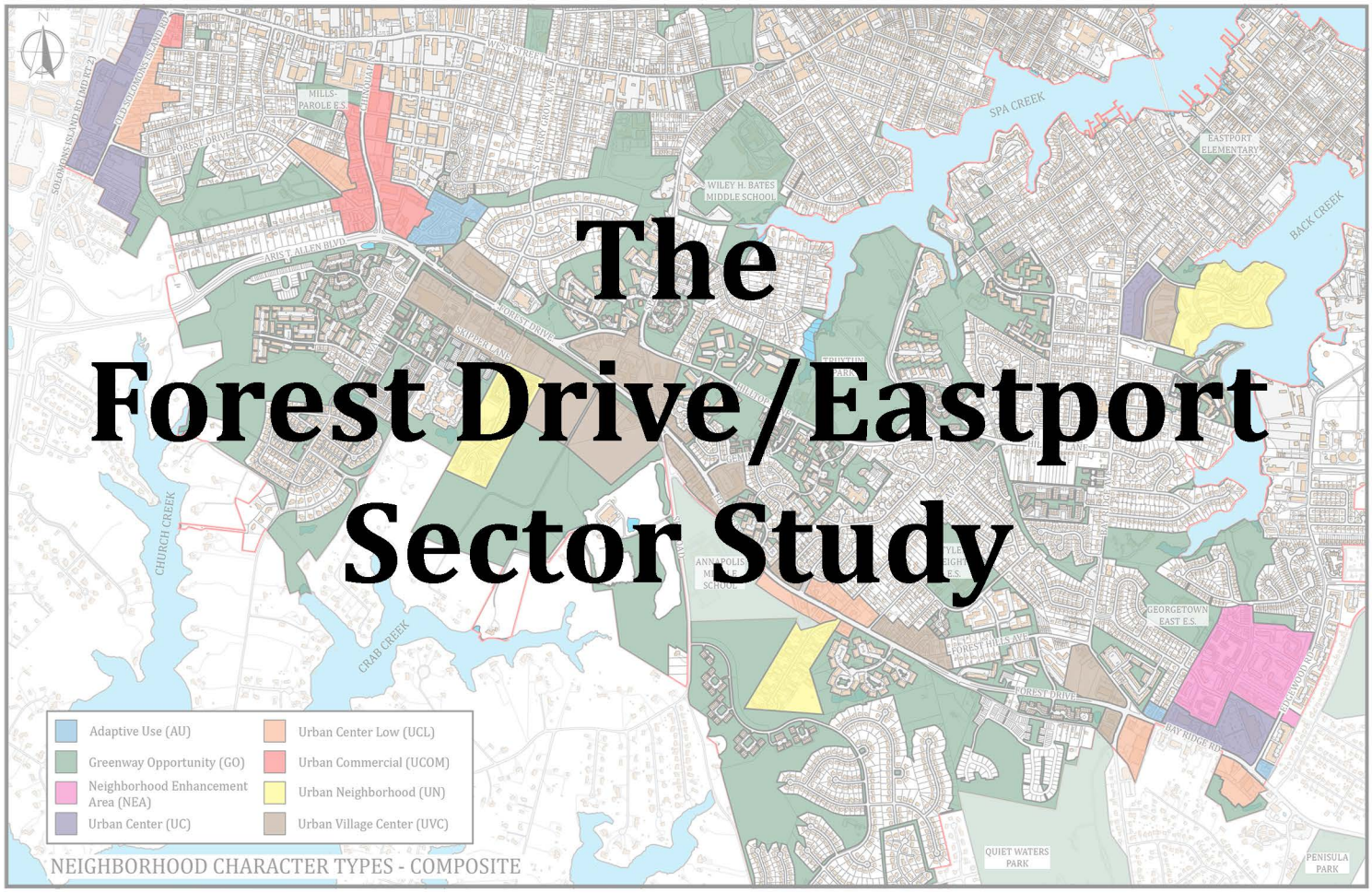

The Forest Drive/Eastport Sector Study

The City of ANNAPOLIS Maryland

THE FOX GROUP

Draft
July 24, 2019

EXECUTIVE SUMMARY

The Forest Drive/Eastport Sector Study ushers in a new era for urban planning and the integration of land use, economic development, technology, and mobility. It provides a specific vision for this part of the City and begins to lay the groundwork for the next Comprehensive Plan for the City of Annapolis. Under current regulations, there is a significant amount of development capacity in this portion of the City. This plan attempts to change the character of that possible development, not necessarily to encourage more development.

Ultimately, this is a study involving choices. To make good choices, we need accurate data about existing conditions and an honest discussion about our possible futures; one that takes place with an acknowledgment of its importance and an openness to perspectives. For healthy places to continue to grow and thrive, communities must adapt with a new character that reflects the values of the people who live there now and the people who will live there in the years to come. Now is the time for Annapolis to truly embrace the core concepts of smart growth—which means development that supports economic growth, strong communities and environmental health. "Smart growth" covers a range of development and conservation strategies that help protect our health and natural environment and make our communities more attractive, economically stronger, and more socially diverse.

The study identifies both new data and trends contributing to current sector issues and a diversity of options regarding the best way to respond to these complex situations. It reports on several significant new demographic trends that impact the sector and it seeks to identify actions that provide a way forward that are fair and equitable while recognizing current City funding constraints. It recognizes that to successfully achieve the vision and meet City goals, City residents must make informed choices, evaluate consequences, and obtain the cooperation of its partners, including the County and State, property owners, and the development community.

One of the solutions that is explored in depth in this plan is the idea of community character. Community character designations entail re-imagining, within a range of options, how neighborhoods in the sector area should look and function under the scope of the Comprehensive Plan's vision. Once the desired community character designations are in place, zoning and street standards changes can also be developed. Changing character does not necessarily mean adding more density compared to what is currently allowed. It means that now is our opportunity to shape and plan for future growth with tools that planners did not have when the zoning code was originally written. This plan charts a transition from the 1970s-era zoning that embraced the era of auto-oriented strip mall development to a new paradigm of larger scale, mixed-use development that promotes pedestrian, bicycle, and transit access to and from where we live, work, and play.

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1. INTRODUCTION

1.1 Study Purpose

The Forest Drive Eastport Sector Study ("the Study") serves as a supplement to the City's 2009 Comprehensive Plan ("the Plan"). It builds on the Plan's adopted policies and vision and was one of the implementation strategies of the Plan. The Study also builds on numerous studies, plans, and regulations that have been prepared since the 2009 Plan.

While building on previous plans, this sector study also ushers in a new era for urban planning and the integration of land use, economic development, technology, and mobility. This Study provides a specific vision for this part of the City and begins to lay the groundwork for the next Comprehensive Plan. It identities new and more detailed actions to achieve this vision. Specifically, it identifies more detailed strategies, refined development, and redevelopment opportunities. This includes land use and zoning changes, as well as new design guidance that can ultimately achieve the desired placemaking and balance between land uses that will provide more options for how the corridor could look and function in the future.

