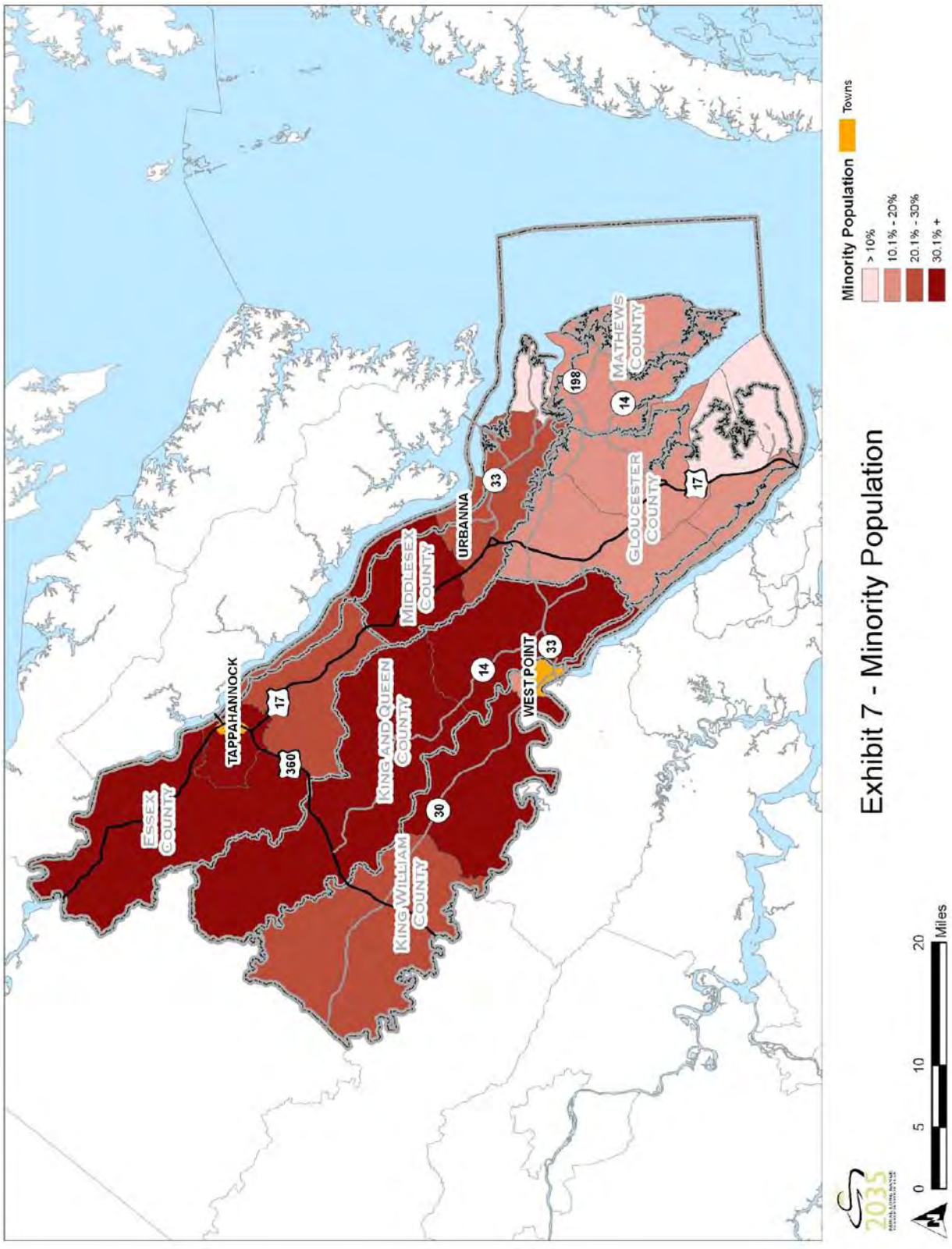
Exhibit 7 - Minority Population
Minority Population
Towns
> 10%
10.1% - 20%
20.1% - 30%
30.1% +
ESSEX COUNTY
KING AND QUEEN COUNTY
KING WILLIAM COUNTY
MIDDLESEX COUNTY
GLOUCESTER COUNTY
MATHEWS COUNTY
TAPPAHANNOCK
URBANNA
WEST POINT
17
360
30
14
33
198
0
5
10
20
Miles

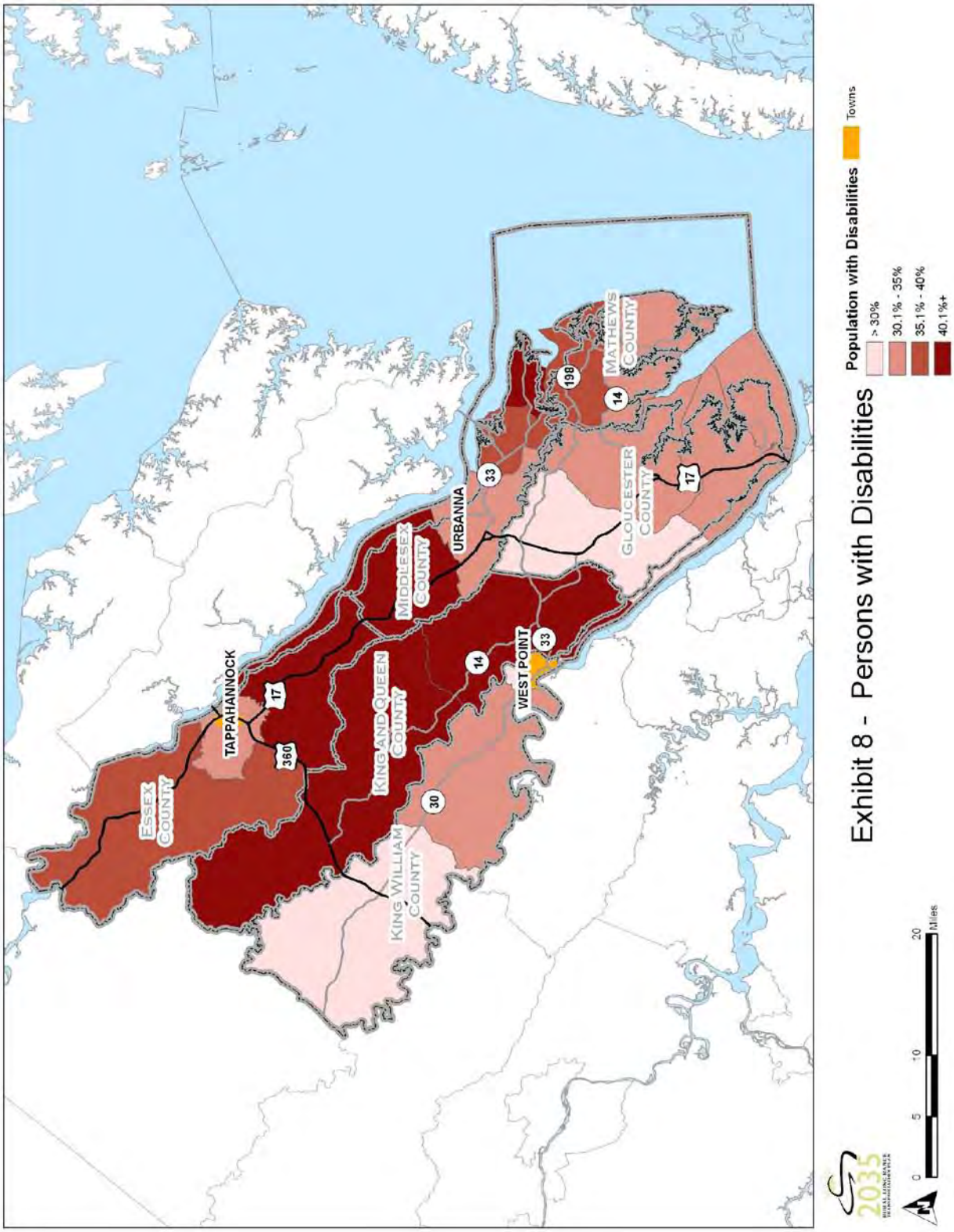
Exhibit 8 - Persons with Disabilities
Towns
Population with Disabilities
> 30%
30.1% - 35%
35.1% - 40%
40.1%+
ESSEX COUNTY
KING AND QUEEN COUNTY
KING WILLIAM COUNTY
MIDDLESEX COUNTY
GLOUCESTER COUNTY
MATHEWS COUNTY
TAPPAHANNOCK
URBANNA
WEST POINT
17
360
30
14
33
198
0
5
10
20
Miles

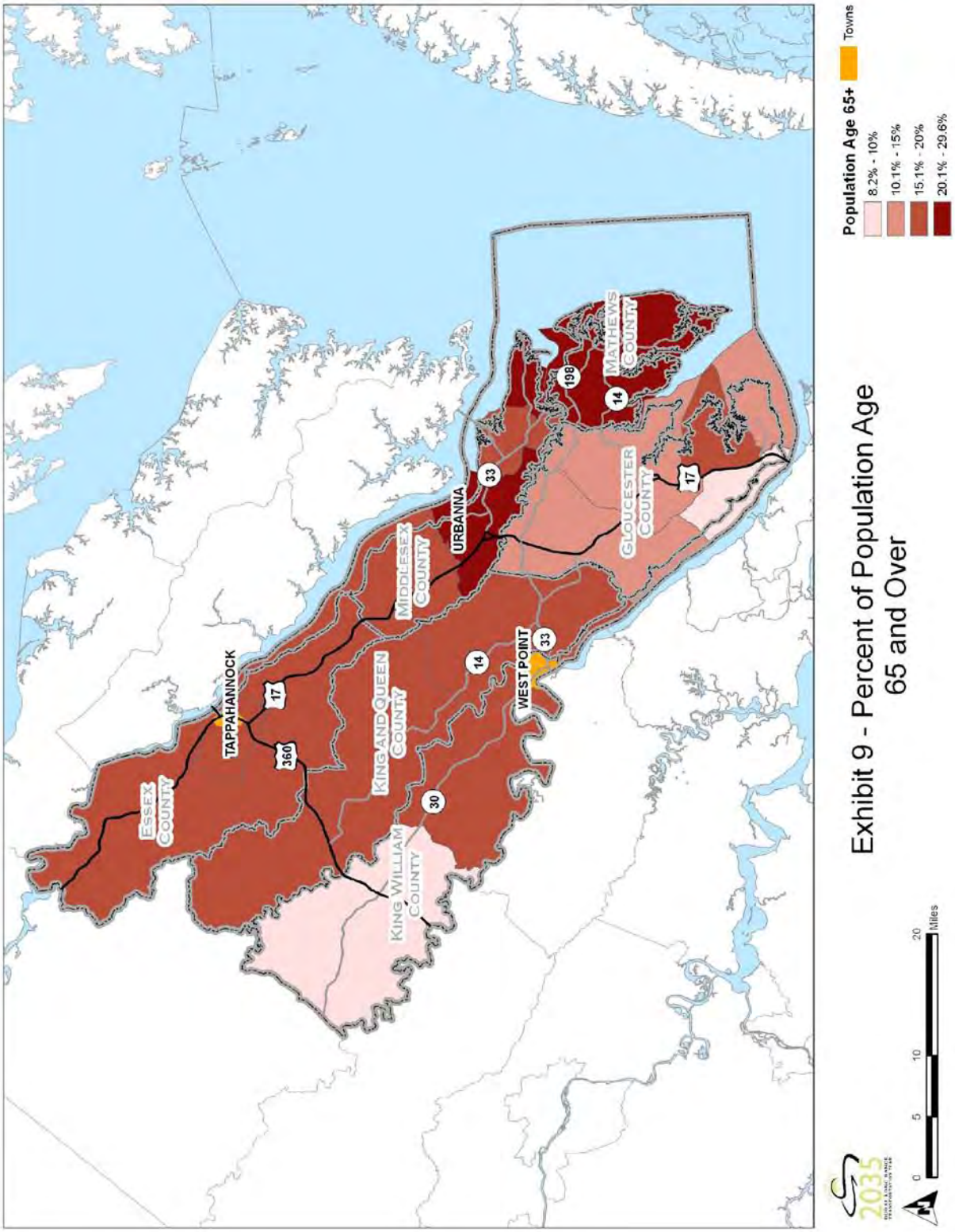

Exhibit 9 - Percent of Population Age 65 and Over

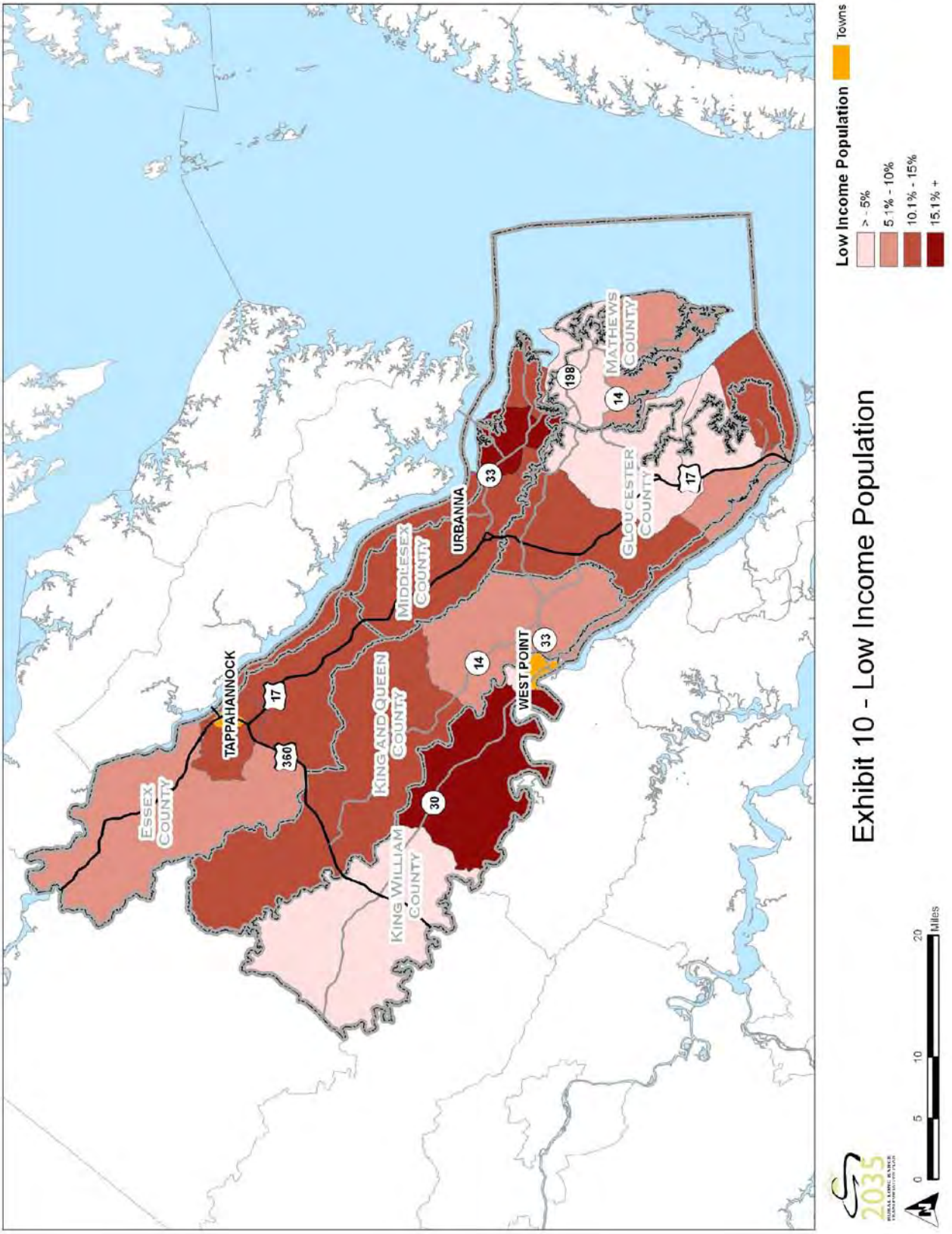
Exhibit 10 - Low Income Population
Low Income Population
Towns
> - 5%
5.1% - 10%
10.1% - 15%
15.1% +
ESSEX COUNTY
KING WILLIAM COUNTY
KING AND QUEEN COUNTY
MIDDLESEX COUNTY
GLOUCESTER COUNTY
MATHEWS COUNTY
TAPPAHANNOCK
URBANNA
WEST POINT
17
360
30
14
33
198
0
5
10
20
Miles
N

Airports

There are no commercial airports in the region. However, Richmond International is within 30 miles of the western portion of the PDC and Newport News/Williamsburg International is located south of the region, within 30 miles of the eastern part of the PDC. There are three general aviation airports: Middle Peninsula Regional Airport in Mattaponi; Tappahannock-Essex County Airport outside of the Town of Tappahannock on Aviation Road; and Hummel Field in Saluda (Exhibit 11). The Virginia Air Transportation System Plan Update includes data on changes in the number of based aircraft at airports. The average annual growth rate between 1990 and 2000 was 0.3% at Hummel Field, and 1.4% at Middle Peninsula Regional (DOAV, 2003). Because the report was written while Tappahannock/Essex was under construction, 1990-2000 data is for the Tappahannock Municipal Airport which had an average annual growth rate of 0.2% and has not been in service since the Tappahannock-Essex opened in 2007.

Goods Movement

The majority of goods movement in the region is by truck and utilizes most of the road network, particularly US 17, US 360, VA 3, VA 14, VA 30, and VA 33. The freight generators and shippers are more heavily clustered in southern Gloucester County and in western King William County, both of which are the closest locations to the interstate system and major metropolitan areas (Exhibit 12).

There is only one rail line in the area, a Norfolk Southern branch that crosses into King William County from New Kent County and terminates in the Town of West Point. The line is heavily used by the paper mill in town, Smurfit-Stone.

Land Use and Future Growth

The land use in the Middle Peninsula region is generally rural residential, agricultural, and forested with more dense residential and commercial uses centered around the existing towns and courthouse areas. The location and extent of land use and development throughout the region is reviewed as a part of traffic analysis. Changes in existing land use and geographic shifts of land use and development can have a long-term effect on traffic forecasts and demand on the transportation network. In Essex County, the Town of Tappahannock has the predominant residential and commercial development. Rural Residential and Countryside Districts are also along US 17 and US 360. In Gloucester County, land use is more intensified in the southern half of the county, within the HRTPO area. Development is more rural residential outside of the HRTPO area with large areas of forested land. In King and Queen County, the predominant land uses are agricultural and forested with residential and commercial development along US 360 and VA 33. King William County is also primarily agricultural and forested. Commercial and residential development is around the Town of West Point and along VA 30 west of West Point, and along US 360 in the western part of the county. Mathews County is also primarily rural in nature with commercial and residential development in the Mathews Village Center. Middlesex County has more residential and commercial development than some of the other counties, primarily in Saluda, Urbanna, and Deltaville.

Travel Demand Management

With diminishing resources of fossil fuels coupled with increasing travel demand, and a need to preserve and enhance environmental quality, every effort needs to be made to reduce the number of vehicle trips, especially single-occupant trips. In some rural areas, low population densities and dispersed trip attractors may not be conducive to major shifts to mass transit. In the MPPDC, there is no single concentration of commuter destinations; commuters travel to Richmond, Fredericksburg, and Hampton Roads. Nevertheless, some gains in ridership could be realized. According to the 2000 US Census, numerous workers traveled outside of their county of residence, from a low of 47% in Essex County to a high of 75% in King and Queen County. Public transit, a key component of commuter transportation, is discussed above. Additional commuter-oriented pieces of the transportation network include ridesharing and park and ride lots.