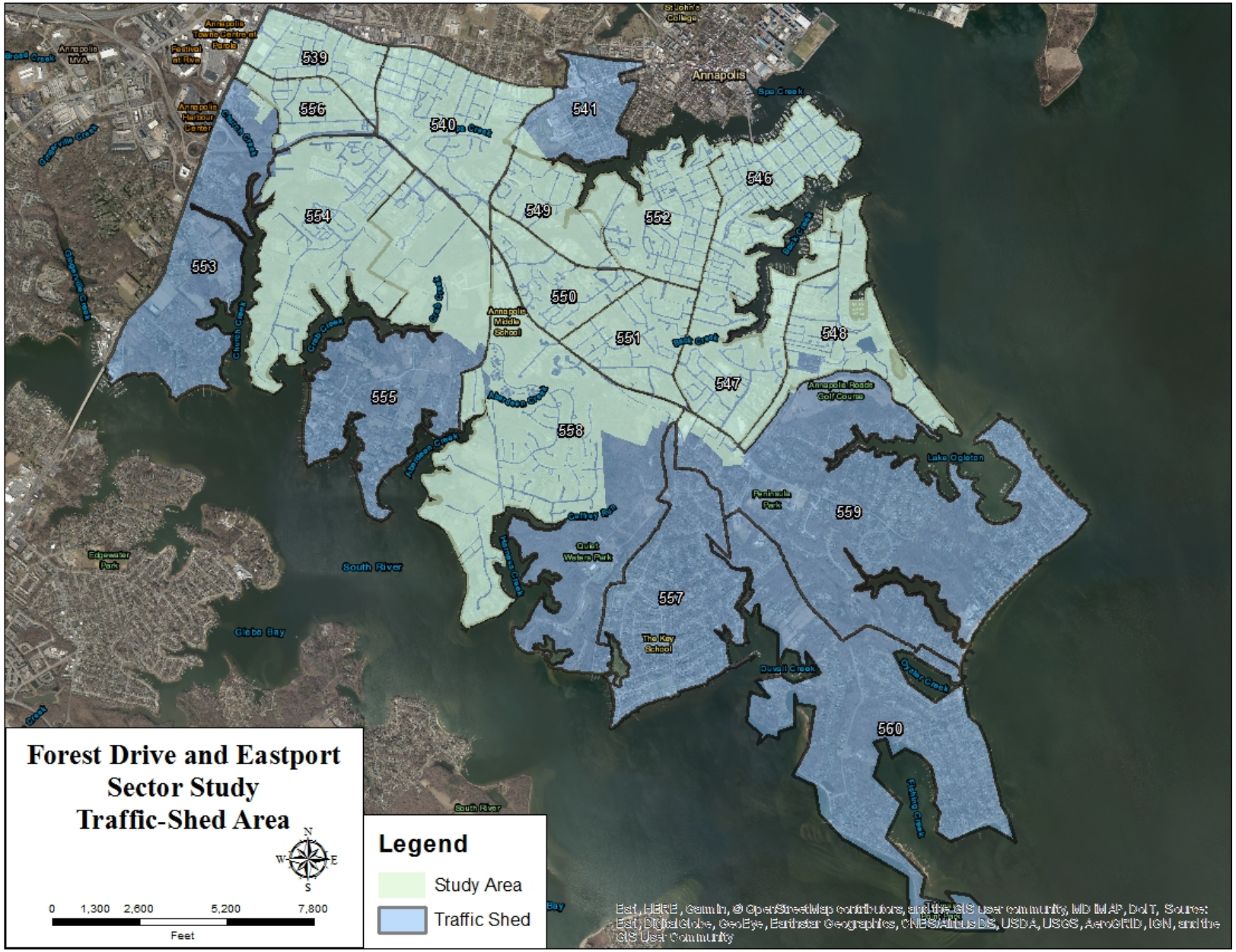
Annapolis is diverse, both in terms of its demographics and its land use. This study builds upon this diversity and identifies methods for placemaking that can create unique neighborhoods that are governed by a unifying design and streetscape.

Because mobility is a large part of the discussion, this Study takes a new approach to looking at land use and mobility together. It provides guidance on regulatory and public infrastructure topics that will clarify the relationship between vehicular mobility and the Comprehensive Plan's vision of a more multi-modal community. Its actions are designed to help the City make a significant shift away from cars toward complete village-like neighborhoods in which residents have much greater access to other modes of travel and so are encouraged to reduce their carbon footprint.

The process for developing this study included public engagement with City residents and businesses. Because Forest Drive is owned and managed by Anne Arundel County and serves both the City and County areas, the County government and residents of the Annapolis Neck have also participated in the process.

The figure below shows the study area in light green, as well as a larger area identified as the "traffic-shed." While the specific recommendations in the study pertain to the study area, the entire traffic-shed was included in the analysis of existing and future traffic conditions. This is explained in more detail on the next page.

Figure One: Study Area and Traffic-Shed



1.2 Study Area

The sector area covers the south side of the City as shown in light green on the map on the previous page (Figure One). It includes City areas along the County's Forest Drive/Bay Ridge Road arterial including Edgewood Road and the southern parts of the City's Parole neighborhood as well as the Eastport peninsula. The blue area on the map shows the larger "traffic-shed" area that was included in the study for the purposes of traffic modeling and deeper transportation analysis that can be found in Appendix C. The numbered areas represent the individual Traffic Analysis Zones (TAZs) that were used in the Study to analyze traffic and demographics. The Eastport area was recently the subject of the 2016 *Eastport Transportation Study*. Likewise, the Study touches on areas addressed by the recently completed draft *Upper West Street Sector Study*. The recommendations from those studies for those areas have been carried forward in this plan.

1.3 Guiding Principles and Study Background

This study is intended to build on and carry forward the policies and aspirations of the adopted Comprehensive Plan. The Plan sets forth the City's desired land use vision through 2030 and provides guiding principles for long-term development in the City. The Plan is built on three themes:

- Preserve and Enhance Community Character
- Maintain a Vibrant Economy
- Promote a "Green" Annapolis

This study is intended to build on and carry forward the policies and aspirations of the adopted Comprehensive Plan. These themes are:

- *Preserve and Enhance Community Character*
- *Maintain a Vibrant Economy*
- *Promote a "Green" Annapolis*

The Comprehensive Plan anticipates that the City will add population and jobs in the future, but that growth will occur largely within its current boundaries; change will occur largely through renovations and redevelopment of currently built sites as has occurred recently in Inner West Street. The Plan focuses on four key opportunity areas for economic change in order to help implement the vision. It defines the desired type, character, and intensity of added development in these opportunity areas based on three desired types of new development: Urban Center Low, Urban Commercial, and Urban Center. Two of these four opportunity areas are located in the Forest Drive corridor. These are the "Bay Ridge" and the "Forest Drive" Opportunity Areas, and are shown on the following page.

Figure Two: Forest Drive Opportunity Area from 2009 Comprehensive Plan

Figure Three: Bay Ridge Opportunity Area from 2009 Comprehensive Plan

The Plan also identifies Forest Drive and Eastport as two of the City's six business districts that generate a large part of the City's annual revenues. The Forest Drive business district is referred to by the business community as "SOFO" or "South Forest Drive." The 2009 Plan envisions that needed City economic development will occur in these areas both through renovations and infill in existing commercial areas and in new mixed commercial and residential development, mainly in the Opportunity Sites. It foresees that, in both existing commercial and the opportunity sites along the corridor, added intensity/density is needed to improve the City's tax base and help catalyze increased transit ridership in the corridor that will also indirectly contribute to reductions in the City's carbon footprint.

The five-year Comprehensive Plan Update, undertaken in 2014, reviews progress to-date. It notes that Plan implementation in this sector has been slow. Questions have been raised as to whether the corridor roadway has the capacity to accommodate added growth. Concerns have been voiced that traffic congestion in the corridor is growing and if not corrected in a timely way will become a detriment to both quality of life in this sector and a hindrance to a vital City economy. This concern is explored in depth in Appendix C. A model of existing conditions, as well as a model of a moderate-level acceleration of development and a high-level acceleration of development was analyzed and is demonstrated through a series of capacity utilization figures.

The results show that in 2030, the current areas with road capacity issues are still an issue. However, no additional road link sections have worsened to the point of reaching 100% capacity. In all three scenarios, the model findings show that the network's road segments can accommodate the added volumes projected and that the differences in traffic impacts between the three scenarios are modest. The greater number of sector jobs added in both the Mid and High Scenarios help mitigate the growth of commuter trips exiting the peninsula in the future, thus accommodating enhanced local economic activity with comparatively modest amounts of added traffic.

National economic trends that are transforming U.S. cities include:

- *Placemaking—making unique, people-scaled spaces*
- *New approach to mobility—emphasizing. walkable and bikeable communities*
- *New Complete Street Designs—retrofitting existing pavement for multimodal uses*
- *Updated Zoning Codes. Discouraging sprawl and encouraging connected neighborhoods with a grid system and short blocks.*

The Plan envisions a future in which the City becomes a much more walkable and bike-able and less auto dependant community with a series of complete neighborhoods that provide destinations within easy distances to residents and workers. It plans for these places to have a distinctive

Annapolis character. It foresees a future in which the City provides a high quality of life that builds on its rich history and waterfront amenities. It acknowledges Annapolis is a special and distinctive community within the State. It also envisions a financially secure city, able to adapt to a rapidly changing economic future, with a thriving economy.

There are several important national economic trends that are transforming U.S. cities and will have huge effects on this sector in the next twenty years. A few of these trends include:

- Placemaking. A trend towards city place-making and creation of "livable places" with a high quality of life as a means to stay competitive and attract businesses.
- New approach to mobility. Cities are becoming denser, less car-dependent. Many cities have been making strides in reducing their car dependency. The new vision is one of walkable and bikeable, denser, neighborhood-based, self-sufficient amenitized communities connected by the smartphone to new technologies and to younger generations that will bring a new era with less need or desire for a private car for normal mobility.
- New Complete Street Designs. Nationwide streets are being retrofitted to use existing pavement more efficiently allowing it to serve a more multimodal purpose. This approach to complete multimodal streets is part of placemaking, economic revitalization, and multimodal choices. Complete Streets are proving to encourage business activity, generate greater tax revenue per acre, and offer a higher return on investment than auto-oriented streets.
- <u>Updated Zoning Codes. Many current zoning codes encourage sprawl and split up land uses into segregated residential, commercial, and industrial zones. They essentially make it either illegal or very expensive to create the walkable mixed-use places people are increasingly looking for. In addition, setbacks, floor-to-area-ratio, density, and other codes have become overly complicated, often with layers of fixes and overlays, rendering it nearly impossible to determine what can and cannot be built. With an outdated zoning code, the process is more difficult, costly, and time consuming. It often makes good community design more expensive to do than bad design choices. The solution to these issues may be the creation of a new hybrid zoning that focuses on building form and scale as it relates to streetscape and adjacent uses.</u>

More information about new economic trends that will shape Annapolis can be found in Appendix B.

1.4 Other Relevant Studies

Since 2009, both the City and County have prepared several plans and studies and have adopted several new regulations that are relevant to this effort. These documents provide useful background and help to articulate the sector's current constraints and opportunities. They include the following:

- 2017 Upper West Street Sector Study (Draft)
- 2016 Annapolis Economic Development Strategic Action Plan
- 2016 Final Report for 2013 Plan Update Anne Arundel County Major Intersections/Improvement Facilities (MIIF) Study
- 2016 Anne Arundel County Pedestrian and Bicycle Master Plan

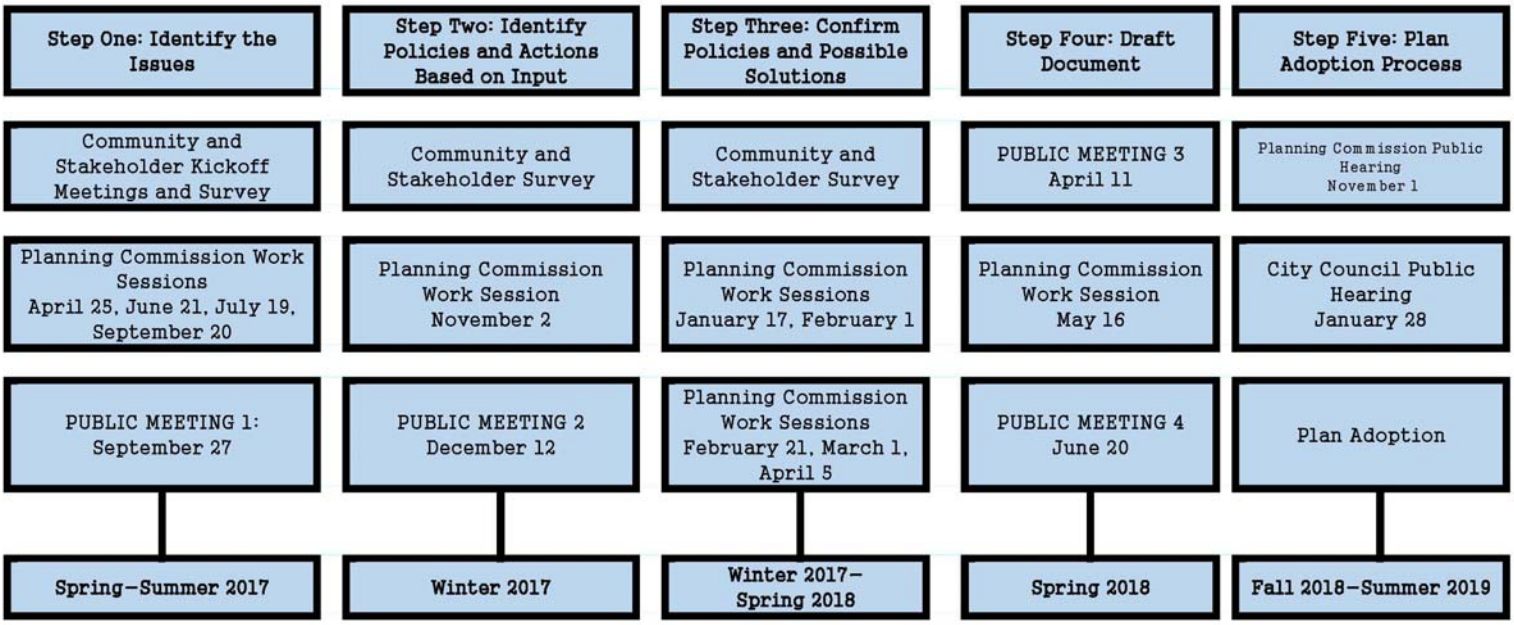
- 2016 Eastport Transportation Study, Existing Conditions Report and Eastport Transportation Study, Short-term and Long-term Recommendations Report
- 2015 Forest Drive Corridor Study
- 2014 Annapolis Comprehensive Plan Five Year Update
- 2011 Annapolis Bicycle Master Plan
- 2009 Fiscal Impact Analysis of Four Opportunity Sites
- 2009 Annapolis Comprehensive Plan