The MPPDC operates a ridesharing program - MidPenRideShare - that offers alternative transportation information and assistance throughout the region. It provides commuter matching for traditional carpools and vanpools, as well as school pools for parents of school-age children to coordinate pick up and drop off at individual schools. There is a guaranteed ride home program, with some restrictions, for those registered in the system.

There are ten VDOT maintained park and ride lots in the region: two in Essex County, one each in King and Queen and King William Counties, three in Mathews County, and two in Middlesex County (Exhibit 13). There is one park and ride lot in the rural portion of Gloucester County; there are three additional lots within the HRTPO.

Passenger rail service is an additional link in travel demand management but is currently not available in the region. The Virginia Rail Express accesses northern Virginia and Washington, DC, but currently terminates in Fredericksburg, approximately 30 miles west of the region.

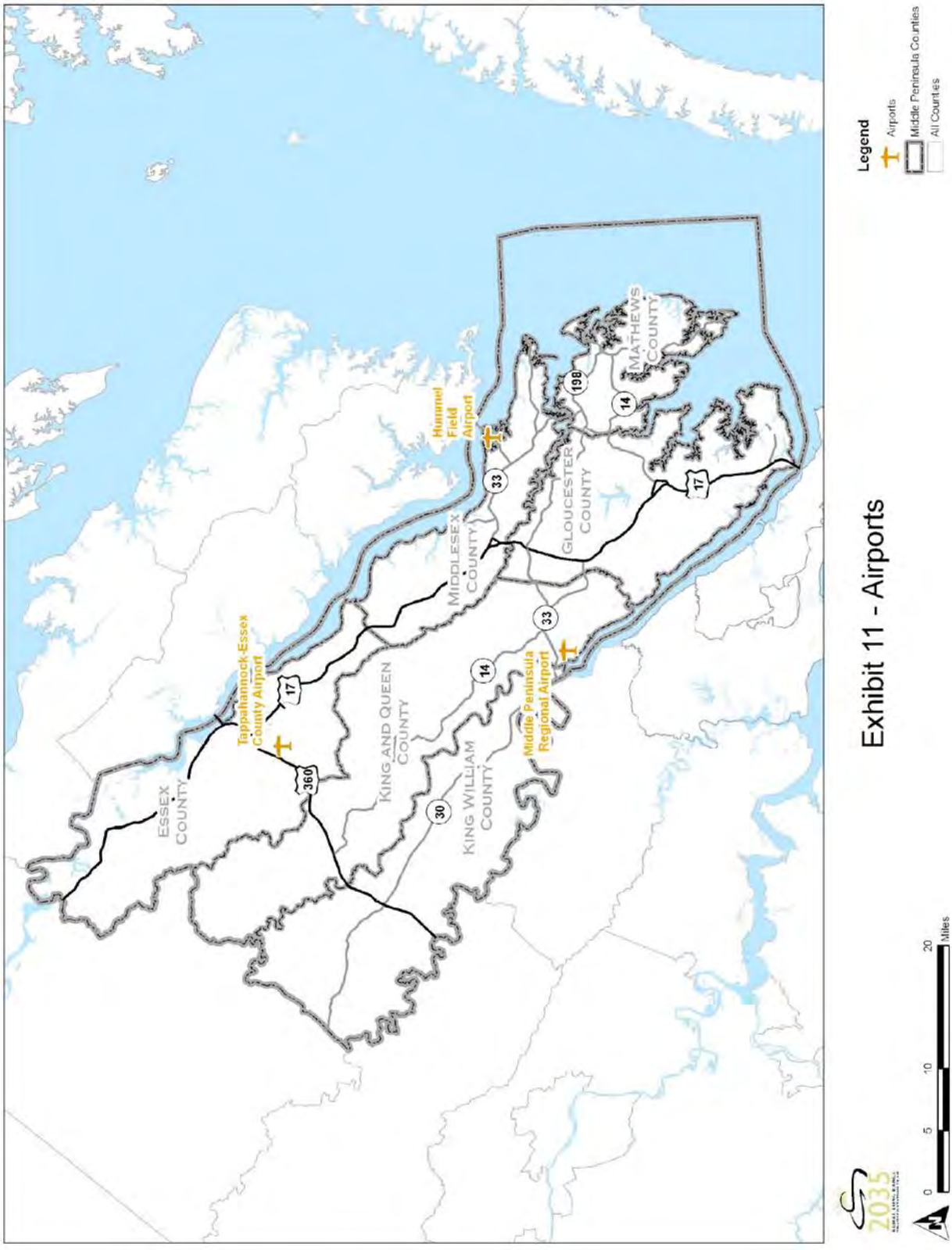
Exhibit 11 - Airports
Legend
Airports
Middle Peninsula Counties
All Counties
Tappahannock-Essex County Airport
Hummel Field Airport
Middle Peninsula Regional Airport
ESSEX COUNTY
KING AND QUEEN COUNTY
KING WILLIAM COUNTY
MIDDLESEX COUNTY
GLOUCESTER COUNTY
MATHEWS COUNTY
17
360
30
14
33
198
0
5
10
20
Miles
2035

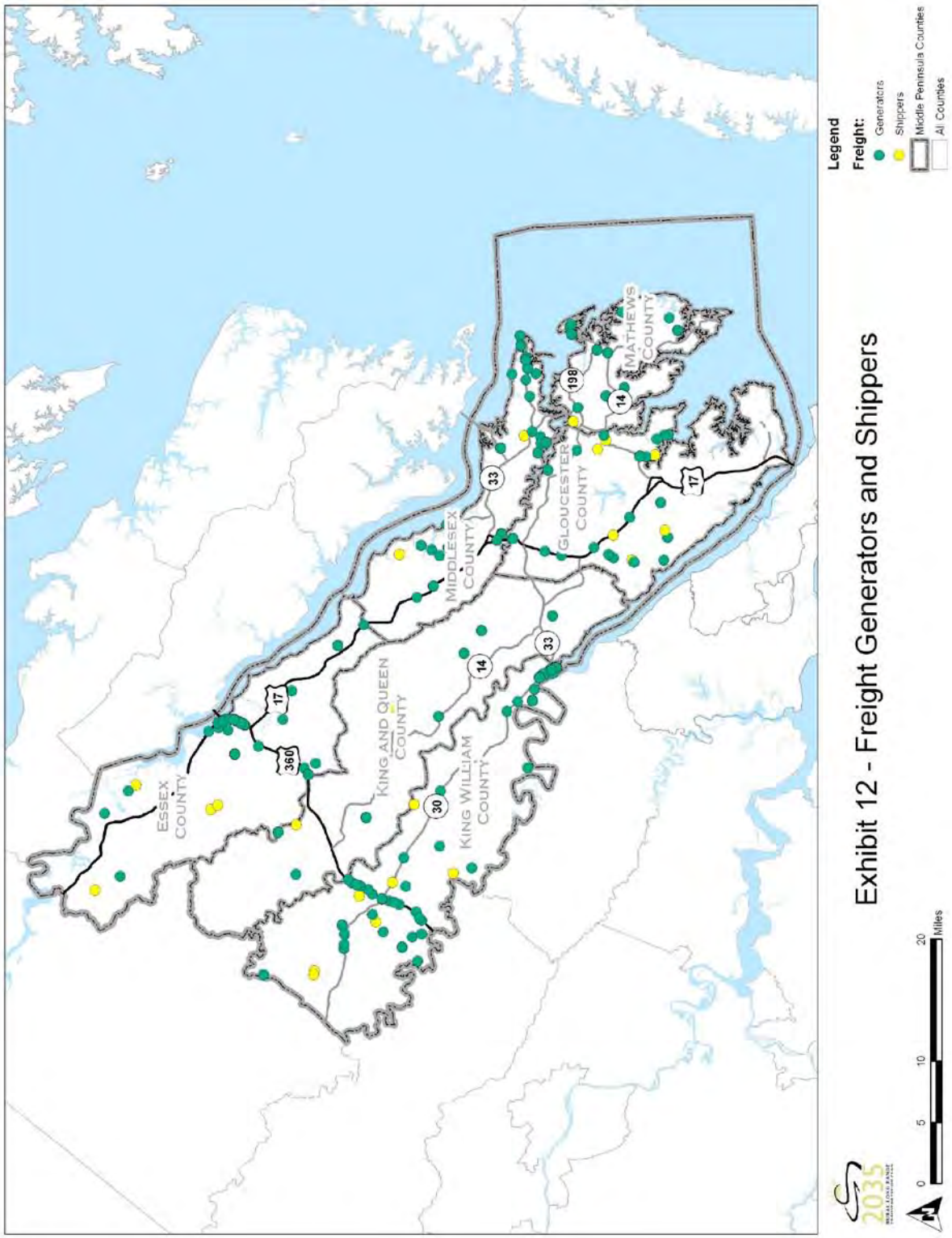

Exhibit 12 - Freight Generators and Shippers

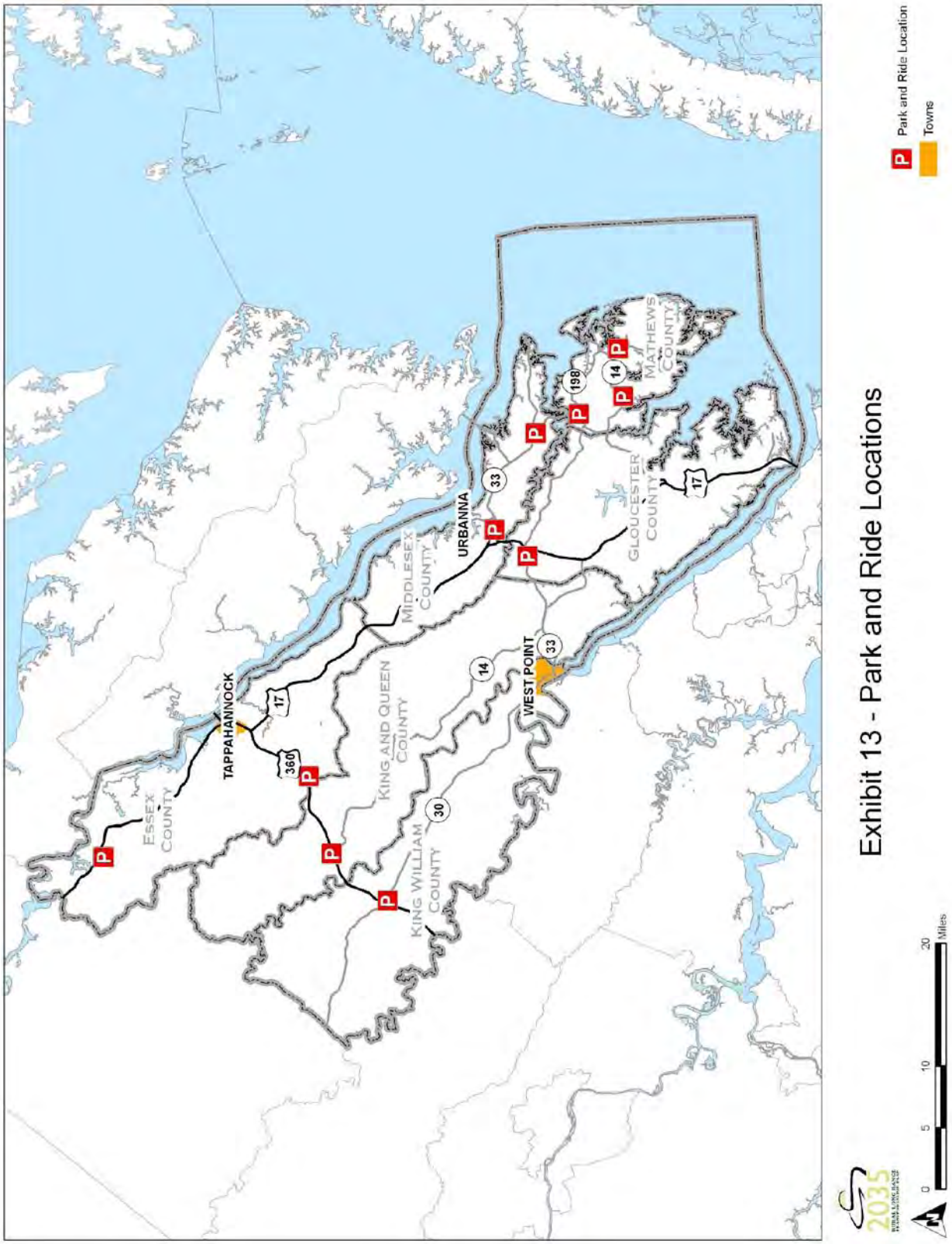
Exhibit 13 - Park and Ride Locations
Park and Ride Location
Towns
ESSEX COUNTY
KING AND QUEEN COUNTY
KING WILLIAM COUNTY
MIDDLESEX COUNTY
GLOUCESTER COUNTY
MATHEWS COUNTY
TAPPAHANNOCK
URBANNA
WEST POINT
17
360
30
14
33
198
Miles
0
5
10
20
N

CHAPTER 4 – TRANSPORTATION DEFICIENCIES AND RECOMMENDATIONS

The products of the transportation data compilation/collection and analysis resulted in a determination of deficiencies and recommendations for improvements. These are discussed by mode.

Roadways – Base Year

Deficiencies and recommendations were determined both for the base year and forecast year (2035) conditions. Deficiencies were identified based on mobility measures (LOS), safety concerns, a determination of structures requiring improvement or replacement, and a determination of geometric deficiencies. The road system analyzed included facilities functionally classified as arterials and collectors. For the purposes of this Plan, the portion of Gloucester County within the HRTPO was not analyzed. Short-term recommendations include recommendations from the Six Year Transportation Improvement Program (SYIP) FY 2010-2015 and projects identified in other studies as short-term. Mid-term recommendations have a horizon year between 2015 and 2025 and include projects in the SYIP that have a completion date after 2015. Long-term recommendations are to be completed after 2025 and are primarily financially unconstrained. When the short-, mid-, and long-term recommendations are combined, the totals of the recommendations include: 113 roadway segments to be improved; 38 structures to be upgraded or replaced; and 40 intersections to be improved.

Mobility

Within the MPPDC, roadway segments and intersections were combined from the following studies/projects: the detailed study locations, the Statewide Mobility System (SMS), private development Traffic Impact Analysis (TIA), the STARS component of this project, local recommendations, other separate studies, and projects currently programmed for funding in the SYIP. For some of the locations, recommendations have already been proposed, which were reviewed to determine if any updates needed to be made. The remaining locations were analyzed for a determination of current mobility LOS and degree of congestion encountered. Deficiencies based on these analyses or inputs provided are presented in Exhibit 14.

Possible recommendations for improvements included measures such as:

- Addition of a new, parallel facility;
- Grade separation (new interchange) of current at-grade intersection;
- Additional lanes to the existing facility;
- Widen existing lanes;
- Improved horizontal and/or vertical alignment;
- Improved shoulders;
- Addition of turn lanes;
- Crossover (addition or closing);
- Signalization (new or updated);

- Removal of parking;
- Roundabouts;
- Replacing shoulders with curb-and-gutter sections;
- Possible reduction in traffic levels to improve LOS; and
- Conversion of two parallel roadways with two-way traffic to a one-way pair.

Safety

Roadway segments and intersections with high levels of incidents were supplied by VDOT and supplemented with additional information obtained from the MPPDC. Within the MPPDC, road segments and intersections were reviewed for causes of high incident rates and recommendations were developed to reduce or eliminate the concerns. Possible remedial measures included many of those noted for LOS deficiencies, and supplemented by others, for example:

- Improved sight distance;
- Reduced speed limit;
- Advance signage with safety-related messages; and
- Removal of objects within the roadway right-of-way.

The safety analysis is limited to the base year condition (Exhibit 14). There are sources listed for most every deficiency and recommendation in Exhibit 14. Please reference these source lists:

Source of Deficiencies:

1: SCP: Safety/Cong Priority List;
2: SMS: SMS (State Mobility System);
3: SPS: SPS database.
4: CDA: Crash Database;
5: 6YR: Six Year Implement Program;
6: SUA: Small Urban Area Plans;
7: HRR: High Risk Rural Roads;
8: STA: STARS project;
9: LOC: Local Recommendations
10: TIA: Proffer/Traffic Impact Analysis
11: OTH: Others.

Source of Recommendations:

1: DSL: DSL Studies;
2: SMS: SMS (State Mobility System);
3: SPS: SPS database
4: 6YR: Six year transportation improvement program;
5: SUA: Small Urban Area Plans;
6: HRR: High Risk Rural Roads;
7: STA: STARS project;
8: LOC: Local Recommendations
9: TIA: Proffer/Traffic Impact Analysis
10: OTH: Others

Exhibit 14. Roadway Base Year and Forecast Year Deficiencies and Recommendations

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
1	Essex	VA 659 (Desha Road) from VA 618 to South City Limit of Tappahannock	Safety: Segment has series of short horizontal curves that limit sight distance. Congestion: Turn lanes that could improve operations are missing along segment. (Source: 1, 3)	Long-Term: Safety/Congestion: Upgrade to current design standards and install turn lanes where appropriate. (Source: 1, 3)
2	Essex	US 17 at VA 631	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 4)	Long-Term: Safety: Deficiency with low priority. Continue to monitor for potential improvements. (Source: 1)
3	Essex	US 360 (Richmond Road) from Begin Downing Bridge to End Downing Bridge / Richmond County Line	Congestion: Segment will operate at LOS E in 2035. (Source: 2, 3)	Long-Term: Congestion: Urban - 4 Lane With Median. (Source: 2, 3)
4	Essex	VA 606 (Fairfield Lane) from VA 607 to US 17	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
5	Essex	VA 607 (Muddy Gut Road) from US 17 to VA 606	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 1)
6	Essex	VA 609 (Essex Mill Road) from US 17 to VA 684	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
7	Essex	VA 617 (Island Farm Road) from End of Road to VA 697	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 20 Feet. (Source: 3)
8	Essex	VA 617 (Island Farm Road) from VA 697 to Eastern City Limit of Tappahannock	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
9	Essex	VA 618 (Scotts Mill Road) from VA 619 to VA 659	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
10	Essex	VA 619 (Sunnyside Road) from VA 620 East to King And Queen County Line	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
11	Essex	VA 620 (Dunbrooke Road) from US 360 to VA 619 East	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
12	Essex	VA 621 (Midway Road) from US 360 to VA 622	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
13	Essex	VA 624 (Essex Church Road) from VA 630 / VA 629 to US 17 North	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
14	Essex	VA 624 (Essex Church Road) from VA 631 to VA 630 / VA 629	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 1)
15	Essex	VA 627 (Mount Landing Road) from Caroline County Line to VA 665 West	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
16	Essex	VA 629 (Battery Road) from VA 627 to VA 624	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
17	Essex	VA 635 (Occupacia Road) from VA 639 East to VA 635 East	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
18	Essex	VA 637 (Occupacia Road) from VA 635 East to US 17	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
19	Essex	VA 716 (Warings Mill Road) from VA 627 to US 17	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
20	Essex (Tappahannock)	VA 659 (Desha Road) from South City Limit of Tappahannock to VA 627 / VA706	Safety: Segment has series of short horizontal curves that limit sight distance. Congestion: Turn lanes that could improve operations are missing along segment. (Source: 1)	Long-Term: Safety/Congestion: Upgrade to current design standards and install turn lanes where appropriate. (Source: 1)
21	Essex (Tappahannock)	US 17 (Tidewater Trail) at US 360 (Richmond Highway)	Safety: Northbound left turners are permitted to turn right onto VA 708 (Hospital Road) across through lanes. Southbound through traffic allowed to turn right onto VA 715 across through lanes. Sight distance may be limited for northbound left turners at VA 715. Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 1, 4)	Mid-Term: Safety: Close access to VA 715 and provide new access south of residences. Close cross-over in the vicinity. Consider converting eastbound right turn to tighter free turn with yield control. Shift access to and realign Hospital Road west away from intersection to allow northbound left turners more time to merge. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
22	Essex (Tappahannock)	US 17 (Church Lane) at VA 657 (Marsh Street)	Safety: Stop bar missing on westbound approach. Congestion: Heavy truck traffic travelling to/from Northern Neck and Richmond county. (Source: 1)	Short-Term: Safety: Install stop bar on westbound approach. Mid-Term: Congestion: Consider providing additional capacity at the intersection by installing turn lanes as needed. (Source: 1)
23	Essex (Tappahannock)	US 17 at VA 1036	Safety: Intersection is located in dense commercial and high activity area with several adjacent signalized intersections. High potential for rear-end and left turn accidents. Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 1, 4)	Mid-Term: Safety: Consider optimization of corridor as separate study and continue to monitor for accidents. (Source: 1)
24	Essex (Tappahannock)	US 17 (Church Lane) at US 360 (Queen Street)	Safety: Pavement markings faded. Truck traffic travelling between Northern Neck and Richmond county cannot be safely accommodated. Southbound left turning trucks cross westbound approach stop bar. Trucks cause curb and sidewalk damage in northeast corner. Electric and light poles located on sidewalks restrict full pedestrian access. Congestion: Heavy truck traffic travelling to/from Northern Neck and Richmond county. Left turn vehicle from the westbound experience high delay. (Source: 1)	Short-Term: Safety: Repaint pavement markings. Move westbound stop bar back to improve turn radius for southbound lefts. Mid-Term: Safety: Relocate electric and light poles from sidewalks or widen sidewalks to provide full pedestrian access. Congestion: Add an exclusive westbound to southbound left turn lane. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
25	Essex (Tappahannock)	US 17 at VA 1008 (Wright Street)	Safety: Diagonal parking on both sides of Wright Street cause vehicles to back out into street. Location of PARR'S Drive-in creates a less than desirable eastbound approach alignment. Eastbound left turners conflict with westbound left turners. Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 1, 4)	Short-Term: Safety: Restrict eastbound left turns out of PARR's Drive-in. Mid-Term: Safety: Consider access management to define access points to parking areas on both sides on Wright Street. On north side of Wright Street, offset eliminated parking spaces (due to reconfiguration of parking) by seeking additional parking in rear of building. (Source: 1)
26	Essex (Tappahannock)	US 17 at VA 1005	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 4)	Long-Term: Safety: Deficiency with low priority. Continue to monitor for potential improvements. (Source: 1)
27	Essex (Tappahannock)	US 17 at VA 1003	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 4)	Long-Term: Safety: Deficiency with low priority. Continue to monitor for potential improvements. (Source: 1)
28	Essex (Tappahannock)	US 17 at VA 725	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 4)	Long-Term: Safety: Deficiency with low priority. Continue to monitor for potential improvements. (Source: 1)
29	Essex (Tappahannock)	US 17 at VA 698	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 4)	Long-Term: Safety: Deficiency with low priority. Continue to monitor for potential improvements. (Source: 1)
30	Essex (Tappahannock)	Proposed US 360 Connector from Proposed Tappahannock Bypass to US 17 / US 360	Congestion: Need for improvement was identified by SMS database. (Source: 2)	Long-Term: Congestion: Proposed US 360 Connector. (Source: 2)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
31	Essex (Tappahannock)	Proposed Tappahannock Bypass from US 360 / VA 715 to US 17 North	Congestion: Need for improvement was identified by SMS database. (Source: 2)	Long-Term: Congestion: Proposed Tappahannock Bypass. (Source: 2)
32	Essex (Tappahannock)	US 360 (Richmond Highway) from US 17/US 360 to Richmond County Line	Congestion: Segment will operate at LOS E in 2035. (Source: 2, 3)	Long-Term: Congestion: Urban - 4 Lane. (Source: 2, 3)
33	Essex (Tappahannock)	US 17 (North Church Lane) from US 360 (Queen Street) to VA 627	Congestion: Project identified in CTB Six Year Improvement Program (UPC 86463).Segment will operate at LOS D in 2035. (Source: 5, 3)	Short-Term: Congestion: Reconstruct 0.23 miles of roadway from 0.23 mile to 0.46 mile north of US 360 North(no information available on specific improvements) Long-Term: Congestion: Continue to monitor for potential improvements. (Source: 4)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
1	Gloucester	VA 606 (Farys Mill Road) from US 17 (George Washington Memorial Highway) to VA 198 (Dutton Road)	Safety: Stop bar missing on VA 605 (Indian Road). VA 605 (Indian Road) intersects VA 606/678 at a less than desirable angle. A sign north of VA 605 (Indian Road) directs southbound left turners to yield to through traffic which suggest driver confusion. Due to this intersection geometry, southbound VA 678 through traffic mistakenly veer left. Substandard roadway geometrics, pavement and edge of pavement conditions. (Source: 1)	Short-Term: Safety: Install stop bar on VA 605. Improve definition of VA 606/605 intersection with pavement markings. Mid-Term: Safety: Install southbound left turn lane on VA 678. Long-Term: Safety: Upgrade VA 606/678 to current design standards. Relocate VA 605 (Indian Road) to intersect VA 606 south of existing intersection. (Source: 1)
2	Gloucester	VA 610 (Pinetta Road) from VA 610 (Davenport Road) to VA 616 (Belroi Road)	Safety: Substandard roadway geometrics, pavement and edge of pavement conditions. Skid marks observed near VA 606 (Ark Road). Congestion: A proposed or recently completed residential subdivision along this segment may increase need for additional capacity. (Source: 1, 3)	Mid-Term: Safety: Consider installing northbound right turn lane and southbound left turn lane on VA 614/610 to reduce potential for accidents and to accommodate traffic travelling towards US 17. Long-Term: Safety: Upgrade VA 614/610 to current design standards. Congestion: Consider the need to increase capacity on VA 614/610 based on impact from new subdivision. (Source: 1, 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
3	Gloucester	VA 198 (Glenns Road) from US 17 (George Washington Memorial Highway) to Mathews County Line	Safety: Pavement and shoulder widths and vertical and horizontal geometrics are substandard. VA 726 (Dogwood Trail) serves as main access to boat pier and subdivision; however no turn lanes provided. VA 678 (Harcum Road) provides access to Beaver Dam Park; however, no turn lanes provided. Based on roadway deficiencies, speed limit is too high. Congestion: Roadway experiences high traffic during weekends and summer months to access the river. Roadway is used as a main commuter route and is expected to experience traffic growth due to residential development. (Source: 1)	Short-Term: Safety: Consider reducing speed limit. Mid-Term: Safety: Consider installing eastbound left and westbound right turn lanes at VA 726 to accommodate vehicles with boat trailers. Install eastbound right and westbound left turn lanes at VA 678 (Harcum Road). Turn lanes at both locations will provide storage, given speed limit of 55 mph, and reduce potential for accidents. Long-Term: Safety: Upgrade VA 198 to current design standards. Widen narrow bridge structure #1005 as part of the roadway upgrades under both safety and congestion long term recommendations. Congestion: Consider the need to increase capacity on VA 198 based on impact of residential development and increased weekend and summer months rivah traffic. Widen narrow bridge structure #1005 as part of the roadway upgrades under both safety and congestion long term recommendations. (Source: 1)
4	Gloucester	VA 617 at VA 610	Safety: Northbound and southbound left turn lanes too short. Wide and undefined access to the USPO, convenience store and informal commuter lot in northwest quadrant. Too many access points in the southeast quadrant. (Source: 1)	Mid-Term: Safety: Lengthen northbound and southbound left turn lanes. Implement access management at intersection to define and reduce number of access points. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
5	Gloucester	US 17 at VA 198	Safety: Westbound through vehicles immediately merge into right-most lane downstream of the intersection making it difficult for southbound free right turners to find gaps. Both movements are heavy particularly during summer months. Northbound left turners turn into eastbound left turn lane. Drivers make unsafe left turn onto westbound VA 33 /198 from bank in southeast corner. Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 1, 4)	Short-Term: Safety: Install puppy tracks for northbound left turns. Install plastic delineator post to prevent westbound through traffic from immediately merging to the right-most lane downstream of intersection in northwest corner. Mid-Term: Safety: Relocate entrance to 7-Eleven and bank to the east away from intersection or restrict left turns from bank to VA 33 /198. (Source: 1)
6	Gloucester	US 17 at VA 601	Safety: Northbound approach lack right turn storage lane. (Source: 1)	Mid-Term: Safety: Install northbound right turn lane. (Source: 1, 6)
7	Gloucester	US 17 at VA 610	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). HRR: High speed roadway and lack of advance warning signs means drivers are unaware of upcoming intersections. Stop bards are worn. Due to high speeds on mainline, side streets have excessive delays under stop controlled conditions. (Source: 4, 7)	Short-Term: Safety: Replace Stop bar on westbound approach. Add advance intersection warning advisor (45 MPH) on both approaches, both sides of the travel lanes. Mid-Term: Safety: Intersection meets Warrant 1B, 2 and 3 for signalization. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
8	Gloucester	US 17 at VA 606	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 4)	Long-Term: Safety: Deficiency with low priority. Continue to monitor for potential improvements. (Source: 1)
9	Gloucester	US 17 (George Washington Memorial Highway) from VA 606 (Ark Road) to Hampton Road MPO boundary	Congestion: CSA: Need for improvement was identified by SMS database. (Source: 2)	Long-Term: Congestion: Urban - 6 Lane With Median. (Source: 2)
10	Gloucester	VA 616 (Belroi Road) from VA 614 (Hickory Fork Road) to VA 615 (Burleigh Road)	Congestion: Segment will operate at LOS D in 2035. (Source: 3)	Long-Term: Congestion: Rural - 4 Lane With Median (Source: 1)
11	Gloucester	VA 602 (Burkes Pond Road) from VA 3 (John Clayton Memorial Highway) to VA 198 (Dutton Road)	Safety: Geometric Deficiency (2025). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
12	Gloucester	VA 605 (Indian Road) from VA 603 (Figg Shop Road) to VA 606 (Farys Mill Road)	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
13	Gloucester	VA 616 (Clay Bank Road) from VA 631 (Gum Fork Road) to VA 616 (Hickory Fork Road)	Safety: Geometric Deficiency (2030). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
14	Gloucester	VA 3 (John Clayton Memorial Hwy) at VA 623 (Ware Neck Road)	Safety: High speed roadway, short right turn bay on mainline and horizontal alignment makes it difficult for drivers on side street to estimate mainline travel speeds, resulting in collisions. (Source: 7)	Short-Term: Safety: Add advisory speed plate to "50 mph" to eastbound intersection ahead sign. Long-Term: Safety: Relocate eastbound right-turn lane approximately 12 feet south to improve sight distance for northbound approach. Add "Vehicles Entering When Flashing" sign (dual indicated) with detector on northbound approach. (Source: 6)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
1	King & Queen	VA 635 (Bradley Farm Road) from Caroline County Line to VA 721	Safety: Substandard roadway geometric conditions. Poor intersection alignment at VA 721 and VA 627. Drivers on VA 627 have to look over shoulder to see on-coming traffic. (Source: 1, 3)	Mid-Term: Safety: Realign VA 635 to intersect VA 721 at 90 degree angle. Realign VA 627 to intersect VA 635 at 90 degree angle. Realign VA 623 north with VA 623 south. Long-Term: Safety: Reconstruct to current design standards with adequate edge of pavement drainage. Additionally, upgrade side street approaches to VA 635. (Source: 1, 3)
2	King & Queen	VA 602 (Mount Olive Road) from VA 614 (Devils Three Jump Road) to Middlesex County Line	Safety: Substandard roadway geometric conditions. Pavement markings missing on all side streets. Lacks adequate way-finding signage. Congestion: Based on information from PDC, trucks use VA 602 as cut through. (Source: 1)	Short-Term: Safety: Install chevrons throughout the segment as necessary; particularly in areas where the speed limit reduces to 30 mph. Install pavement markings (stop bars) and way-finding signage. Long-Term: Safety: Upgrade to current design standards. Additionally, upgrade side street approaches to VA 602. Congestion: Upgrade roadway conditions to current design standards to accommodate truck traffic. Provide turn lanes for additional capacity where necessary. (Source: 1)
3	King & Queen	VA 634 (Canterbury Road) from VA 636 to VA 14	Safety: Substandard roadway geometric conditions. (Source: 1)	Short-Term: Safety: Install chevrons throughout the segment as necessary; particularly in areas where the speed limit reduces to 30 mph. Long-Term: Safety: Upgrade to current design standards. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
4	King & Queen	VA 33 (General Puller Highway) at VA 605 (York River Road)	Safety: DSL: East and westbound left turn lanes are too short. Due to speeds on VA 33 , right turn treatments are inadequate. Vertical curve on eastbound approach limits sight distance to side street. Static warning signage already in place. HRR: High speed roadway and placement of advance warning signs can create safety issues. Shoulders are worn from turning traffic. Knoll in median creates sight distance issues for side street's view of mainline traffic. (Source: 1, 7)	Short-Term: Safety: Add Left-turn arrow for eastbound and westbound approaches. Move "intersection ahead" sign by 800' to 1,000' on both approaches. Add reflect on east side of median. Mid-Term: Safety: DSL: Improve eastbound approach and overall intersection grade to improve sight distance. Lengthen east and westbound left turn lanes. Install westbound right turn lane and convert eastbound taper to full right turn lane. HRR: Improve sight distance by lowering the profile of the median (west of intersection). Improve westbound right turn taper to distinguish from shoulder. Long-Term: Safety: Add "Vehicle Entering when Flashing" sign (dual indicated) with detector on northbound approach to catch right-turn movement. Overlay northbound approach to repair damage caused from truck use. Lengthen eastbound right-turn lane. (Source: 1, 6)
5	King & Queen	VA 33 (General Puller Highway) at VA 14 (Buena Vista Road)	Safety: Too many median openings closely spaced. Westbound left turn lane is too short. Based on speeds, eastbound right turn taper may be inadequate. VA 14 intersects at less than desirable angle. (Source: 1)	Mid-Term: Safety: Install eastbound right turn lane. Lengthen westbound left turn lane. Close cross-overs immediately to the east and west of VA 14. Realign VA 14 to the east at Long Dirt Road and improve cross-over to include turn lanes. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
6	King & Queen	VA 14 at US 360	Safety: Pavement markings faded. Eastbound and westbound left turn lane is too short. Lack of westbound right turn lane increases potential for accidents. High number of crashes may be due to red light running. Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 1, 4)	Short-Term: Safety: Repaint pavement markings. Check clearance intervals. Mid-Term: Safety: Lengthen eastbound and westbound left turn lanes. Install westbound right turn lane. (Source: 1)
7	King & Queen	VA 33 (General Puller Highway) at VA 14	Safety: Westbound right turn taper is inadequate to accommodate truck traffic going to land fill on VA 14. The approach also has slight vertical/ horizontal curve overlap. Trash truck queue on southbound approach spills-back to block entrances to USPO and Sears Realty. Sears Realty entrance is used as a cut-though to avoid queues at VA 33. (Source: 1)	Short-Term: Safety: Install stop bar and "Do not block the box" signage at Sear Realty entrance. Mid-Term: Safety: Covert westbound right turn taper to full right turn lane of appropriate length to accommodate truck traffic and reduce potential impacts of the horizontal/ vertical curve. Implement access management measure, such as channelization of Sears Realty entrance, to prevent truck cut through traffic. (Source: 1)
8	King & Queen	VA 601 (Stratton Major Road) from VA 605 North to VA 14 West	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
9	King & Queen	VA 603 (Dragon Bridge Road) from Middlesex County Line to VA 14	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
10	King & Queen	VA 608 (Clancie Road) from 1.25 miles North VA 678 to VA 609 West	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
11	King & Queen	VA 610 (Liberty Hall Road) from VA 614 East to VA 614 West	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 20 Feet. (Source: 3)
12	King & Queen	VA 614 (Devils Three Jump Road) from VA 602 to VA 610 South	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 20 Feet. (Source: 3)
13	King & Queen	VA 614 (Devils Three Jump Road) from VA 609 South to VA 602	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
14	King & Queen	VA 614 (Devils Three Jump Road) from VA 613 North to VA 609 South	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 1)
15	King & Queen	VA 614 (Devils Three Jump Road) from VA 14 to VA 613 North	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 1)
16	King & Queen	VA 620 (Owens Mill Road) from VA 660 to Essex County Line	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
17	King & Queen	VA 619 (Owens Mill Road) from VA 660 to VA 721	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
18	King & Queen	VA 620 (Poor House Lane) from VA 630 to VA 620 East	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
19	King & Queen	VA 631 (Poor House Lane) from VA 14 North to VA 630	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
20	King & Queen	VA 622 (Minor Road) from US 360 to Essex County Line	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
21	King & Queen	VA 623 (Indian Neck Road) from VA 721 to VA 635 South	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 20 Feet. (Source: 3)
22	King & Queen	VA 625 (Byrds Mill Road) from VA 721 to VA 649	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 20 Feet. (Source: 3)
23	King & Queen	VA 631 (Smithfield Road) from US 360 West to VA 650	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
24	King & Queen	VA 631 (Stevensville Road) from VA 632 to VA 14 North	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
25	King & Queen	VA 632 (Hockley Neck Road) from VA 633 to VA 631	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
26	King & Queen	VA 633 (Mantua Road) from VA 634 to VA 632	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
27	King & Queen	VA 634 (Mount Elba Road) from VA 633 to VA 629 East	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
28	King & Queen	VA 633 over Garnett's Creek	Safety: Identified as needing bridge replacement (UPC 2239). (Source: 5)	Short-Term: Safety: Replace bridge with current design standards, upgrade approaches (Source: 4)
29	King & Queen	VA 14 from US 360 to VA 33 West	Safety: Project identified in CTB Six Year Improvement Program as needing centerline rumble strips. Deficiency likely vehicles drifting across centerline (UPC 86481). (Source: 5)	Short-Term: Safety: Add centerline rumble strips. (Source: 4)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
1	King William	VA 30 (King William Road) from VA 617 East to VA 613	Safety: Substandard roadway geometrics. Horizontal and vertical curve overlap in vicinity of East Spring Forest Road north and south intersections. Many of the major side streets have no pavement markings. Congestion: Segment will operate at LOS E in 2035. (Source: 1)	Short-Term: Safety: Install pavement marking on major side streets. Mid-Term: Safety: Upgrade VA 30 to current design standards. Long-Term: Congestion: Reconstruct to 4 Lane with median. (Source: 1)
2	King William	VA 618 (Acquinton Church Road) from US 360 to VA 30 East	Safety: Inconsistent pavement and shoulder widths throughout entire segment. (Source: 1, 3)	Long-Term: Safety: Upgrade VA 618/629 to current design standards. (Source: 1, 3)
3	King William	US 360 at VA 600	Safety: Eastbound US 360 approach has horizontal alignment issue and the right turn lane is too short. Westbound right turn lane is too short. (Source: 1)	Short-Term: Safety: Reduce speed limit on both approaches to the intersection. Install flashing warning signs along eastbound approach to limit impact of horizontal curve issue. Mid-Term: Safety: Lengthen eastbound and westbound right turn lanes. (Source: 1)
4	King William	US 360 at VA 611	Safety: Too many access points in northeast quadrant. Inadequate westbound right turn provision given speeds on US 360. (Source: 1)	Mid-Term: Safety: Install westbound right turn lane to provide storage and reduce potential for rear-end accidents due to slowing vehicles. Implement access management to reduce the number of access points in northeast quadrant. Consider closing first entrance on VA 611 and widening second to at least 30 feet. Eliminate both existing access points on US 360 to accommodate right turn lane. Provide new access point on US 360 in future when property is redeveloped. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
5	King William	VA 30 (King William Road) at US 360	Safety: Tight westbound right turn radius; trucks run over curb. Northbound right turn vehicles intending to turn right at US 360 become trapped in right-most right turn lane which provides access to 7-Eleven only. Additionally, northbound through vehicles at VA 662 (Sharon Lane) become trapped downstream as lane becomes right turn only lane; vehicles wishing to go straight have to shift to left-most lane . Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 1, 4)	Short-Term: Safety: Move stop bar for southbound shared through/left lane back to provide additional turn radius for westbound right turning trucks. Mid-Term: Safety: Improve westbound right turn radius to accommodate trucks. Reconstruct to realign northbound approach of VA 30 from south of VA 662 to US 360. Change lane configuration at US 360 to allow right turns from right-most lane. New channelization will be exclusive right, through and left. (Source: 1)
6	King William	VA 30 (King William Road) at VA 629 / VA 9466	Congestion: Segment experiences heavy truck traffic in both directions. Two schools are located within immediate vicinity of the Intersection. Adequate turn lane storage is not provide at entrances to both schools. Queue spill-back and slowing of school buses may be creating congested conditions. (Source: 1)	Mid-Term: Congestion: Convert southbound right turn lanes at Acquinton Church Road to full right turn lane and lengthen to minimum 150 feet. Lengthen right and left turn lanes at northern entrance to middle school. Convert northbound right turn taper lanes to full right turn lanes at Walkerton Road. (Source: 1)
7	King William	VA 604 (Dabneys Mill Road) from VA 614 to VA 30 East	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
8	King William	VA 604 (Herring Creek Road) from VA 30 West to VA 628	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
9	King William	VA 608 (Globe Road) from VA 607 West to VA 600	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
10	King William	VA 608 (Globe Road) from VA 30 to VA 609	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
11	King William	VA 609 (Smokey Road) from VA 604 to VA 608 East	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
12	King William	VA 611 (Venter Road) from VA 605 to VA 30	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
13	King William	VA 614 (Etna Mills Road) from VA 601 to VA 615	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
14	King William	VA 615 (Nelsons Bridge Road) from Hanover County Line to VA 604	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
15	King William	VA 625 (Indian Town Road) from VA 640 to End of Road	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
16	King William	VA 625 (Indian Town Road) from VA 626 to VA 640	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
17	King William	VA 628 (Dorrell Road) from VA 600 to King And Queen County Line	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 20 Feet. (Source: 1)
18	King William	VA 628 (Dorrell Road) from VA 604 to VA 600	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 20 Feet. (Source: 3)
19	King William	VA 673 (Pocahontas Trail) from VA 1400 (Pocket Road) to VA 633 (Powhatan Trail)	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 20 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
20	King William	US 360 from Hanover / King William County Line to VA 1214 (Choctaw Ridge)	Safety: Lack of paved shoulders (UPC 81466). (Source: 5)	Mid-Term: Safety: Widen and pave shoulders. (Source: 4)
21	King William	VA 600 over Herring Creek	Safety: Identified as needing bridge replacement (UPC 77328). (Source: 5)	Short-Term: Safety: Replace bridge with current design standards, upgrade approaches (Source: 4)
22	King William	VA 30 (King William Road) at VA 1301 (Courthouse Lane)	Congestion: Current roadway configuration cannot accommodate for long term growth. (Source: 11)	Long-Term: Congestion: Extend Courthouse driveway from Courthouse lane to VA 30, include right and left turn bays on VA 30. Eliminate existing eastern VA 30 and Courthouse lane intersection. Construct park & ride lot on Courthouse lane. (Source: 10)
23	King William (West Point)	VA 30 (King William Road) from VA 1002 (Magnolia Ave) to VA 33	Congestion: Series of closely spaced intersections along the corridor. At bulk delivery entrance (24th St), trucks making northbound left form queues that propagate to impact through lane. The capacity of VA 30 & VA 33 is not enough. (Source: 1)	Mid-Term: Congestion: Implement access management. Lengthen northbound left turn lane at bulk delivery entrance (24th Street). Add turn lanes to the east bound approach of the intersection of VA 30 & VA 33 . (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
24	King William (West Point)	VA 30 (King William Road) at VA 1122 (15th Street)	Safety: Stop bar and centerline markings are missing on both approaches of 15th Street. Westbound lefts turn into TWLTL and conflict with northbound lefts. Eastbound right turn cars are crushed as they attempt to slip by on the right side of heavy vehicles as they make wide right turns. Entrance to Valero gas station on 15th Street is too close the intersection. TWLTL on north leg allows drivers to turn left into Valero at closest entrance to intersection. (Source: 1, 4)	Short-Term: Safety: Install stop bar and centerline marking on both approaches of 15th Street. Repaint northbound and southbound approaches to delineate left turn bays; paint left arrow on pavement. Install signage on eastbound approach to warn cars that heavy vehicles make wide right turns. Mid-Term: Safety: Implement access management to move entrance to Valero west away from intersection. (Source: 1)
25	King William (West Point)	VA 30 (King William Road) at VA 33	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). Congestion: The capacity of the eastbound approach is not enough. (Source: 1, 4)	Mid-Term: Congestion: Add a through lane and an exclusive left lane for the eastbound approach. Long-Term: Safety: Deficiency with low priority. Continue to monitor for potential improvements. (Source: 1)
26	King William (West Point)	Off VA 33 (Eltham Road) Adjacent to new bridge.	Congestion: Commuter Lot Improvement identified by SMS database. (Source: 2)	Long-Term: Congestion: Construct commuter lot adjacent to new bridge. Estimate 25 spaces. (Source: 2)
27	King William (West Point)	VA 701 (Euclid Boulevard) from VA 1026 to VA 30	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
1	Mathews	VA 3 (Twiggs Ferry Road) at VA 198 (Buckley Hall Road)	Congestion: Vehicles from the southbound approaches have difficulty finding gaps in mainline traffic flow. (Source: 1)	Mid-Term: Congestion: Consider signalization to provide gaps for Twiggs Ferry Road traffic based on preliminary warrant analysis. Installation of the signal would depend on full warrant analysis. (Source: 1)
2	Mathews	VA 626 (Hallieford Road) from VA 198 North to VA 666	Safety: Stop bar missing on southbound VA 626 at VA 198. Tide water floods drainage ditches on side of the roadway. Substandard horizontal curve alignment. Congestion: VA 626 experiences high summer time traffic. (Source: 1)	Short-Term: Safety: Install stop bar on VA 626 at VA 198. Long-Term: Safety: Reconstruct to current design standards with adequate edge of pavement drainage facilities. Congestion: Based on future summer traffic volume, consider widening VA 626 where feasible. (Source: 1)
3	Mathews	VA 660 (East River Road) from VA 617 North to VA 618	Safety: Both north and south VA 617 intersections are not well-defined and intersect VA 660 at a less than desirable angle. Stop bars missing on both approaches of VA 619. Several minor roads and private entrances intersect VA 660. (Source: 1)	Short-Term: Safety: Install pavement markings including stop bars on both VA 617 intersections, lane markings and edge of pavement marking to improve definition and visibility. Install stop bar on both approaches of VA 619. Mid-Term: Safety: Install appropriate turn lanes on VA 660 at VA 619 and VA 660 (East River Road). Long-Term: Safety: Reconfigure both VA 617 intersections to intersect VA 660 at 90 degree angle and install appropriate turn lanes on VA 660. Investigate opportunities to implement access management to consolidate minor roads and relocate private entrances. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
4	Mathews	VA 3 (Windsor Road) at VA 198 (Buckley Hall Road)	Safety: Slight horizontal curve on VA 3 approach. (Source: 1)	Long-Term: Safety: Straighten VA 3 approach to eliminate horizontal curve. (Source: 1)
5	Mathews	VA 14 at VA 660	Safety: Intersection is under construction. (Source: 1)	Long-Term: Safety: Continue to monitor for safety improvements. (Source: 1)
6	Mathews	VA 3 (Windsor Road) from VA 14 to Middlesex County Line	Congestion: Segment will operate at LOS D in 2035. (Source: 2)	Long-Term: Congestion: Rural - 4 Lane With Median. (Source: 2)
7	Mathews	VA 14 (Buckley Hall Road) from VA 198 West to VA 9246	Congestion: Segment will operate at LOS D in 2035. (Source: 3)	Long-Term: Congestion: Urban - 4 Lane With Median. (Source: 3)
8	Mathews	VA 14 (Old Bayside Drive) from VA 600 (Circle Drive) to Bayside Wharf	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
9	Mathews	VA 600 (Circle Drive) from VA 14 North to VA 14 South	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
10	Mathews	VA 609 (Bethel Beach Road) from VA 608 to VA 611	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet . (Source: 1)
11	Mathews	VA 611 (Garden Creek Road) from VA 613 West to VA 609	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
12	Mathews	VA 613 (Beaverdam Road) from VA 14 to VA 611 West	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet . (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
13	Mathews	VA 617 (North River Road) from VA 618 (Cardinal Road) to VA 654	Safety: Project identified in CTB Six Year Improvement Program as needing realignment. (UPC 67091). Geometric Deficiency (2030). (Source: 5, 3)	Short-Term: Safety: Reconstruct 0.75 miles of roadway from 0.105 mile North of VA 618 to 0.073 mile South of VA 645 to realign and widen roadway (no information available on specific improvements) Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 4, 3)
14	Mathews	VA 617 (North River Road) from VA 654 to VA 14	Safety: Geometric Deficiency (2025). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
15	Mathews	VA 618 (Cardinal Road) from VA 617 to VA 660	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
16	Mathews	VA 628 (Cobbs Creek Lane) from VA 198 to VA 725	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
17	Mathews	VA 636 (Bay Haven Drive) from VA 672 to VA 633	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
18	Mathews	VA 637 (Gwynnsville Road) from VA 680 to VA 633	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
19	Mathews	VA 639 (Crab Neck Road) from VA 223 East to VA 648	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
20	Mathews	VA 641 (Pine Hall Road) from VA 14 to End of Road	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
21	Mathews	VA 642 (Fitchetts Wharf Road) from VA 643 to Fitchett Wharf	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
22	Mathews	VA 643 (Haven Beach Road) from VA 642 to VA 645	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
23	Mathews	VA 14 at VA 198	Safety: Project identified in CTB Six Year Improvement Program. (UPC 56940). (Source: 5)	Short-Term: Safety: Construct turn lanes to improve intersection safety. (Source: 4)
24	Mathews	VA 3 at VA 14	Safety: Short turn bays cause safety concerns. (Source: 11)	Mid-Term: Safety: Extend existing turn bays to current standards (Source: 10)
1	Middlesex	VA 33 (General Puller Highway) at VA 3 (Twiggs Ferry Road)	Safety: Yield sign on eastbound to southbound right turn is on left hand side only. Several commercial and private access points closely spaced. Congestion: Vehicles on the northbound approach have difficulty finding sufficient gaps in the mainline traffic. (Source: 1)	Short-Term: Safety: Augment existing yield sign for eastbound right turns to southbound Twiggs Ferry Road with additional yield sign on right hand side. Mid-Term: Safety: Consider access management to consolidate access points along the segment from VA 626 to VA 3 (Twiggs Ferry Road). Long-Term: Congestion: Reconstruct intersection since VA 3 will be to widen to four lanes according to SMS recommendations. Keep monitor the intersection for further improvements. (Source: 1)
2	Middlesex	VA 603 (Farley Park Road) from King & Queen County Line to VA 612	Safety: Vegetation along portions of the roadway restrict sight distance. Roadway is constructed to secondary (low volume) road design standards. (Source: 1, 3)	Short-Term: Safety: Trim vegetation to improve sight distance. Long-Term: Safety: Upgrade roadway to current design standards. (Source: 1)
3	Middlesex	VA 3 (Twiggs Ferry Road) from Mathews County Line to VA 630	Congestion: Segment will operate at LOS D in 2035. (Source: 2, 1)	Long-Term: Congestion: Rural - 4 Lane With Median. (Source: 2, 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
4	Middlesex	VA 33 at VA 227	Safety: DSL: Pavement markings are faded. Westbound right turn radius is too tight. Permitted/Protected left turn phasing on both east/west approaches causes accidents. Too many commercial entrances located within functional area of the intersection. Southbound right turn acceleration lane creates an unnecessary merge point. HRR: Location has high rate of left turn crashes due to permitted phases and high speeds of opposing traffic. Tight geometry and lack of guidance (puppy tracks) contributes to crashes between left turning vehicles. Stop bar is worn. Poor drainage in median. Congestion: DSL: Heavy westbound right turn volume. (Source: 1, 7)	Short-Term: Safety: DSL: Repaint pavement markings. HRR: eastbound & westbound protected left-turn phasing. Restripe westbound stop bar. Strip puppy feet for eastbound left-turn. Mid-Term: Safety: DSL: Eliminate southbound right turn acceleration lane and allow turns at the signal. HRR: Improve drainage in median. Congestion: DSL: Convert VA 33 westbound right turn taper to full right turn lane and improve turn radius. Right turn lane should be long enough to accommodate heavy right turn traffic. Long-Term: Safety: DSL: Consider access management to consolidate or relocate commercial entrances, particularly entrance that tie into turn lane. Continue to monitor intersection for accidents and consider changing east/west left phasing to protected only. (Source: 1, 6)
5	Middlesex	US 17 at VA 616 / VA 665	Safety: Southbound US 17 left turn lane too short. Northbound US 17 right turn taper does not accommodate summer time boat-trailer traffic. Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source:1, 4)	Mid-Term: Safety: Lengthen southbound left turn lane to accommodate trailer traffic. Convert northbound right turn taper to full right turn lane that can accommodate trailer traffic. (Source: 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
6	Middlesex	VA 33 at VA 3	Safety: Crashes at this location exceed the planning threshold (nine crashes over three-year period). (Source: 4)	Long-Term: Safety: Deficiency with low priority. Continue to monitor for potential improvements. (Source: 1)
7	Middlesex	US 17 BUS (Gloucester Road) from US 17 South to VA 33 / VA 618	Congestion: Need for improvement was identified by SMS database. (Source: 2)	Long-Term: Congestion: Urban - 3 Lane. (Source: 2)
8	Middlesex	VA 3 (General Puller Highway) from VA 3 / VA 33 North to VA 3 / VA 33 North	Congestion: Need for improvement was identified by SMS database. Study identified that the roadway will not accommodate long term growth on corridor. (Source: 2, 11)	Long-Term: Congestion: Rural - 4 Lane With Median. (Source: 2, 10)
9	Middlesex	VA 3 (Greys Point Road) from Lancaster County Line / Robert Opie Norris Bridge End to VA 3 / VA 33 North	Safety: Bridge is functionally obsolete, shoulders are insufficient. Congestion: Segment will operate at LOS E in 2035. Existing LOS for bridge is LOS D in AM, and LOS E in PM. (Source: 2, 11)	Long-Term: Safety: Replace existing 2-lane bridge with a 4-lane bridge, include 10 foot shoulders. Congestion: Urban - 4 Lane With Median. (Source: 2, 10)
10	Middlesex	VA 3 (Twiggs Ferry Road) from VA 3 / VA 33 North to VA 630	Congestion: Segment will operate at LOS D in 2035. (Source: 2, 3)	Long-Term: Congestion: Rural - 4 Lane With Median. (Source: 2, 3)
11	Middlesex	VA 33 (General Puller Highway) from US 17 / VA 33/ VA 618 to VA 703	Congestion: Segment will operate at LOS E in 2035. (Source: 2, 3)	Long-Term: Congestion: Urban - 4 Lane With Median. (Source: 2, 3)
12	Middlesex	VA 33 (General Puller Highway) from VA 636 to Stingray Point	Safety: Project identified in CTB Six Year Improvement Program because of insufficient facilities for pedestrians and cyclist. (UPC 67640) (Source: 5, 3)	Mid-Term: Safety: Construct bicycle/pedestrian path between VA 636 to VA 688. Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 4, 1)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
13	Middlesex	VA 1101 (Lovers Lane) from End of Road to VA 33	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
14	Middlesex	VA 1104 (Deagles Road) from End of Road to VA 1102	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
15	Middlesex	VA 602 (Wares Bridge Road) from King And Queen County Line to US 17 North	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
16	Middlesex	VA 603 (Farley Park Road) from VA 612 to US 17	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)
17	Middlesex	VA 615 (Town Bridge Road) from VA 616 to VA 602 West	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
18	Middlesex	VA 616 (Zion Branch Road) from VA 615 to US 17	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
19	Middlesex	VA 622 (Dirt Bridge Road) from VA 623 to VA 3	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
20	Middlesex	VA 623 (Regent Road) from VA 624 to VA 622	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
21	Middlesex	VA 624 (Syringa Road) from VA 626 to VA 623	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 3)
22	Middlesex	VA 625 (Barricks Mill Road) from VA 624 to VA 628	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)
23	Middlesex	VA 628 (Mill Creek Road) from VA 33 to VA 625	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 22 Feet. (Source: 3)