1.5 Planning Process

This Study's planning process was developed with input from the Planning Commission who has provided guidance on the process, study vision, and study recommendations through a series of monthly work sessions with City staff and the consultant team. After deliberation, a five-step process was chosen to identify and reflect the expressed concerns and desires of the communities interested and affected by the ensuing document. These steps are shown in the figure below and are as follows:

- Step One: Identify the Issues
- Step Two: Identify Policies and Actions Based on Input
- Step Three: Confirm Policies and Possible Solutions
- Step Four: Draft Document Review - "Did we get it right?"
- Step Five: Public Adoption Process

Figure Four: Process and Timeline for the Forest Drive/Eastport Sector Study



This process allowed the recorded outcomes from the first three steps to be reviewed and compiled as a part of the draft plan document. The drafted document offers a vision for the future based on a careful review of the input from residents, businesses, and other stakeholders in the Forest Drive corridor and in Eastport. In order to ensure fair and equitable consideration of contributions from city residents, businesses,

organizations, community groups, and other stakeholders, the City of Annapolis utilized a variety of techniques to obtain input, as described below:

Step One: Identify the Issues

- Stakeholder interviews. Over 150 representatives of every constituency were invited to attend one of 22 meetings held to help identify issues and aspirations. Over 100 people attended.
- Online Survey #1. Over 1,180 people provided input and responses to the issues identification survey posted on the city website.
- Website posting feedback. The team compiled lists of the issues heard thus far. These were posted on the City's website. Several people provided added input via email.
- Open House Public Meeting #1. About 75 people attended a public meeting to review the compiled issues lists and add their input.

Step Two and Three: Identify and Confirm Policies and Actions Based on Input

- Website posting feedback. A draft list of Policies and Actions was prepared and posted on the city's website.
- Online Survey #2. Over 178 people viewed and responded to a second survey on the city website on actions. The survey included images and questions regarding community character preferences.
- Public meeting #2. About 37 people attended a public meeting to comment on the draft list of Policies and Actions.
- A first draft of the study was developed.

Step Four: Draft Document - "Did we get it right?"

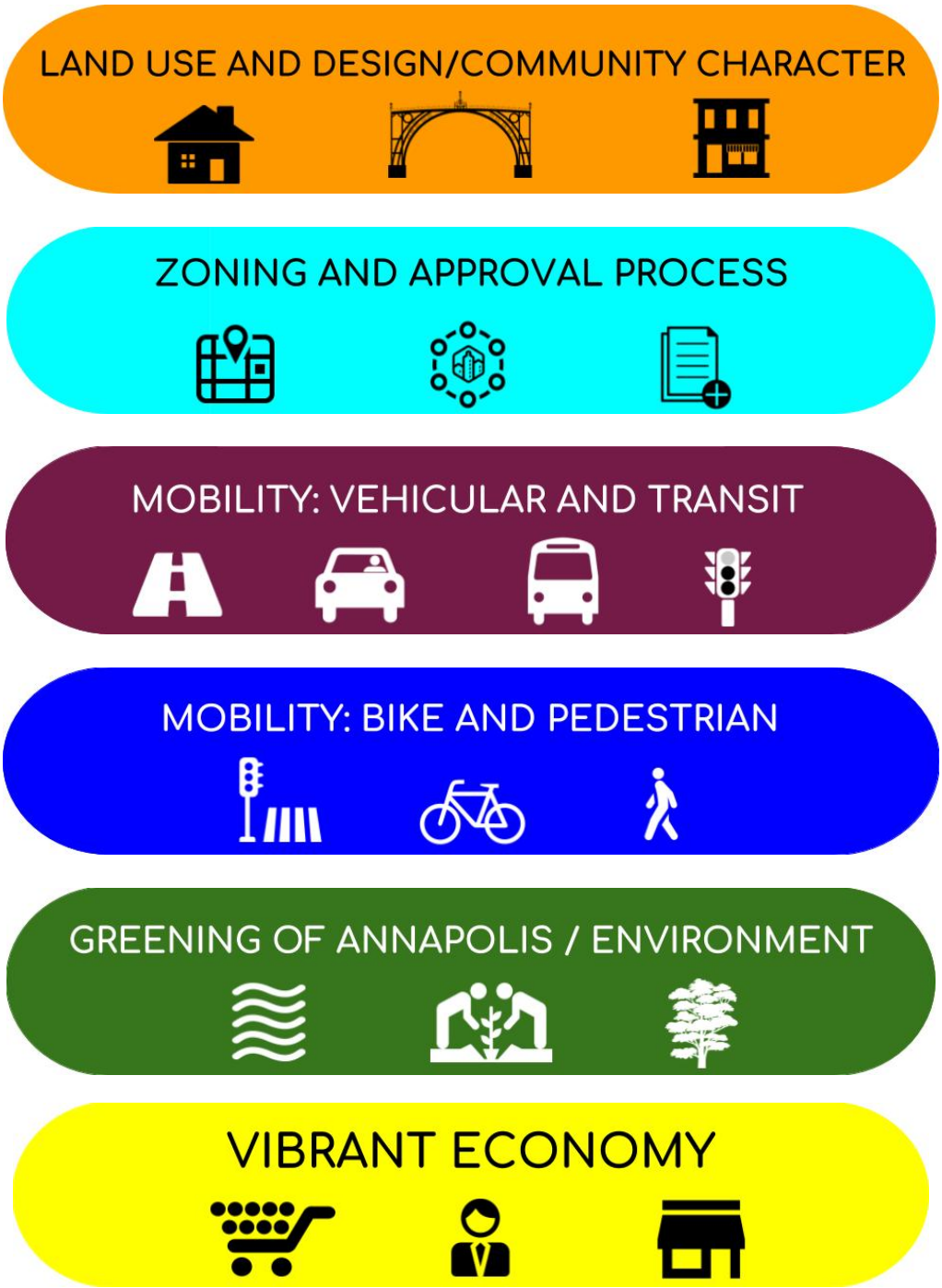
- Public Meeting #3: Draft Document Review—what did we get right and what did we miss? About 18 people attended a public meeting to hear a presentation of the draft study and provide initial feedback.
- First draft website posting feedback: The first draft Study was posted on the City website. Stakeholders who had asked to be notified were advised of its availability by email and text. An online survey created to solicit comments received seven responses.
- Further discussions were held with the County staff and the Planning Commission. A second draft of the study, with technical appendixes, was then developed.
- Third draft website posting: A third draft of the study was posted online and notifications sent out again.
- Public Meeting #4: A second opportunity to comment was provided before the start of the formal public hearing and adoption process. About 30 people attended the event. Numerous written comments were received.

Step Five: Plan Adoption Process

- Planning Commission Work Session: The final work session before the Planning Commission.
- Website posting of the Draft Study for Introduction
- Public Hearings were held at the Planning Commission and the City Council to provide opportunities for further public comment

2. ISSUE IDENTIFICATION AND EXISTING CONDITIONS

Input received from interviews, surveys, and public meetings in Step One yielded over 300 issues that were grouped into six themes that are color-coded throughout this plan. Each theme has also been assigned graphic icons to help with continuity:



Comments were received on the overall sector area and on specific sub-areas within it. As many people have participated in other recent City planning efforts, comments also reflected a request to see implementation of those plans. The feedback given also included new issues, actions, and suggestions for new solutions to ongoing issues that have arisen since the 2009 Plan.

Public Meeting #1

The online community surveys helped to significantly broaden stakeholder participation. They collected insights on a range of aspirations, concerns and preferences from a much larger, more diverse group of stakeholders than were able to attend the public meetings. The surveys helped to identify common themes and differing stakeholder perspectives, since the responses could be sorted by respondent location and age. For instance in the first survey, 47% of the respondents indicated they lived in the Forest Drive corridor parts of the sector, while 20% said they lived in the Eastport part of the sector. 33% lived outside the sector with 11% living elsewhere in the City and 20% outside the City.

In Survey #1, one question asked: “What are the 3 most important topics to focus on in the Forest Drive/Eastport Sector Study?” The top ranked responses were Transportation (24%), Land use (23%), Environment (19%), Bike and pedestrian facilities (13%), and Types of businesses (8%). The importance of transportation was also stressed in stakeholder meetings. Survey #1 respondents chose “Traffic during-an accident,” and “Day-to-day traffic” as their first and second worst features of the sector. Follow-up survey questions provided greater specificity and insight on the transportation issue. Respondents chose non-vehicular mobility as a fourth most important issue. Inability to get around without a car was the fourth worst feature. 15% of the respondents expressed wanting bike lanes over reduced traffic/congestion in the area.

In another survey question, respondents were asked, “What do you wish were located along Forest Drive or in Eastport?” Respondents’ top desires were very detailed, down to the type of food desired in a new restaurant. When sorted by type the following sentiments emerged: 15% of the respondents wanted either less or no new

development in the sector. Many of these same respondents also indicated in another question that overcrowding was one of the top three worst features about the sector.

85% of survey respondents expressed a desire for something new that would require either a private or public expenditure. 45% wanted some type of new retail or other service. The top request was for a better grocery store and/or more access to better food shops in Eastport and the sector generally. The second highest desire was for more dining options, various restaurants and coffee shops, followed by other retail and entertainment options. Various commercial services and job opportunities were listed as a smaller part of this group. While housing was not nearly as common of an urgent desire, those that wanted housing over anything else preferred affordable housing. A smaller group wanted added green space, greenery, beautification, bike and pedestrian safety, and various community services and amenities.

The second survey asked about design preferences about overall vision. Responses to the Survey #2 question on vision yielded the following:

"What is your vision for the study area?" (Check all that apply):

1.	Series of walkable and bikeable village-like neighborhoods	64%
2.	Neighborhoods served by several vibrant small business areas	50%
3.	Residential neighborhoods surrounded and divided by forest	47%
4.	Low-scale urban (Annapolis style)	45%
5.	Art district with locally serving restaurants and entertainment	42%
6.	Enhanced green boulevard between shopping clusters	39%
7.	Smart growth oriented mixed use served by transit	39%
8.	Thoroughfare to get to employment/shopping centers as quickly as possible	21%
9.	Smaller scaled landscaped town center	15%

2.1 Summary of Priority Issues by Theme

All collected issues were added to a spreadsheet. A paraphrased compilation of the most frequently raised issues are as follows:

- Strong vision. A clear vision for this part of the City is needed so that transformative implementation can occur with fewer disputes and delays.
- More local shops and services. There were many requests for more local shops and services in the business districts of this part of the City, especially more places to buy food and eat. Participants wanted to reduce the need to drive out of their neighborhoods and out of the City to find food, groceries, services, entertainment, recreation and work. Commercial revitalization should be promoted.
- Transformative corridor beautification. Participants want the corridor to be more attractive and green, to be a pleasant shady boulevard, and to keep some "forest on Forest". Also, many wanted more public art and more place-making in this part of the City.
- More Annapolis style and character. Annapolis is a special maritime city with a distinct appeal within the country. Participants want the corridor and this sector to change so that it looks and feels more like Annapolis, i.e., low scale urban, less suburban, and less auto-centric. Transformation, not protection of the current character is needed. There was a strong sentiment that, "We don't want to look like Montgomery County" but more like Newport, Charleston, Boulder, or New Orleans.

Supporting regulatory changes. Regulatory changes are needed to enable this plan's achievement and to remove current obstacles. This includes zoning text and map changes, as well as new traffic impact study procedures, changes to traffic adequate public facility ordinance congestion measurements, etc.

Participants want vehicular, bike and pedestrian mobility both today and in the future, both on the County corridor and on the connecting City street network. Many want a transformation in the sector and to see more walking, biking, and transit and less driving alone as the mode of choice. Ideally, the percentage of drivers leaving the City and the corridor each morning would be reduced. New development should contribute their fair share to mobility and not cause negative impacts. To ensure long term mobility, better tools are needed to assess and monitor traffic, to achieve a complete multi-modal transportation network, and to ensure that development impacts are understood and appropriately mitigated.

Figure Five: Example from Issue Spreadsheet

A	B
	MOBILITY - VEHICULAR AND TRANSIT
	ISSUES FROM STEP ONE
ROAD ADEQUACY AND CAPACITY	
	Develop a more balanced urban planning-based evaluation method for assessing development traffic impacts
	Develop a better method to forecast city mobility, accessibility and road capacity
	Sector Plan traffic models should anticipate approved & planned developments
	Study models need to use better data with current traffic counts
POLICIES & REGULATIONS	
	Emergencies - plan for peninsula evacuation & create more emergency routes
	Incidents - Prevent grid lock during traffic incidents, Need multi-jurisdictional incident policy/plan/ strategies
	Events - protect community mobility during city events downtown and in Eastport
	Promote greater state, county & city coordination of corridor improvement, management & beautification
	Need better tools to understand impacts of added traffic in the city & peninsula
	Need better tools to understand traffic benefits of low scale walkable mixed use neighborhoods
	Ensure that city APFO rules require developments to fix their fair share of traffic problems, or don't approve
	Allow developers to offer other creative improvements as part of their mitigation
VISION	
	Forest will be a slow-speed beautiful boulevard that is lined with trees & is safe to bike & walk along
	Forest should also be a free flowing arterial adequate to serve the City and County today & in the future
	Congestion will be reduced because traffic is better managed and people drive less & shorter distances
	This part of the city will be place with many near-by destinations that people can easily walk & bike to

Walkable and bikable neighborhoods. Participants want to be able to safely and comfortably walk and bike to shops, parks, schools, jobs, etc. This is part of the Annapolis' quality of life. This part of the City has more capacity to accommodate bicycle facilities than other parts so we should make it a key sector asset.