ID #	Jurisdiction	Location Information	Deficiencies	Recommendation
24	Middlesex	VA 629 (Stormont Road) from VA 690 to VA 619	Safety: Project identified in CTB Six Year Improvement Program. (UPC 59071) (Source: 5, 3)	Mid-Term: Safety: Reconstruct 0.23 miles of roadway from 0.50 mile East of VA 619 to 0.085 mile West of VA 690 (no information available on specific improvements). Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 4, 3)
25	Middlesex	VA 3 in vicinity of VA 621	Safety: Tight horizontal curves in "darkness - not lighted" conditions compounded with high speeds are cause of collisions (Source: 11)	Short-Term: Safety: Add advisory speed reduction signage at horizontal curve. (Source: 10)
26	Middlesex	VA 630 (Stampers Bay Rd.) from VA 3 to VA 33	Operational and Safety: Geometric Deficiency.	Short-term: Complete widening and realignment of the roadway.
27	Middlesex	VA 3 at VA 622 (Dirt Bridge Road)	Congestion: Lack of turn lanes causes congestion as through vehicles are blocked by turning vehicle. (Source: 11)	Mid-Term: Congestion: Add eastbound right turn lane and northbound right turn lane. (Source: 10)
28	Middlesex (Urbanna)	VA 227 (Urbanna Road) at VA 1001(Rappahannock Avenue)	Safety: Stop bar missing on VA T-1001 and stop sign is obscured by tree limbs. No pedestrian facilities available; however, pedestrians observed walking in street along VA T-1001. No drainage facilities. (Source: 1)	Short-Term: Safety: Install stop bar on VA 1001. Trim tree limbs away from stop sign. Long-Term: Safety: Upgrade intersection with urban characteristics. Consider installing curb & gutter, side-walk on either side of VA 1001, cross-walks with ADA requirement. (Source: 1)
29	Middlesex (Urbanna)	VA 1001 (Rappahannock Avenue) from VA 1014 to VA 1007	Safety: Geometric Deficiency (2009). (Source: 3)	Long-Term: Safety: Rural - 2 Lane 24 Feet. (Source: 1)

Structures

Information on structures and their current degree of adequacy was obtained from inventory information provided by VDOT. Current bridge sufficiency ratings were reviewed and those structures with a rating of less than 50 were considered deficient. Within the MPPDC, 15 structures were considered deficient or obsolete and in need of replacement, with an additional 23 recommended to be upgraded or repaired (Exhibit 15).

Exhibit 15. Bridge Deficiencies

	Functionally Obsolete			Structural Deficiency		
	Replace	Upgrade/Repair		Replace	Upgrade/Repair	
Bridge Sufficiency Rating	**0-50**	**51-80**	**80+**	**0-50**	**51-80**	**80+**
Essex County	0	3	0	4	0	0
Gloucester County*	1	4	0	1	0	0
King and Queen County	1	2	0	2	3	0
King William County	1	4	0	1	2	0
Mathews County	2	1	0	1	0	0
Middlesex County	0	4	0	1	0	0
Middle Peninsula PDC	5	18	0	10	5	0

Note: * Outside of HRTPO.

Roadway Geometrics

Data related to roadway geometrics provided by VDOT was compared to adequacy criteria, also made available by VDOT, to determine road segments and spot locations considered deficient. Recommendations for improvements included many of the remedial actions noted for mobility and safety improvements.

Deficiencies, Recommendations and Cost Estimates

Base year deficiencies (mobility, safety, structures, geometrics) and recommendations to alleviate the deficiencies are listed in Exhibit 14 and mapped by jurisdiction in Exhibits 16 through 21.

Roadways - Forecast Year (2035)

Deficiencies were based on mobility analysis (LOS) only. The same roadway segments and intersections analyzed for the base year condition, together with any new roadways (arterials or collectors) expected to be constructed in the MPPDC were analyzed again using year 2035 traffic projections. If some segments and intersections are determined to be deficient for both the base year and forecast year, the recommendation for 2035 will override the recommendation for the base year (Exhibit 14).


SEE TAPPAHANNOCK MAP
ESSEX COUNTY
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360
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5
17
12
2035
RURAL LONG RANGE TRANSPORTATION PLAN
Legend
Operation Deficiency
Safety Deficiency
Both Deficiencies
Other Deficiency
Operation Deficiency
Safety Deficiency
Both Operation and Safety Deficiency
Geometric Deficiency
EXHIBIT 16
ESSEX COUNTY
DEFICIENCIES
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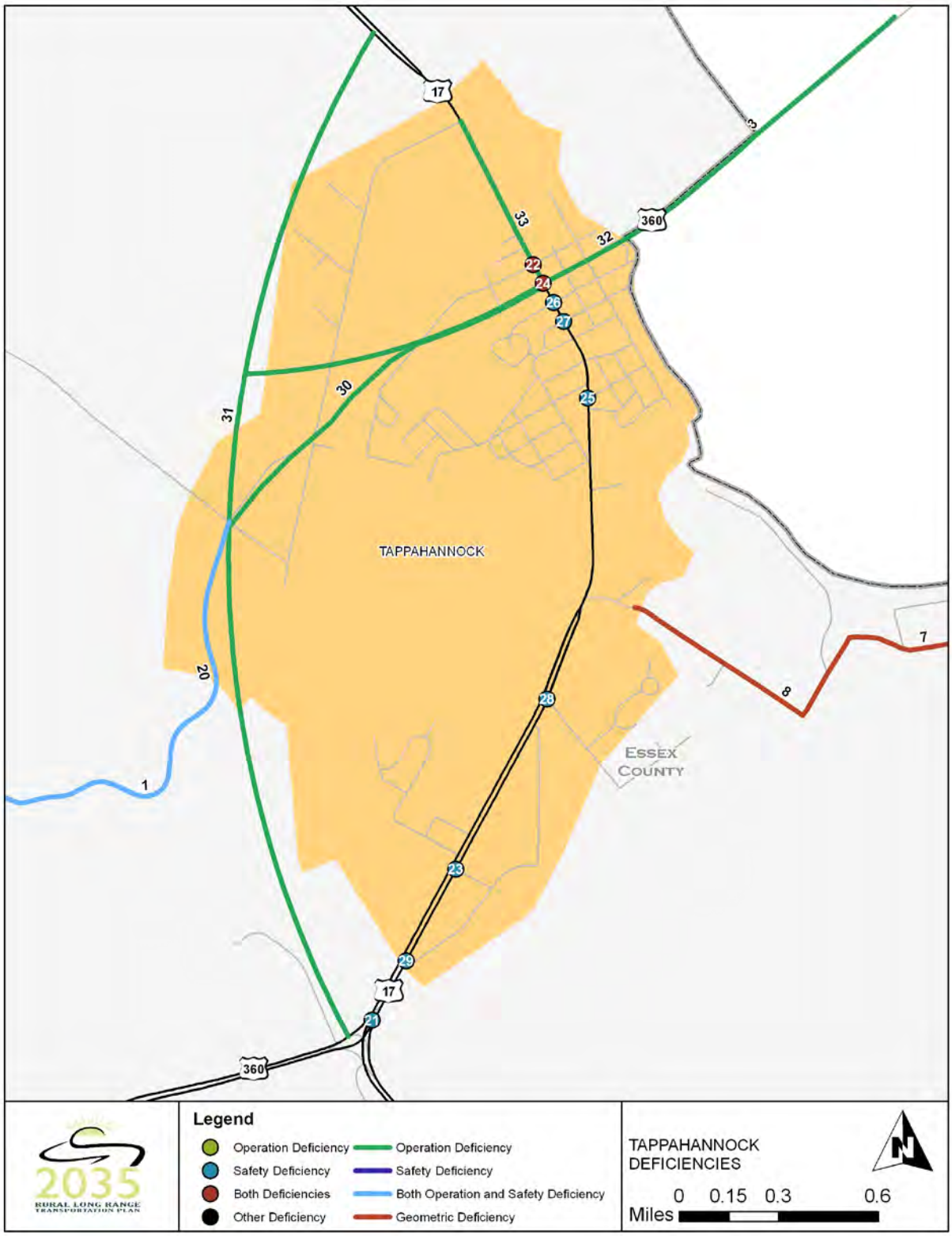
Miles


TAPPAHANNOCK
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2035
RURAL LONG RANGE TRANSPORTATION PLAN
Legend
Operation Deficiency
Safety Deficiency
Both Deficiencies
Other Deficiency
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Both Operation and Safety Deficiency
Geometric Deficiency
TAPPAHANNOCK DEFICIENCIES
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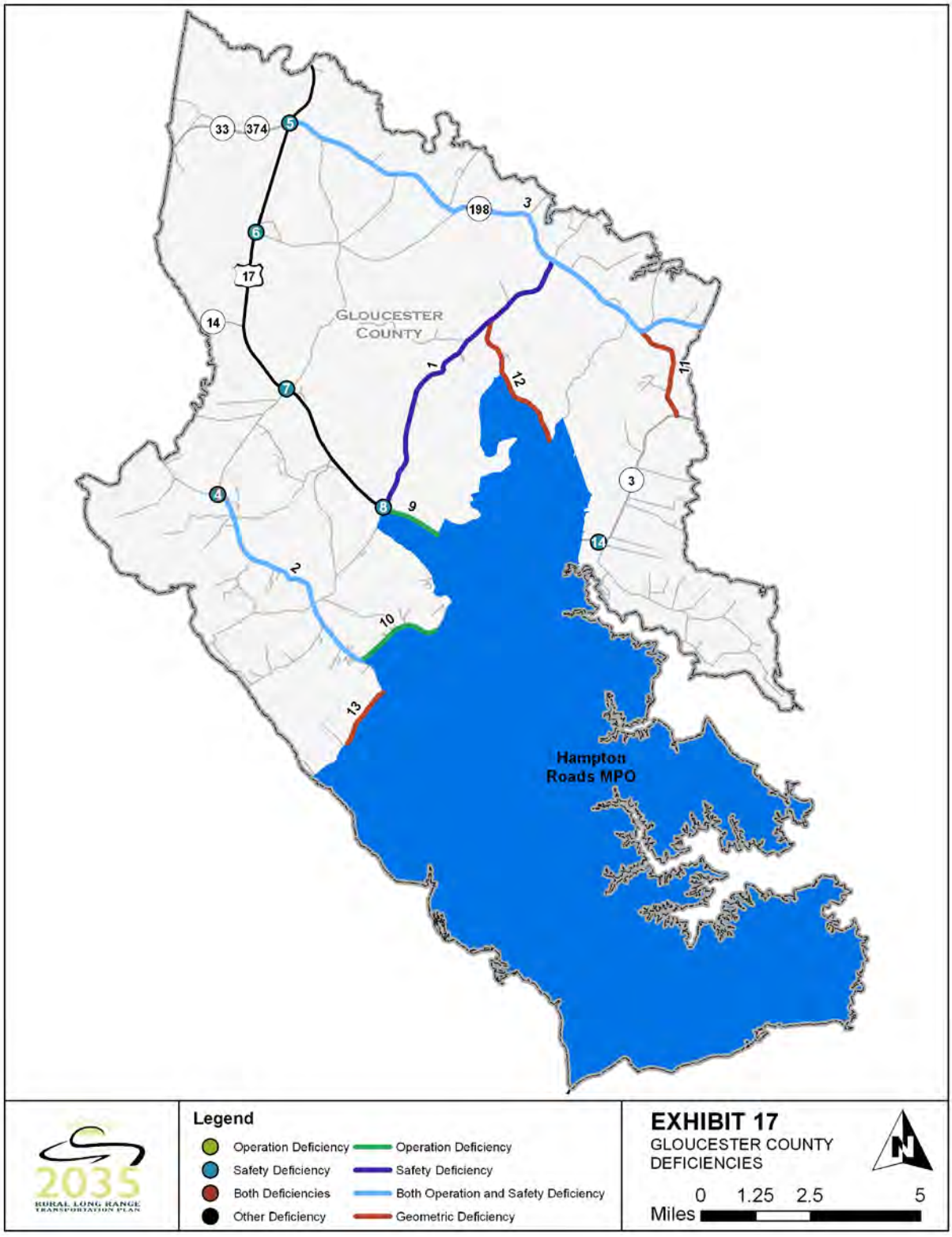
33
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198
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14
GLOUCESTER
COUNTY
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13
Hampton
Roads MPO
2035
RURAL LONG RANGE
TRANSPORTATION PLAN
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Operation Deficiency
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EXHIBIT 17
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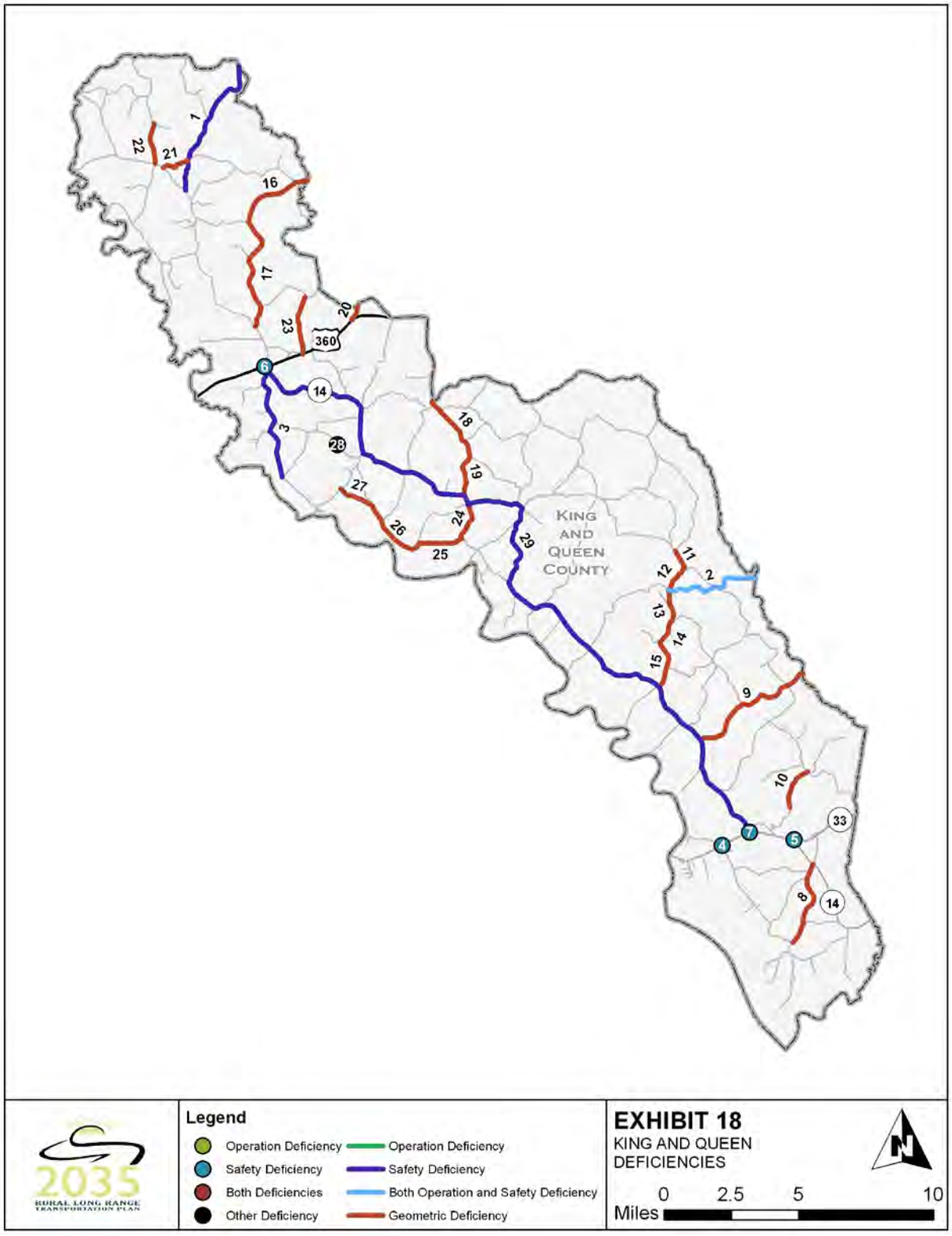
KING AND QUEEN COUNTY
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360
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2035
RURAL LONG RANGE TRANSPORTATION PLAN
Legend
Operation Deficiency
Safety Deficiency
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Other Deficiency
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Both Operation and Safety Deficiency
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EXHIBIT 18
KING AND QUEEN
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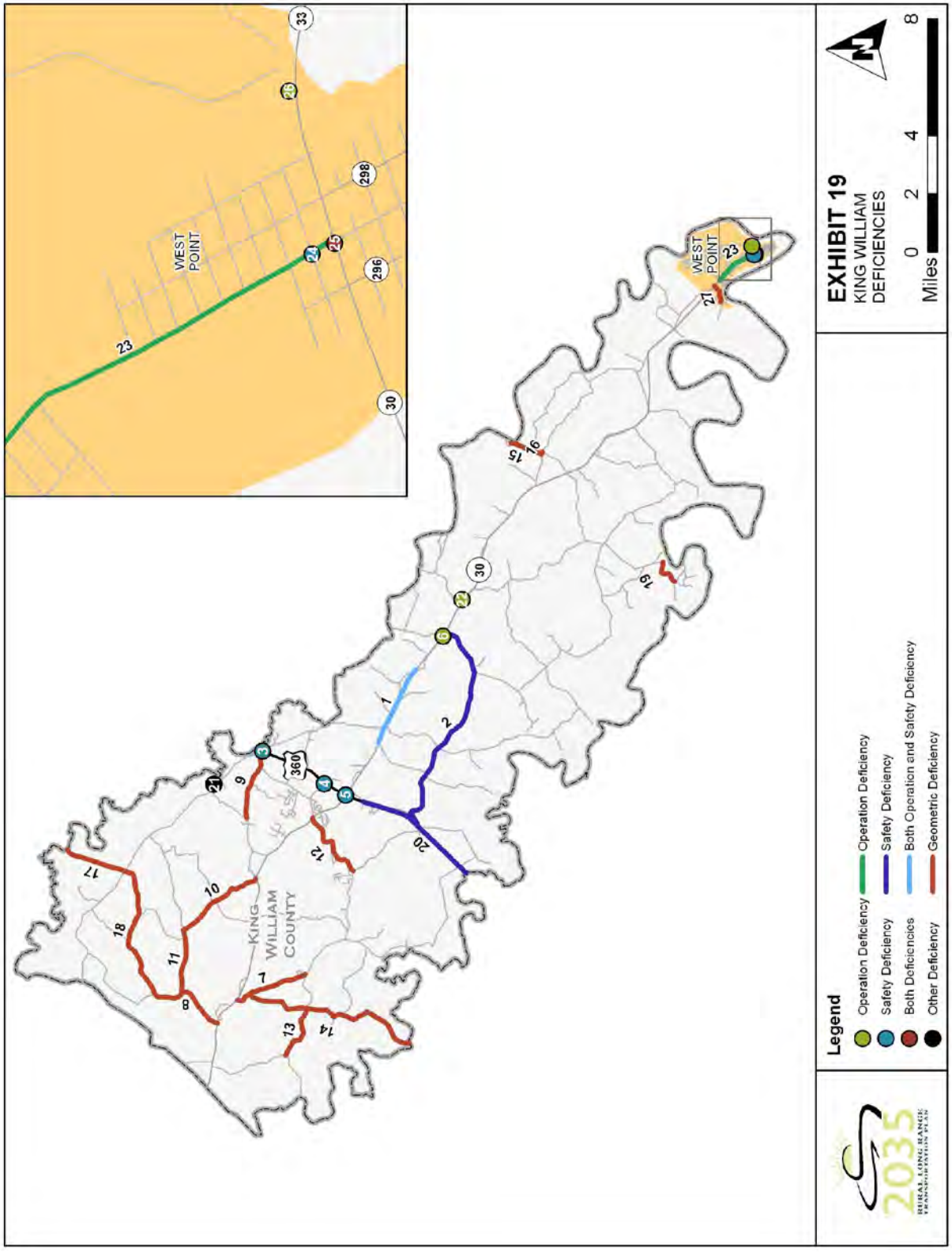
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KING WILLIAM
DEFICIENCIES
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Safety Deficiency
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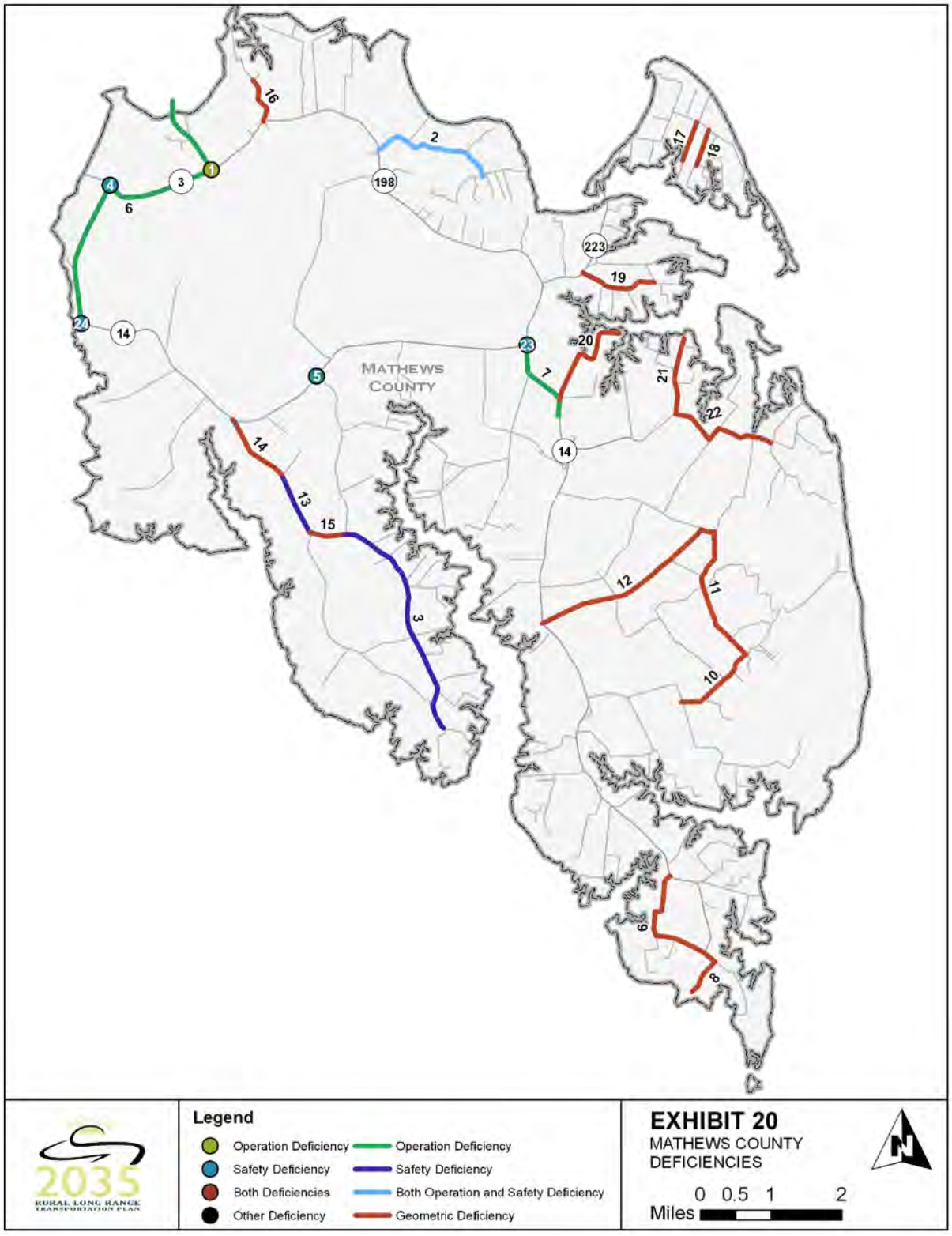
Geometric Deficiency
KING WILLIAM COUNTY
WEST POINT
WEST POINT
2035