Continue the ongoing city-wide good work on smart growth, green space preservation, urban tree canopy expansion, forest protection, improved water quality, reducing its carbon footprint, etc. In addition, there should be more street trees and more emphasis on incentivizing or requiring infill or redevelopment on the many impervious commercial sites that have no stormwater facilities. Added stormwater management for streets is also important. This area's green space is a special asset in the sector.

City vitality and revenues. A vital City economy and a stronger tax base are essential so that the City can pay for the improvements envisioned by this study and so that there are more businesses and jobs in the City. The value of commercial properties needs to increase so that the sector can attract more private business.

2.2 Existing and Currently Planned Sector Conditions Analysis

Before developing solutions to the issues raised, the team collected data and analyzed existing conditions and trends relevant to the study scope, aspirations, issues, and questions raised in Step One. Analysis included a review of land use, community character, zoning, demographics, economic factors, areas susceptible to change, roads, mobility, and travel behavior. A summary of these investigations are provided

here as an aid to understanding the resulting proposed actions. The technical appendices provide added detail and the full traffic analysis.

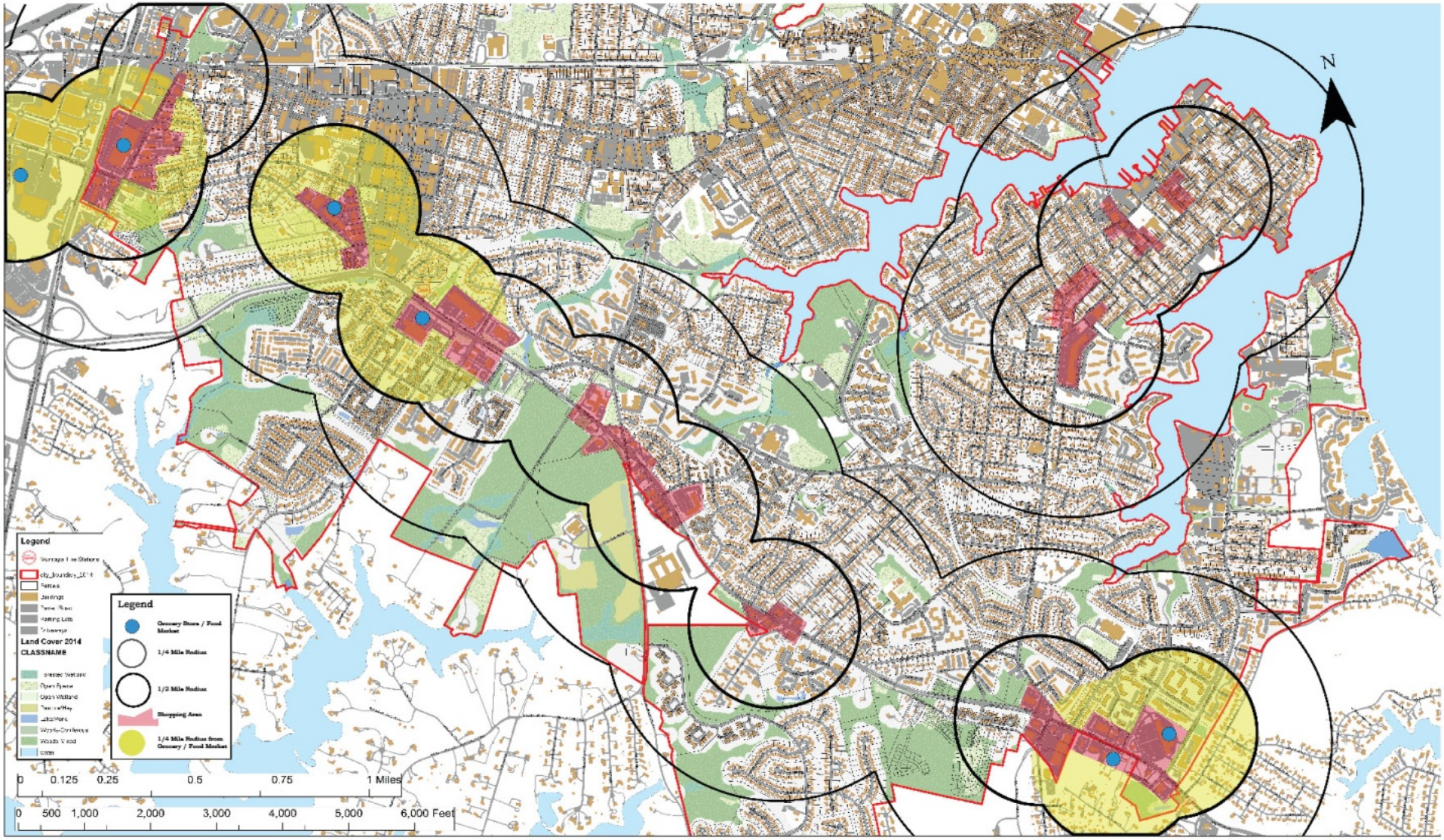
The area within the sector covers over two-thirds of the City's land area. It includes about 65% of the City's population and households and about 63% of the City's resident workers. It includes two business districts, Forest Drive and Eastport. These two areas together contain more commercial acreage than other parts of the City. Despite the large area, the sector contains only about 22% of all City jobs. It contains about 35% of all the City's retail jobs and about 22% of all the City office jobs.

The buildings and communities along Forest Drive are much younger than those in downtown and Eastport. Parts of the sector have lower density and are more suburban in character, as well as more auto-oriented than the rest of the City. The streets are typically much wider. The existing patterns of population and employment located along the main corridor make the area well-suited to public bus transit service. The corridor includes a series of office and commercial clusters spaced about half to one mile apart that are surrounded by established residential neighborhoods that straddle the corridor.

There are schools, churches and other institutional services all within easy walking distance. The land use pattern is well-suited to changes that achieve the stakeholders' aspirations for a series of complete, walkable, scaled neighborhoods. The map below (Figure Six) locates the existing commercial centers and delineates a quarter-mile and a half-mile walking radius around them to demonstrate how much of the surrounding residential areas are within easy walking distance of a center. The areas colored yellow have access to a grocery store (including the Latino food mart on Forest Drive at Fairfax Road).

The map also highlights the existing impervious coverage in the sector areas, illustrating that coverage is significantly less in the sector compared to the older City sections or the industrial Design District. Much of the existing publicly and privately owned pavement was built before stormwater management was required, making redevelopment an environmental as well as an economic and a quality of life issue. Most of the sector's land area has already been developed or approved for development in some form with the exception of a large wooded area on the Forest Drive Opportunity Site. Infill development is ongoing in the sector.