MATHEWS COUNTY
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2035
RURAL LONG RANGE TRANSPORTATION PLAN
Legend
Operation Deficiency
Safety Deficiency
Both Deficiencies
Other Deficiency
Operation Deficiency
Safety Deficiency
Both Operation and Safety Deficiency
Geometric Deficiency
EXHIBIT 20
MATHEWS COUNTY
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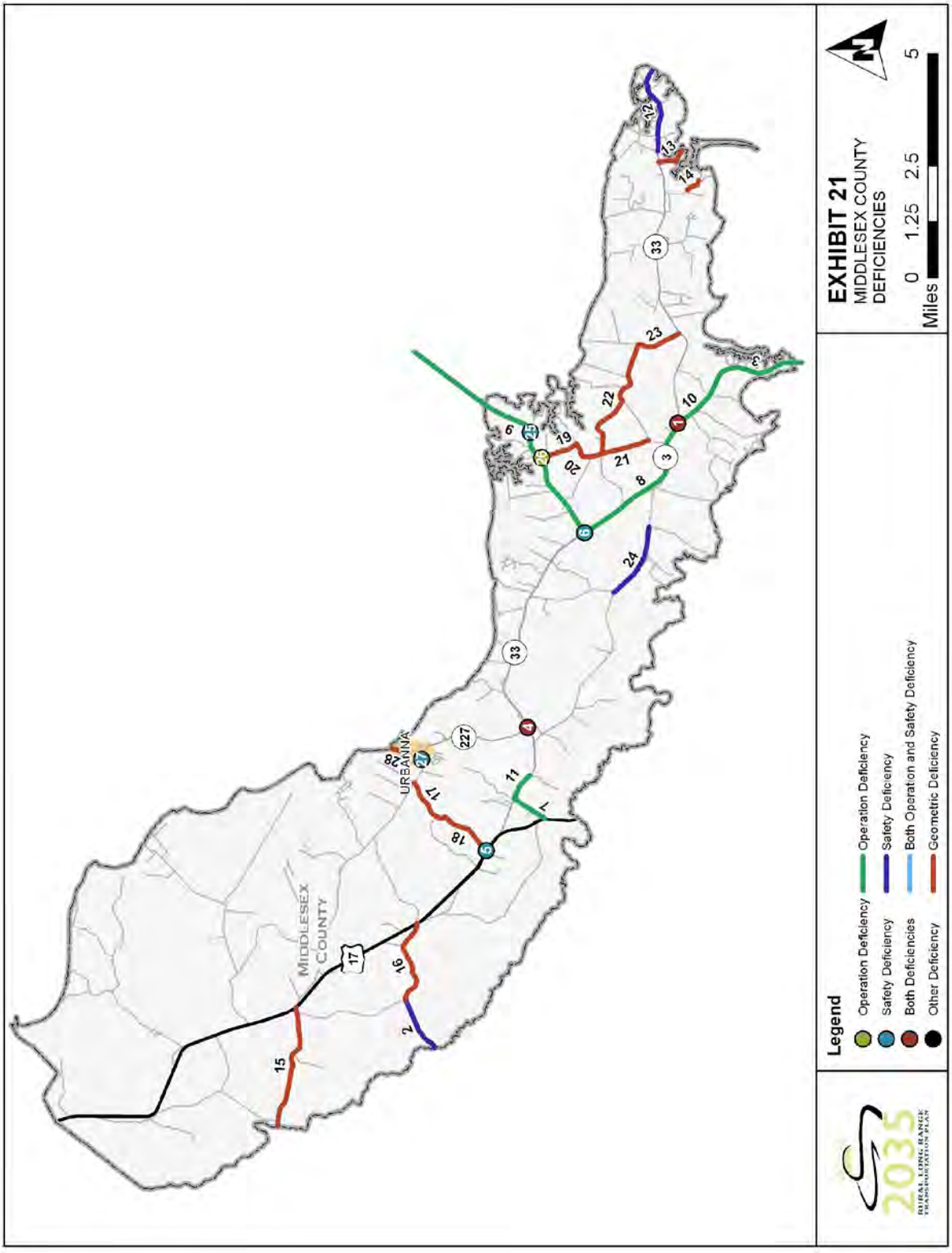
EXHIBIT 21
MIDDLESEX COUNTY
DEFICIENCIES
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Legend
Operation Deficiency
Safety Deficiency
Both Deficiencies
Other Deficiency
Operation Deficiency
Safety Deficiency
Both Operation and Safety Deficiency
Geometric Deficiency
URBANNA
MIDDLESEX COUNTY
2035
RURAL LONG RANGE TRANSPORTATION PLAN

Public Transportation

One set of deficiencies and recommendations (base year and forecast year) was developed for the public transportation component of the Plan. Bay Transit, in partnership with other regional organizations, is exploring the possibility of providing additional fixed-route services in the future to meet the high transit demands of the Middle Peninsula region.

Demand-responsive transit is a vital service offered in many rural areas throughout the state because the providers offer transportation services to those with no other means of travel to necessary trip destinations. The Coordinated Human Service Mobility plan identified the needs and deficiencies of the region and also formulated strategies to address these needs (DRPT, *Middle Peninsula*, 2008):

- Continue to support and maintain capital needs of coordinated human service transportation providers;
- Expand availability of demand-response and specialized transportation services to provide additional trips for older adults, people with disabilities, and people with lower incomes;
- Expand outreach and information on available transportation options in the region, including establishment of a centralized point of access;
- Build coordination between Bay Transit and other demand-responsive transit providers;
- Bring new funding partners to public transit/human service transportation;
- Implement new public transportation services or operate existing public transit services on more frequent basis;
- Provide flexible transportation options and more specialized one-to-one services through expanded use of volunteers; and
- Provide targeted shuttle services to access employment opportunities.

The review of disadvantaged population groups determined that there is limited access to public transportation by these populations, other than by demand-responsive service.

The Virginia Disability Survey of 1999, identified transportation as a significant impediment for disabled persons seeking additional or improved employment, including disabled individuals currently employed 35 or more hours per week. This is a particularly urgent problem for persons who have serious loss of vision or other severe physical impairments that cannot be overcome by purchasing a properly outfitted, privately-owned vehicle. Although each of the localities provides emergency vehicles to people with disabilities, these services are, in general, expensive and not equipped to meet the day-to-day transportation needs of disabled people living on the Middle Peninsula.

The largest provider of transportation services in the region, Bay Transit, Inc., offers transportation and para-transit style services to residents of each locality in region as stated previously. Although most Bay Transit vehicles are equipped with wheelchair lifts, Bay Transit has indicated that additional vehicles and the construction of bus shelters would reduce the number of individuals whose requested pick up times could not be accommodated and enhance service delivery. Recently, Bay Transit has decided to expand its services to include

transportation from the Middle Peninsula to surrounding areas, such as the Richmond Metropolitan Area. There, the transportation system connects with Richmond transportation hubs, increasing the ability of disabled individuals to access additional services.

There are several census tract block group areas that had a high portion of one or more transportation disadvantaged groups. The MPPDC identified those areas that have the highest concentrations of low-income, elderly, and persons with disabilities (Exhibits 22 and 23). Bay Transit, in their "Transit Development Plan: Fiscal Years 2010-2015", projected that the population of elderly persons age 65 or older will increase from years 2010-2015 in all of the Middle Peninsula counties they serve. Addition of fixed-route or flexible fixed-route transit service along the principal arterials within the PDC would provide better mobility and access to and from these areas and populations. In addition, extended hours of demand-responsive service and new fixed-route service could provide access to the other transportation disadvantaged groups throughout the region.

Exhibit 22. Census Tracts with Higher than PDC-wide Transportation Disadvantaged Populations

Location	Minorities	Low-Income	Age 65 and Over	Persons with Disabilities
MPPDC	22.5%	8.4%	14.6%	18.5%
Essex County				
Tract 9506	53.1%	9.8%	15.3%	24.5%
Block Group 1	74.0%	12.6%	15.4%	30.2%
Block Group 2	41.8%		18.1%	25.4%
Tract 9507	44.2%	13.6%	19.5%	20.0%
Block Group 1	28.8%	10.5%	23.0%	18.6%
Block Group 2	57.1%	17.0%		20.1%
Block Group 3	42.1%	11.9%	24.1%	
Tract 9508	27.7%	10.3%	17.2%	22.4%
Block Group 1	23.9%	12.3%	18.8%	20.9%
Block Group 2	34.0%		15.4%	23.7%
Block Group 3	24.6%	13.8%	17.3%	
Gloucester County				
Tract 1105		10.6%	14.9%	19.3%
Block Group 2		9.6%	20.5%	23.0%
King and Queen County				
Tract 9504	43.8%	11.6%	16.4%	25.1%
Block Group 1	42.6%	12.8%	16.3%	24.0%
Block Group 2	46.2%	9.2%	16.7%	23.1%
Tract 9505	31.8%	9.8%	17.5%	24.0%
Block Group 2	36.5%	16.7%	19.5%	32.4%
Block Group 3	48.5%	11.4%	21.3%	19.5%
King William County				
Tract 9502	48.7%	16.0%	17.7%	19.2%

Location	Minorities	Low-Income	Age 65 and Over	Persons with Disabilities
Block Group 1	61.8%	18.8%	15.8%	21.8%
Block Group 2	40.6%	14.2%	18.9%	
Middlesex County				
Tract 9509	32.4%	14.8%	20.6%	29.1%
Block Group 1	33.6%	15.2%	20.6%	30.5%
Block Group 2	31.1%	14.3%	20.6%	24.8%
Tract 9510	27.3%	12.3%	21.8%	20.8%
Block Group 1	43.6%	15.4%	20.9%	
Block Group 3		14.2%	17.7%	23.1%
Tract 9511		15.2%	17.3%	20.5%
Block Group 1	24.3%	15.3%	19.3%	21.1%
Block Group 2		16.2%	21.1%	19.3%
Tract 9512		10.6%	29.9%	25.0%
Block Group 2		14.9%	38.9%	31.4%

Source: US Census 2000.

The staff of Bay Transit and several stakeholders, through the Transit Development Plan (TDP) process, have identified the potential need in the region for the initiation of additional fixed-route services. They identified one proposed fixed route in the Middle Peninsula Region. "Proposed Fixed Route 1" would provide service from Gloucester Point to the Town of Urbanna to the Town of Tappahannock starting from Gloucester and following US 17 to access Urbanna and Tappahannock. The one-way distance of the route is about 62 miles with a one-way trip estimated to take one and a half hours. However, funding for new fixed-route services is unlikely during at least the next 5 years considering anticipated funding levels in the near-term future and other considerations.

Bay Transit and other stakeholders included additional suggestions for expanded service in their TDP, including the extension of existing demand-response service to include later evening hours (after 6 PM) and/or weekend service (Saturday primarily). Other improvements that Bay Transit has proposed include the planned acquisition of a computerized scheduling and dispatching system. The manual method they are using presently is not an efficient way to operate the system, and with the improvement, Bay Transit suggests that their annual ridership may experience an increase of about ten percent per year following the implementation of a computerized system.

Based on the way the demand for transit has grown in the Bay Transit service area, an administrative and maintenance center has been proposed to be built in the Middle Peninsula. Funding for the facility, according to Bay Transit's current TDP, had been previously identified as a Federal earmark and would require zero local funds to build.

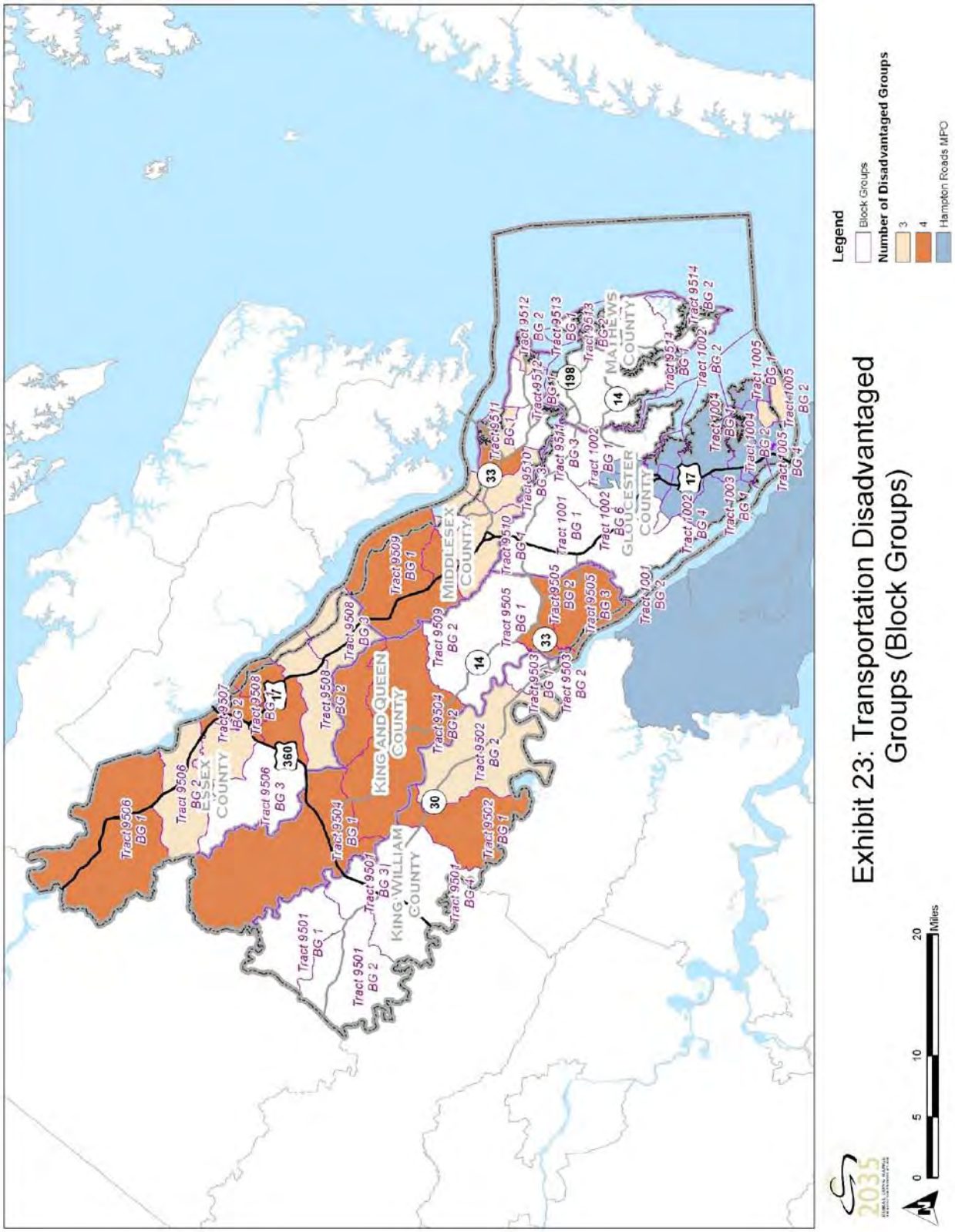
Exhibit 23: Transportation Disadvantaged Groups (Block Groups)
Legend
Block Groups
Number of Disadvantaged Groups
3
4
Hampton Roads MPO
ESSEX COUNTY
KING AND QUEEN COUNTY
KING WILLIAM COUNTY
MIDDLESEX COUNTY
GLOUCESTER COUNTY
MATHEWS COUNTY
0
5
10
20
Miles
2035

Bicycle and Pedestrian Facilities

As with human services transportation, one set of deficiencies and recommendations (base year and forecast year combined) was developed for this component of the Plan. Analysis is more qualitative than quantitative in nature with recommendations closely aligned with local desires. Because system development desires addressed present day or near-term needs, consolidation of recommendations was appropriate.

Determination for bikeways and pedestrian facilities is dependent on several factors. One is to define areas for development that have numerous trip generators and attractors, such as neighborhoods, parks, schools, and shopping areas. Another factor in development is the determination of areas appropriate for extensions of existing routes and paths to provide better links between facilities.

The primary source of recommendations was the Middle Peninsula Regional Bicycle Facility Plan. In the Middle Peninsula, the relatively flat terrain and current use of roads by bicyclists allowed the bike plan focus group to recommend facilities that will be successfully accepted and utilized. The recommendations from the regional plan are for shared road designations and primarily require routing and signage (Exhibits 24 and 25).

Exhibit 24. Recommended Bicycle Facilities in the MPPDC

Jurisdiction	Roadway	Termini
Essex County	US 17	Caroline County line to Middlesex County line
	US 360	Rappahannock River to King and Queen County line
	VA 659, VA 618, and VA 619	Tappahannock to King and Queen County line
	VA 622 and VA 621	VA 618/VA 619 to US 360
	VA 684	US 17 to US 360
Town of Tappahannock	Diversion around US 17 through town using South Water Lane (T-1004) and Wright Street (T-1008)	
Gloucester County	VA 198 and VA 33	Mathews County line to King and Queen County line
	US 17	Middlesex County line to HRTPO boundary
	VA 14	King and Queen County line to US 17
	VA 602 (Burkes Pond Road)	VA 198 to VA 14
	VA 3/VA 14	Mathews County line to HRTPO boundary
King and Queen County	VA 721 and VA 14	Caroline County line to Gloucester County line
	VA 623, VA 625, and VA 628	Essex County line to King William

Jurisdiction	Roadway	Termini
		County line
	US 360	Essex County line to King William County line
	VA 621 and VA 629	Essex County line to King William County line
	VA 620, VA 617, VA 614, VA 610, and VA 609	Essex County line to Gloucester County line
King William County	VA 600	Caroline County line to VA 30
	VA 628	King and Queen County line to VA 600
	VA 30	Caroline County line to King and Queen County line
	VA 601	Caroline County line to VA 30
	VA 614	Hanover County line to VA 615
	VA 615	Hanover County line to VA 30
	VA 604	VA 600 to VA 30
	VA 609, VA 608, and VA 610	VA 600 to VA 30
	VA 605	VA 615 to US 360
	US 360	King and Queen County line to Hanover County line
	VA 618	US 360 to VA 629
	VA 629/VA 632	King and Queen County line over VA 30 and back to VA 30
	VA 640	VA 30 to VA 30
	VA 33/VA 30	King and Queen County line to New Kent County line
Mathews County	VA 3	Middlesex County line to VA 14
	VA 198, VA 642, VA 643	Gloucester County line to Chesapeake Bay
	VA 14	Gloucester County line to Chesapeake Bay
	VA 223	VA 198 to Chesapeake Bay
	VA 611	VA 14 south of Mathews to VA 14 west of Mathews
Middlesex County	US 17	Essex County line to Gloucester County line
	VA 602, VA 227	King and Queen County line across US 17 to VA 33
	VA 33	Saluda/US 17 to Chesapeake Bay
	VA 3	Rappahannock River to Piankatank River/Mathews County line

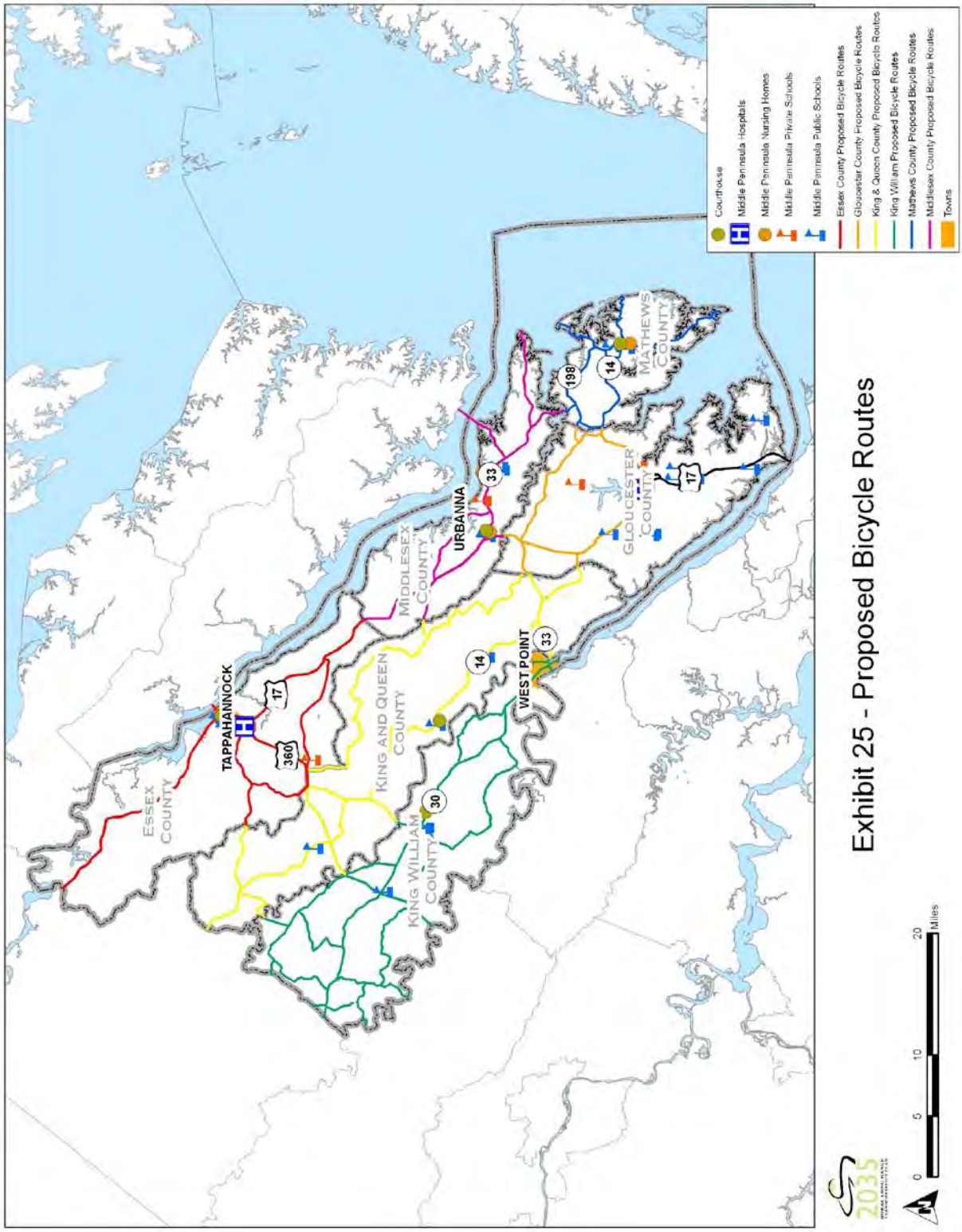

Exhibit 25 - Proposed Bicycle Routes

Airports

The Virginia Air Transportation System Plan Update forecasted average annual growth rates of based aircraft through 2020 for the three general aviation airports (DOAV, 2003). Aircraft based at Hummel Field are expected to continue to grow at 0.3% annually, at Middle Peninsula Regional Airport, 1.4%, and at Tappahannock/Essex County Airport, 1.0%. The forecasts assumed that the replacement of Tappahannock Municipal with Tappahannock/Essex would bring some initial gains followed by the projected growth (DOAV, 2003). Future growth at these airports is not expected to have long-term effects on the existing transportation network.

Goods Movement

The transfer of some goods shipments from roadway to rail has the potential to strengthen rail freight services offered, while also reducing the number of long-haul tractor-trailers trips and preserving or possibly enhancing roadway Level-of-Service (LOS). Due to the limited rail network in the Middle Peninsula, this is not as likely a possibility as in other PDCs with more extensive rail networks. Key truck freight corridors will continue to include the major arterials and collectors in the region, US 17, US 360, VA 3, VA 14, VA 30, and VA 33 due to their access to I-64. The counties and towns wish to direct most new industrial and commercial development towards the existing development in order to maintain the predominantly rural land uses throughout the counties as well as to utilize the current infrastructure such as water and sewer service and the transportation network.

The Middle Peninsula PDC received a planning grant from VDOT to conduct a Multimodal Freight Operations Study in the Region to analyze the existing intermodal and port infrastructure assets on the Middle Peninsula and how those assets can be better incorporated to establish a more efficient and reliable transportation system. The final report was completed in November 2009, identifying the most feasible opportunities for improving transportation integration of freight traffic in the Region. Three different industries were analyzed in the study: seafood, agriculture, and timber.

The seafood industry's transportation model uses inter-transportation and intra-transportation segments to complete the product distribution or supply chain. Inter-transportation combines multiple modes, whereas intra-transportation involves the use of a singular transportation mode. The initial segment of the seafood transportation model is "inter" in nature because the product is trans-loaded from boat to truck. The subsequent segment is "intra" in nature because the product is trans-loaded from truck to truck. It is difficult to incorporate new inter-transportation models for the seafood industry because of the products' brief shelf life. Seafood businesses in the Middle Peninsula generally receive and distribute products in less than a day to ensure freshness. That practice virtually eliminates the possibility of shipping seafood in refrigerated containers via ship, barge, or rail because each of those alternative modes of inter-transportation incorporates additional freight handling charges and, more importantly, increases transit times because of indirect routes. For this reason, an intra-transportation model versus an inter-transportation model produces the most feasible concept for improvement to seafood transport in the Region. Intra-transportation efficiencies could be made by establishing a centralized trans-loading refrigerated warehouse where seafood can be stored, consolidated, and distributed. The warehouse should have a fleet of trucks for local, regional, and over-the-road transport, able to service any of the local seafood businesses' transportation needs. The ideal location of the trans-

loading refrigerated warehouse is recommended for three generalized areas in the Region, each having a concentrated amount of seafood business within a 10-15 mile radius: Guinea in Gloucester County, New Point in Mathews County, and Lower Deltaville in Middlesex County. The ability to establish this service would benefit the local seafood businesses because more resources would be placed on operational aspects (i.e., harvesting, processing, etc.) and fewer resources allocated towards locating and securing reliable transportation. This service could create a more efficient transportation network by consolidating shipments and thereby reducing truck traffic in the Region. One of the challenges facing the Middle Peninsula seafood industry is waterside access. Waterside access in this case means maintaining ample water depths to allow for the safe navigation of commercial fishing vessels. Regular maintenance dredging is required to maintain adequate navigation conditions. With no regular maintenance dredging, local waterways in the Middle Peninsula will continue to result in silting of navigational channels and loss of safe boating depths. Lack of available financing for regular maintenance dredging will continue to challenge the local navigation conditions of the Middle Peninsula's creeks and rivers.

The study identified a potential location for a public intermodal facility in the Region that would serve as a trans-loading site, able to accommodate agriculture and timber industries' commodities such as grains, round log, and wood chips. A public intermodal facility established on the Middle Peninsula could be a more effective link between transportation modes by providing a centralized point for cargo transfer and allowing shippers access to alternative markets. The facility would need access to two or more transportation modes and be positioned adjacent to the water, with ingress and egress provided by a primary or secondary road able to accommodate truck traffic carrying heavy loads. There are many locations throughout the Region that satisfy these requirements, and further evaluation is recommended to distinguish the most suitable site, but the study identified a location in King William County, in or near the Town of West Point. Preliminary evaluation conducted for the study supports that location because it currently accommodates all three modes of transportation, has proximity to major highways, is in a centralized location, is surrounded by water and is adjacent to the only railway access in the Region. The sole rail line is a critical component to the success of any potential intermodal facility because it offers the region the ability to reach out-of-state markets more economically by an alternative mode of transportation. The Middle Peninsula has a robust agriculture and timber market, making an intermodal facility sustainable just by accommodating a small percentage of those commodities produced in the Region.

The study also found that truck traffic and emissions could be reduced by transporting containerized grain products via barge from the Middle Peninsula to the Virginia Port Authority (VPA) marine terminal. Grain products are now transported from farms by truck to the VPA terminal and are transferred to a barge once there. By transporting the containers by barge from the Middle Peninsula to a VPA marine terminal, those truck trips could be eliminated from the primary highways connecting the Middle Peninsula to southeastern Virginia. The advantages of shipping cargo by barge compared to truck and rail has been well documented and includes increased energy efficiency, reduced emissions, and reduced traffic on roadways.

Funding available for the multimodal freight infrastructure recommendations discussed in the study includes the Aid to Local Ports Program administered by the VPA and the Maritime Administration's America's Marine Highway Program. The Marine Highway Program has at least two current projects that may provide opportunities for the Middle Peninsula movement of

goods to market. The James River Expansion Project will expand an existing container-on-barge service between Hampton Roads and Richmond, Virginia by increasing the frequency of service. It will also initiate a container shuttle service between four terminals in the Hampton Roads area, shifting the freight from local urban roads to the waterborne alternative. The James River service began in 2008 and exceeded the initial container transport estimates by more than 50 percent and moved more than 6,000 containers in the first year of service. The I-64 corridor has been identified by the U.S. Department of Transportation as a major freight bottleneck, causing up to 500,000 hours of vehicle delays annually, making the area a good candidate for alternative freight movement. The M-95 Marine Highway Corridor is a waterside alternative to transporting goods via I-95, the 1,925 mile-long corridor that is the major North-South landside freight corridor on the East Coast. The U.S. Department of Transportation identified more than a dozen major freight bottlenecks along this route, along with significant critical rail congestion along the upper portions. Projections of future freight volumes indicate increasing freight congestion challenges, with limited opportunities to increase landside capacity. Along the corridor are found 15 of the largest 50 marine ports in the United States, and those ports handle about 26 percent of the national total of short tons of cargo. The East Coast possesses a host of waterways, bays, rivers and the Atlantic coast itself. The Middle Peninsula is perfectly positioned to take advantage of this marine highway for transporting goods to market.

Land Use and Future Growth

Because the existing land use in the Middle Peninsula region is generally rural and agricultural in nature, future development is expected to focus in existing towns, along major roadway corridors, and/or where water and sewer service is currently available or to become available (Exhibit 26). These growth areas were developed by the MPPDC in conjunction with the individual jurisdictions. These areas were used in the analysis of the roadway network to review existing traffic forecasts for the individual roadways and to produce new forecasts. The analysis was then used to prepare the recommendations. Some of these residential growth areas are designated as Rural Service Centers, Rural Village Centers, or Crossroad Communities. Commercial and industrial land uses are expected to continue where they currently occur and to expand along existing roadways, US 17, US 360, VA 30 and VA 33.

Travel Demand Management

In rural areas, low residential densities and dispersed work destinations are generally not conducive to high public transportation use. This is particularly true in the Middle Peninsula. Some decreases in single-occupant vehicle trips are possible through the continued use of the MidPen RideShare program. Further reductions would be possible if additional fixed-route service is established in the region. In addition, a commuter bus that would link to existing transit in Richmond, Fredericksburg, or Hampton Roads could reduce reliance on single-occupant vehicle travel. The Hampton Roads area is developing a Regional Transit Vision Plan that will look into the future, 2025 and beyond, to imagine what may be possible for the region's transit services. As part of the plan, there will be a proposed express and enhanced bus service that connects major transit centers and activity nodes in the Hampton Roads region. One such recommendation for the Peninsula Network includes an express bus service from Gloucester County (Courthouse area) to Oyster Point in Newport News with a vision horizon of 2035. The

express bus service would use coach bus vehicles and would serve regional commuter trips. If this service becomes available it would provide Middle Peninsula commuters with another option besides ridesharing. Finally, park and ride lots in the region are expected to maintain their importance to the commuting population. In some lots, more space is needed and the feasibility of a lot in or near the Town of West Point, a major gateway to the Middle Peninsula Region, needs to be investigated. A survey of existing lots and their amenities and usage would be useful to assess any changes that may be needed to better serve commuters. A key intermodal connection to Bay Transit should also be addressed. Assessment of the use of the transit system in conjunction with park and ride lot usage can also prove useful in meeting the access and mobility needs of commuters.

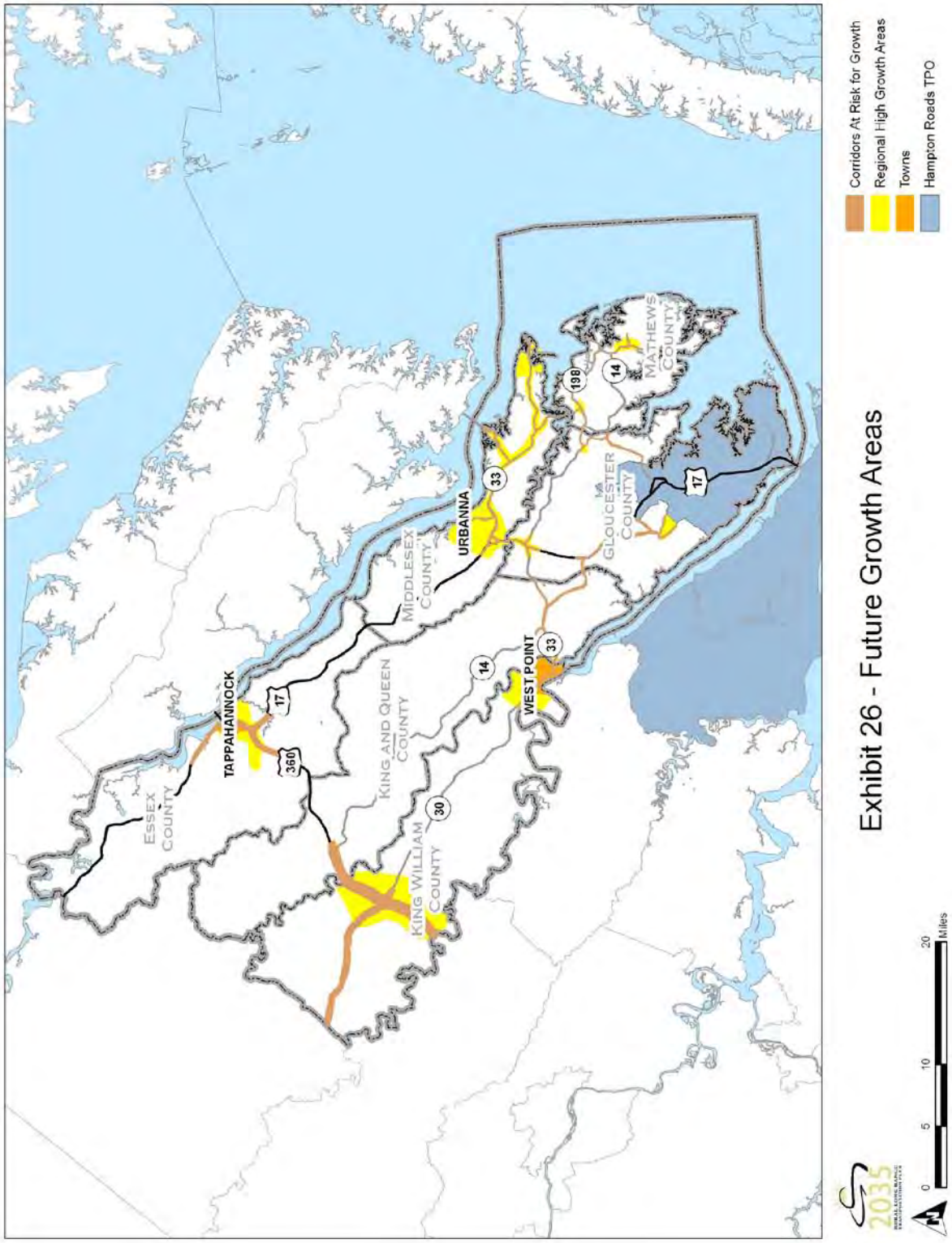
Exhibit 26 - Future Growth Areas
Corridors At Risk for Growth
Regional High Growth Areas
Towns
Hampton Roads TPO
ESSEX COUNTY
KING AND QUEEN COUNTY
KING WILLIAM COUNTY
MIDDLESEX COUNTY
GLOUCESTER COUNTY
MATHEWS COUNTY
TAPPAHANNOCK
URBANNA
WEST POINT
17
360
30
14
33
198
Miles
0
5
10
20

CHAPTER 5 – CURRENT TRANSPORTATION PROJECTS & CONCERNS

The Middle Peninsula's Regional Transportation Committee expressed a need for any current transportation projects that are underway, or determined to be needed, to be recorded in this Plan along with any local government or public comments regarding those projects. These projects fall into all categories including, but not limited to, maintenance, construction, safety improvements and enhancements. Projects and comments are recorded here by county if they were submitted to the Middle Peninsula Regional Transportation Committee or MPPDC staff. All projects ongoing or needed in the Region are not included in this section and a more comprehensive list may be provided in a future update of the Plan.