Figure Six: Complete Neighborhood Pedestrian-Sheds



2.2.1 Existing Land Use

The land use in the corridor is shown on the map below. The following describes general categories of prominent land use:

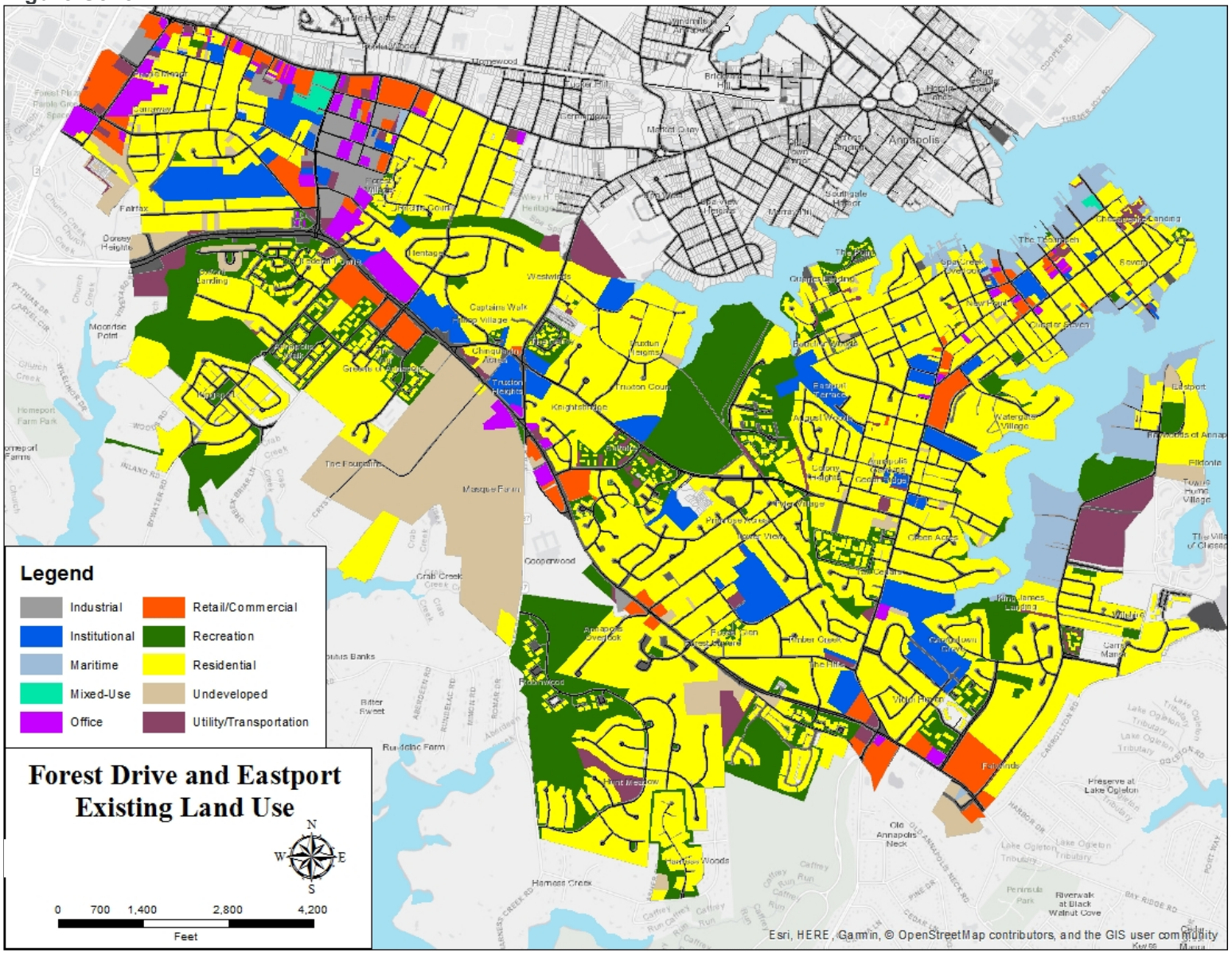
Commercial, Office and Industrial Uses. This sector's commercial areas provide a wide range of retail and service businesses that serve their neighborhoods, the City, and the larger peninsula community. Included are three of the city's four existing supermarket grocery stores. A fourth grocery store is being planned in the corridor on land in the County. Numerous two- and three-story office buildings exist including a 120,000 sq. ft. office building at 1750 Forest Drive now under renovation. The City's thriving Design District located just to north on Chinquapin Round Road includes an array of industrial uses.

Residential Uses. Many of the sector's residential areas were designed as planned subdivisions. They include a diverse mix of housing types including rental apartments, town homes and single-family home communities. There are numerous active homeowner associations. Four of the City's public housing areas exist in the sector; two along the corridor and two in Eastport. Two of these are scheduled for redesign and redevelopment soon.

Institutional Uses. The sector is home to numerous public and private institutions. The sector contains six schools, including three of the City's elementary public schools as well as two private schools. Additional public and private schools exist on the Outer Neck to the east. There are several large places of worship and two operating assisted living facilities. Additional public institutions include two fire stations and a County library. This part of the City has the advantage of being close to the City's largest park and recreation center at Truxtun Park, the park amenities near Maryland Hall, as well as to the County's major regional park at Quiet Waters.

Green Open Space. A distinctive feature of this part of the City is the amount of green open spaces and forests that have been and will be preserved for public or private use, or environmental protection. Additional preservation areas are anticipated as a part of several recent and pending development projects. There have been questions raised as to whether the City might be better served by preserving a larger portion of the mature forests on the undeveloped tracts and by redirecting a greater portion of the envisioned future commercial development to several smaller clusters rather than creating one larger center. There are many existing open areas that include significant amounts of private green open space and other recreational amenities incorporated into the design of neighborhoods and owned by homeowner associations. There are also many acres of permanent conservation easements held by the Annapolis Conservancy Board as well as the Ellen O. Moyer Nature Park area. Additionally, there are several areas of abandoned City and County rights-of-way (ROW) and old railroad ROW that are underutilized. These areas form a substantial connected greenway network that should be considered further.

Figure Seven



2.2.2 Existing Community Character

The parts of the Forest Drive corridor that is most often identified as appealing are the sections where the road has either a forested or a green open space edge and the street has a shaded green boulevard character with street trees and a central landscaped median. The part of the corridor that is most often mentioned as unattractive is the aging, tired visual character of many of the older commercial properties and of the street frontage itself. This concern is raised both by residents and members of the business community. While there have been commercial improvements and updates over the last decade, the prevailing perception that stakeholders report is a series of aging auto-oriented suburban strips and pad sites. This perceived lack of vitality and re-investment differs from other parts of the City.

Community efforts to organize volunteer corridor beautification have begun but are complicated by the fact that the Forest Drive ROW is owned by the County. The County's current street standards and maintenance policies prohibit such elements as street trees at the street edge, banners on light poles, and added landscape medians.

The Eastport area, by comparison, has seen widespread commercial and residential improvements and updates over the last decade. The character of its residential areas has been managed for many years through implementation of the Neighborhood Conservation zoning designation. Most stakeholders see Eastport as a special place in the City, and its residential and maritime character should continue to be protected.