Essex County provided a complete list of the roads that need to be paved below. Only those roads with 50 or more vehicles per day are eligible for paving per VDOT guidelines.

Essex Unpaved Roads-2010:

- Route 685, River Landing Road, from Route 606 to the dead end.
- Route 666, Shellfield Road, from Route 646 to the dead end.
- Route 727, Laurel Level Road, from route 611 to the dead end.
- Route 640, Ullaincee Road, from Route 637 to Route 639 West.
- Route 676 Lewis Level Road, from Route 620 to the dead end.
- Route 653, Tuscarora Road, from Route 694 to the dead end.
- Route 648, Old Howerton Road, from Route 684 to the dead end.
- Route 661, Kendalis Road, from Route 637 to the dead end.
- Route 680, River Place, from R0.3 miles east of Route 616 to the dead end.
- Route 683, Fountain Run Road, from Route 620 to the dead end.
- Route 623, Beulah Church Road, from Route 622 to Route 650 East.
- Route 608, Barefords Mill Road, from Route 607 to the dead end.
- Route 605, White Marsh Road, from Route 684 West to Route 684 East.
- Route 688, Fortune Lane, from Route 637 to the dead end.
- Route 654, Rectory Road, from route 17 to the dead end.
- Route 638, Wheatland Road, from route 17 to the dead end.
- Route 659, Desha Road, from Route 618 to the dead end.
- Route 606, Wares Mill Road, from Route 17 to the dead end.
- Route 655, Vineyard Road, from Route 611 to the dead end.
- Route 672, Cloverdale Road, from Route 600 to the dead end.
- Route 675, Carpenters Rest Road, from Route 639 to the dead end.
- Route 600, Sadlers Hill Road, from Route 17 to the dead end.

- Route 602, Colnbrook Road, from Route 17 to Route 719.
- Route 654, Belle Mead Road, from Route 17 to the dead end.
- Route 663, Ferry Landing Road, from Route 17 to the dead end.
- Route 669, Foggs Loop Road, from Route 627 West to Route 627 East.
- Route 674, Marl Bank Road, from Route 17 to the dead end.
- Route 679, Belmont Road, from Route 624 to the dead end.
- Route 686, Old Wagon Road, from Route 662 to the dead end.
- Route 690, Box Factory Lane, from Route 603 to the dead end.
- Route 701, Oak Hill Road, from Route 620 to the dead end.
- Route 718, Forest Grove Road, from Route 17 North to Route 17 South.
- Route 720, Montague Road, from Route 601 to Route 17.
- Route 1103, Ben Lomond Road, from Route 17 to .11 miles South of Route 17.
- Route 626, Bloomsberry Lane, from Route 620 to the dead end.
- Route 673, Polar Grove Road, from Route 605 to the dead end.
- Route 678, Clydeside Road, from Route 662 to the dead end.
- Route 709, Clover Lane, from Route 17 to Route 720.

Essex County's Secondary Six-Year Plan for fiscal years 2012-2017 and Construction Priority List for fiscal year 2012 included Routes 659, 608, 666 and 685.

Gloucester County provided the Commonwealth Transportation Board (CTB) with the following comments on the fiscal year 2012-2017 Six-Year Improvement Program:

1) Page 213, UPC No: 100624, Route 1216 Bicycle-Pedestrian Improvement.

Comment #1: There appears to be a minor typing error in the Scope of Work which reads "Minor Construction – City." Gloucester County is not a City and if possible this typo should be corrected on future documents.

Comment #2: The project is lacking a description. Our records indicate the description of the project as: "Entire length of Hayes Road from its northern intersection with Route 17 to the southern intersection with Route 17 and along Hook Road."

Comment #3: This project is very important for our Urban Development Area (UDA) project which is located in the Gloucester Point area, the highest populated area of the County. Route 1216 serves this area of the County, locally known as "Old 17" or Hayes Road. This is a mixed use area various density residential types, and a variety of commercial and industrial establishments. This road also provides an alternative to Route 17 for commuters and those looking to avoid traffic congestion on Route 17. A large number of pedestrians walk or ride bikes along Route 1216. Creating a more bicycle and pedestrian friendly environment would encourage and enable more residents of this area to take alternative, non-motorized routes to the nearby churches, retail, restaurants and other commercial establishments. Providing a bike lane and/or pedestrian friendly option to this road it would make a considerable difference in the safety of citizens who utilize the road as well as reduce the number of local motorized vehicle trips in this area of the County. In addition, sidewalks are required in new commercial site plans and since this area is designated a compact area under the State's Subdivision Street Acceptance Requirements (SSAR), sidewalks will be required on any new subdivision streets.

2) Page 217, UPC No: 100625, Bicycle-Pedestrian Improvement to Route 216, Guinea Road.

Comment #1: The project is lacking a description. Our records indicate the description of the project as: "From intersection of Guinea Road (Route 216) with US Route 17 to Achilles Elementary School/ Maryus Road (SR 649)."

Comment #2: This project is very important for our Urban Development Area (UDA) project which is located in the Gloucester Point area, the highest populated area of the County. Route 216 acts as a main arterial to connect this highly populated area of the County, locally known as Guinea Neck, to Route 17. Route 216 has public sewer and water running along much of its length and is zoned for high to moderate density housing. Providing a bike lane or pedestrian friendly option to this road would make a considerable difference in the safety of citizens who utilize the road as well as encourage alternative modes of transportation to the citizens living on this "peninsula" such as safe streets to schools and convenient access to retail centers and the newly relocated

Gloucester Point library at the intersection of Route 17 and Route 216. In addition, sidewalks are required in new commercial site plans and since this area is designated a compact area under the State's Subdivision Street Acceptance Requirements (SSAR), sidewalks will be required on any new subdivision streets.

3) Page 214, UPC No: 100626, Route 17 Bicycle Pedestrian Improvements.

Comment #1: This project is very important for our Urban Development Area (UDA) project which is located in the Gloucester Point area, the highest populated area of the County. Route 17 acts as a gateway from the peninsula to Hampton Roads. The area of the proposed project is a mixed use area with various density residential types, and a variety of commercial and industrial establishments as well as one of the County's major employers and a prominent educational institution - the Virginia Institute of Marine Sciences (VIMS). Route 17 is currently under construction as part of a long term widening project, however, sidewalks were not including during the original planning phases for the project. A large number of pedestrians walk or ride bikes along Route 17 using the existing shoulders or in the turn lanes. The project includes handicap ramps at the corners but does not provide the connecting sidewalks. Providing a bike lane and/or pedestrian friendly option to this portion of this road it would make a considerable difference in the safety of citizens who utilize the road as well as reduce the number of local motorized vehicle trips in this area of the County. Future widening projects in the UDA designated areas along Route 17 will include sidewalks in the project planning phases. In addition, sidewalks are required in new commercial site plans and since this area is designated a compact area under the State's Subdivision Street Acceptance Requirements (SSAR), sidewalks will be required on any new subdivision streets.

4) Page 213, UPC No: 98806, Signal Coordination Along Route 17.

Comment #1: The need for this project was identified as a priority during a recent 527 traffic impact analysis related to a local rezoning project. In certain intersections the northbound turning movements are overflowing in the PM hours due to the need to adjust the signal timings to reflect the traffic volume differences during different times of the day. The better movement of traffic would reduce congestion at these intersections and reduce the amount of idling vehicles. In addition, coordination of the signals to provide for pedestrian movements within the designated UDA's is critical to both areas' future functionality under traditional neighborhood design concepts.

5) Page 212, UPC No: 84478, Access Management – Crossover Improvements.

Comment #1: The Gloucester Board of Supervisors presented a list of 34 specific recommendations primarily focusing on the need for left turn lanes, additional signing and closing of crossovers. Additionally, several other crossovers were identified to have deficiencies to be addressed. The study was approved by the Board and the recent ARRA funding has allowed this important project to move forward more quickly than previously anticipated.

6) Page 251, UPC No: 98805, Business Route 17 Corridor Planning Study.

Comment #1: A large number of commuters from the northern portion of the County and other localities on the Middle Peninsula use Rte 3/14 as the main corridor to access Route 17 to the Peninsula. During peak hours, traffic at the intersection of Route 3/14 meets Main Street (Business 17) creates bottlenecks which compromise the system's efficiency. Various remedies have been put into effect to minimize the congestion, such as signalization coordination, a left

turn on green, right turn on red, to help traffic flow better. While the problem has gotten slightly better with these solutions there is still a large amount of bottleneck traffic at this intersection. The intersection is also adjacent to two historic properties and serves at one of the gateways to the County's Historic Courthouse Downtown area. The Village along with the surrounding area is the County's second designated Urban Development Area (UDA). The County has used Enhancements grants to create a pedestrian friendly environment in the retail village however this intersection poses a mobility challenge for pedestrians and motor vehicles alike.

Along with this intersection, the cross-over at the Main Street Center has become a concern from a safety aspect as the use of this access has increased due to the location of the library, post office, and Health Department along with other retail establishments in this shopping center. Improvements to this section of Business 17 to relieve congestion, improve safety and access to the Main Street Center and provide a better pedestrian environment at either end of the Courthouse Village are much needed. Such improvements may encourage non motorized local traffic in and around this more densely developed portion of the County.

By studying this corridor in depth we are hopeful that a solution may be found that works to dramatically reduce or eliminate the bottle necking at this intersection while remaining cognizant of the surrounding historic properties and downtown retail area consistent with the traditional neighborhood design principles established for this UDA.

Gloucester County's Secondary Six-Year Plan for fiscal years 2012-2017 and Construction Priority List for fiscal year 2012 included:

- Reconstruction of Route 614, Hickory Fork Road, from .027 miles west of intersection with Route 633 and .149 miles west of intersection with Route 17.
- Reconstruction and minor widening of Route 615, Burleigh Road, from Route 616 to Route 17.
- Surface treatment of non-hard surfaced road on Route 615, Willis Road, from Route 613 to Route 606.
- Surface treatment of Route 610, Salem Church Road, from .56 miles north of Route 637 to Route 198.
- Surface treatment of Route 655, Zack Road, to Route 714.
- Surface treatment of Route 663, George Lane, to Route 629.
- Surface treatment of Route 709, Schley Lane, to Route 623.
- Surface treatment of Route 1105, Cross Road, to Route 646.

Mathews County has several projects that needed attention according to a report from May 2010 outlining comments that were approved by the Mathews County Board of Supervisors on April 27, 2010 for inclusion in the record of the FY 2011-2016 Six-Year Improvement Program (SYIP) public hearing.

Projects that are in the 2011-2016 SYIP identified in the May 2010 comments:

- Reconstruction of Intersection at Routes 14/198-Ward's Corner: Substantial funding has already been programmed for the reconstruction of this dangerous intersection and a representative of Mathews County expressed that the additional funding that is necessary to begin construction of this improvement be included in the FY 2011-2016 SYIP.
- Reconstruction of Route 14-Main Street in Mathews Court House: $500,000.00 has been

budgeted in previous SYIPs to provide for engineering design to develop plans to minimize flooding of the roadway in the business district. Mathews asked the Commonwealth Transportation Board (CTB) to provide the necessary right-of-way acquisition and actual construction for this project. This project is of the utmost importance to the economic viability of the community, as regular flooding on Main Street has made business ownership and expansion extremely difficult.

Safety Improvements identified in the May 2010 comments (projects that are not large in terms of cost, but they will greatly enhance the safety of the traveling public):

- Intersection Improvements at Routes 14/3 (Fort Nonsense): VDOT has begun some safety improvements at this dangerous intersection. The construction of a turn lane from Rt. 3 (Windsor Road) onto Rt. 14 West would greatly improve vehicular safety at this intersection.
- Construction of turn lanes on Rt. 198 at intersection with Rt. 626 (Hallieford Road): Hallieford Road (Rt. 626) serves one of the most densely-populated sections of Mathews County. Turn lanes at this location would allow traffic to move more freely along Rt. 198 and would greatly enhance safety.
- Construction of left turn lane on Route 14/198 at the Park & Ride facility adjacent to Mathews High School: This parking lot includes 63 spaces set aside for commuters; it also provides an additional 61 spaces for park users and overflow from Mathews High School. It is located along the busiest section of roadway in Mathews County (Rt. 14/198).
- Construction of a left turn lane on Rt. 14 at the entrance to the Mathews County Waste Convenience/Transfer Station: This public facility attracts an average of 500 vehicles per day, along with numerous trucks used to haul waste from the site. This is a primary public service location where traffic on Rt. 14 is slowed on a regular basis. Construction of a left turn on Rt. 14 would greatly enhance safety for the traveling public.
- Intersection of Routes 3/198 (Dixie): The Mathews Board of Supervisors has asked VDOT several times to install a traffic signal at this intersection. VDOT engineers originally approved this improvement and later withdrew approval. This intersection is dangerous, growing in traffic, and has been the site of numerous accidents in the past few years. The Board requested that VDOT reconsider this request for a traffic signal.

Enhancement Projects identified in the May 2010 comments:

- New Point Comfort Lighthouse: Mathews County has been fortunate to receive partial funding through the enhancement grant program for Phase 1 of the New Point Comfort Lighthouse Preservation Project. The Mathews Board of Supervisors requested in 2010 that the CTB support of the current application for this project which will put the county closer to their goal of preserving the 1805 historic landmark.
- Mathews Court House Historic Gateway: VDOT has awarded several enhancement grants to Mathews County for this important project which will provide for pedestrian and vehicular safety improvements on Main Street in the Court House business district.

The Mathews Board of Supervisors requested support for continued funding from the CTB of the enhancement grant applications for this purpose.

Mathews County has several projects that needed attention according to a report from May 2011 outlining comments that were approved by the Mathews County Board of Supervisors on April 26, 2011 for inclusion in the record of the FY 2012-2017 Six-Year Improvement Program (SYIP) public hearing.

Projects that are in the 2012-2017 SYIP identified in the May 2011 comments:

- Reconstruction of Rt. 14 –Main Street in Mathews Court House: $500,000 has been budgeted previously to provide for engineering design to develop plans to minimize flooding of the roadway in our business district. Additional funding is needed to provide for necessary right-of-way acquisition and actual construction for this project. This project is of utmost importance to the economic viability of the community, as regular flooding on Main Street has made business ownership and expansion extremely difficult. It is critical that this work be coordinated with streetscape work being done as part of the Mathews Court House Historic Gateway Enhancement Program project.

Safety Improvements identified in the May 2011 comments (projects are not large in terms of cost, but they will greatly enhance the safety of the traveling public):

- Intersection Improvements at Routes 14/3 (Fort Nonsense): VDOT has begun some safety improvements at this dangerous intersection. The construction of a turn lane from Rt. 3 (Windsor Road) onto Rt. 14 West would greatly improve vehicular safety at this intersection.
- Construction of turn lanes on Rt. 198 at intersection with Rt. 626 (Hallieford Road): Hallieford Road (Rt. 626) serves one of the most densely-populated sections of Mathews County. Turn lanes at this location would allow traffic to move more freely along Rt. 198 and would greatly enhance safety.
- Construction of left turn lane on Route 14/198 at the Park & Ride facility adjacent to Mathews High School: This parking lot includes 63 spaces set aside for commuters; it also provides an additional 61 spaces for park user and overflow from Mathews High School. It is located along the busiest section of roadway in Mathews County (Rt. 14/198).
- Construction of left turn lane on Rt. 14 at entrance to the Mathews County Waste Convenience/Transfer Station: This public facility attracts an average of 500 vehicles per day, along with numerous trucks used to haul waste from the site. This is a primary public service location where traffic on Rt. 14 is slowed on a regular basis. Construction of a left turn on Rt. 14 would greatly enhance safety for the traveling public.
- Intersection of Routes 3/198 (Dixie): The Board of Supervisors has asked VDOT several times to install a traffic signal at this intersection. VDOT engineers originally approved this improvement and later withdrew approval. This intersection is dangerous, growing

in traffic, and has been the site of numerous accidents in the past few years. The Board requests that VDOT reconsider this request for a traffic signal.

Enhancement Projects identified in the May 2011 comments:

- Mathews Court House Historic Gateway: VDOT has awarded several enhancement grants to Mathews County for this important project which will provide for pedestrian and vehicular safety improvements on Main Street in the Court House business district. Preliminary design is complete and engineering work is currently being completed. The County looks forward to construction in the near future, with state support. The Board of Supervisors requested that the $776,000 in additional funding included in the FY 12 Tentative Enhancement Allocations for this project be approved.
- Fort Nonsense Historical Park***:*** The CTB has awarded two previous enhancement grants to Mathews County for this important historic/cultural wayside at the entrance to the county on Route 14. The additional enhancement program funding that has been requested will provide adequate funds to complete this project and the County is anxious to get started. The Board of Supervisors requests that the $393,000 in additional funding included in the FY 12 Tentative Enhancement Allocations for this project be approved.
- New Point Comfort Lighthouse Preservation Project: The County expects to begin construction of Phase 1, the protective rock revetment, in 2011 or early 2012. An application for additional funding to assist with restoration of the lighthouse structure itself (Phase 2) will be submitted later in 2011 year.

King and Queen County's Secondary Six-Year Plan for fiscal years 2012-2017 and Construction Priority List for fiscal year 2012 included Routes 636, 659, 601, and 664 and most, if not all, of those Routes are in the County's unpaved road plan.

CHAPTER 6 – FUTURE CONCERNS IN REGIONAL TRANSPORTATION PLANNING

It is not possible to plan for all challenges that will come in the future, but below are some subjects that may be of concern in the next 25 years. Additional subjects will be added in future plan revisions.

Climate Change & Sea Level Rise

According to information presented in the U.S. Department of Transportation and the Federal Highway Administration's 2011 Climate Change and Transportation Planning webinar on Virginia, there is evidence to suggest that the sea level will rise by 2 feet or more over the next 80 years. That increase in sea level may significantly impact the counties and towns of the Middle Peninsula.

With well over 1,000 miles of linear shoreline, the Middle Peninsula is under direct threat from accelerated climate change. Specifically, sea level rise will impact coastal communities and infrastructure, including roadways. In 2008, with funding from the Virginia Department of Environmental Quality's Virginia Coastal Zone Management Program, the Middle Peninsula Planning District Commission began a three year endeavor working with member localities and a variety of stakeholder groups to assess and discuss climate change impacts. As part of the study, an assessment was conducted of the economic and ecological impacts of a one foot sea level rise by the year 2050 for select vulnerable locations within the Middle Peninsula region. The total long term costs of selected areas in the region were calculated to be approximately $187,005,132.10-$249,451,074.50, including the costs to raise selected roadways ten inches and acquire the additional right-of-way to do so. Estimates of what it costs to raise a roadway 10 inches were provided by the Virginia Department of Transportation at $149-$745/square foot depending on short and long term time periods. Road access to coastal developments may become more limited as roadways are impacted by higher storm surge and sea level rise.

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