2.2.3 Existing Zoning

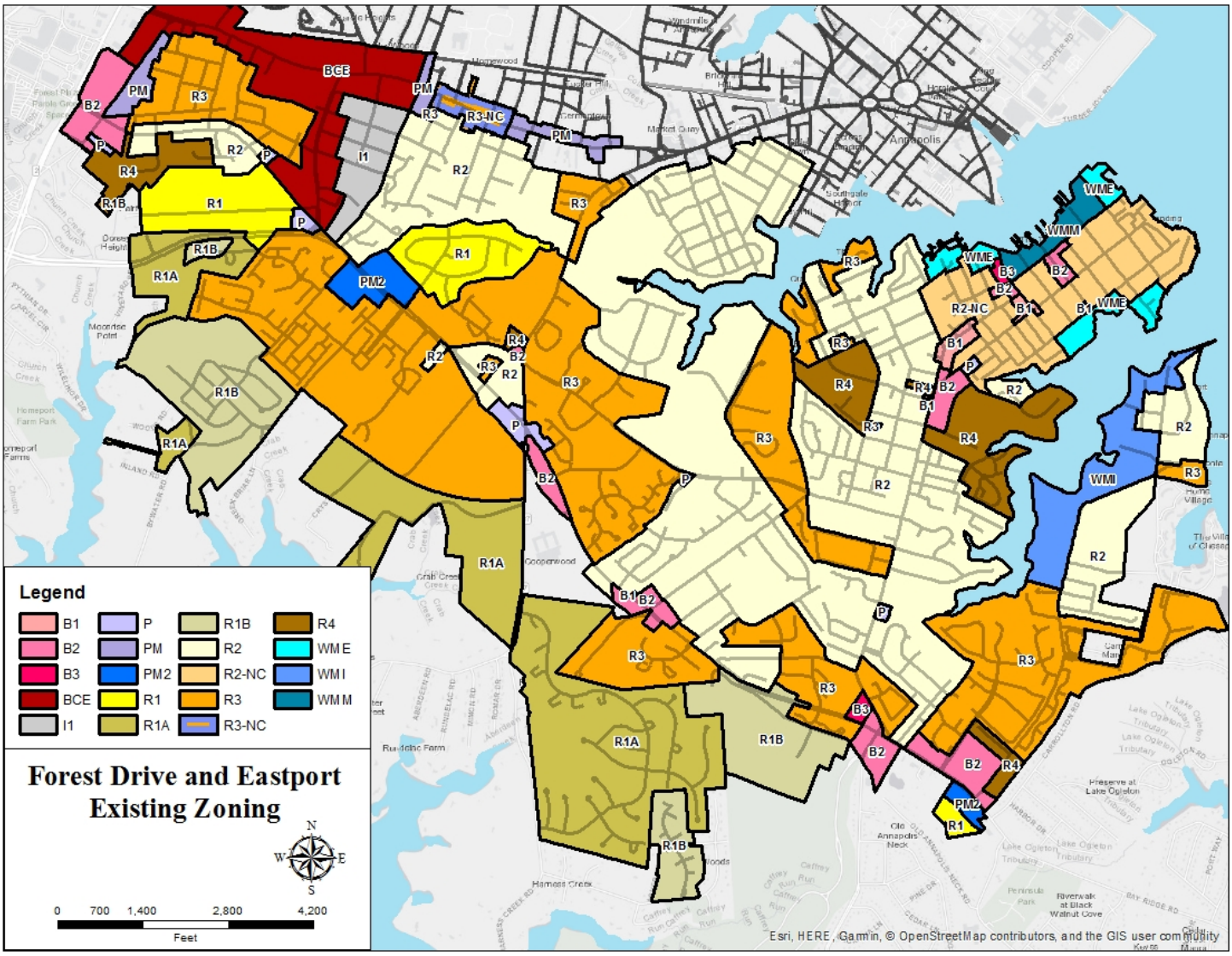
The area's current non-residential zoning designations are intended to permit employment and shopping districts oriented to the needs of the City and its neighborhoods. The existing non-residential clusters (excluding maritime areas) are predominantly zoned for professional office use and general business use. The Chinquapin Round Road area includes light industrial uses. These zones permit relatively high densities and intensities as well as some mixed use. For example the Professional Office District (P) allows a floor area ratio of up to 3.0. Both the Community Shopping District (B2) and Professional Mixed Office Park District (PM2) allow a floor area ratio of 2.0. Based on a recent city study, the current sector zoning designations would permit significant amounts of new development in the future.

A review of the zoning code shows that the current designations also require a suburban development pattern. Buildings must be set well away from the street and from each other. These setback standards greatly restrict the design and uses on the corridor's many small commercial lots. They also conflict with the creation of a low-scale village-like urban setting with pleasant compact walkable bike-able streetscapes as requested by stakeholders and envisioned by the City's Comprehensive Plan. The zoning for the residential neighborhoods of the corridor permit a mix of detached or attached single-family homes as well as multi-family homes. The maximum permitted densities range from two to nine dwelling units per acre. A minimum density of seven units per acre or greater is generally considered compact enough for a neighborhood to function as a walkable community with moderate levels of bus transit service.

Higher densities are generally considered necessary to support additional transit service. It is not just density, however, that contributes to more walkable and transit-friendly neighborhoods. New development must embrace connectivity as part of its form—streets should be laid out in grid form with the pedestrian forefront in the mind, not the automobile.

One other existing City zoning issue that should be addressed through this study is the existence of numerous split-zoned lots. This condition is a hindrance to change as it complicates both development and approval of new uses for built spaces. Figure Eight below shows the zoning designations in the study area.

Figure Eight



2.2.4 Demographics

This sector, and the City as a whole, has a diverse population. Its diversity has been increasing for some time and is projected to continue. The number of City residents in all of the racial and ethnic categories defined by the U.S. Census have remained fairly stable without significant increases or decreases in population except for Latinos. As the "white alone" category has seen a decrease in its share of the population by several percentage points, the Latino community has increased both overall and in its proportion of the population. This trend is expected to continue in the near future where Hispanics or Latinos will eventually make up the largest minority group.

Table One: Annapolis Population by Race and Ethnicity, 2010

Subject	Annapolis City, Maryland, 2010			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
POPULATION	37,825	+/-41		
RACE				
Race alone or in combination with one or more other races				
White	26,056	+/-1,040	68.9%	+/-2.8
Black or African American	9,082	+/-758	24.0%	+/-2.0
American Indian and Alaska Native	156	+/-103	0.4%	+/-0.3
Asian	988	+/-331	2.6%	+/-0.9
HISPANIC OR LATINO AND RACE				
Hispanic or Latino (of any race)	5,887	+/-819	15.6%	+/-2.2

Table Two: Annapolis Population by Race and Ethnicity, 2017

Subject	Annapolis City, Maryland, 2017			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
POPULATION	39,151	+/-52		
RACE				
Race alone or in combination with one or more other races				
White	25,528	+/-1,364	65.2%	+/-3.5
Black or African American	9,072	+/-836	23.2%	+/-2.1
American Indian and Alaska Native	189	+/-141	0.5%	+/-0.4
Asian	1,001	+/-315	2.6%	+/-0.8
HISPANIC OR LATINO AND RACE				
Hispanic or Latino (of any race)	8,000	+/-797	20.4%	+/-2.0

Estimates from 2010 and 2017 US Census

As the maps below demonstrate, the City's minority population is largely concentrated within the sector. The African American community is fairly concentrated in certain pockets of the City mainly in the Parole area and along the western stretch of Forest

Drive, while the Hispanic or Latino community is more dispersed, but with small concentrations throughout along Forest Drive. The highest proportion of White residents is located in neighborhoods outside of the Sector area.

Figure Nine: Race and Ethnicity by Block in Annapolis for Black or African American

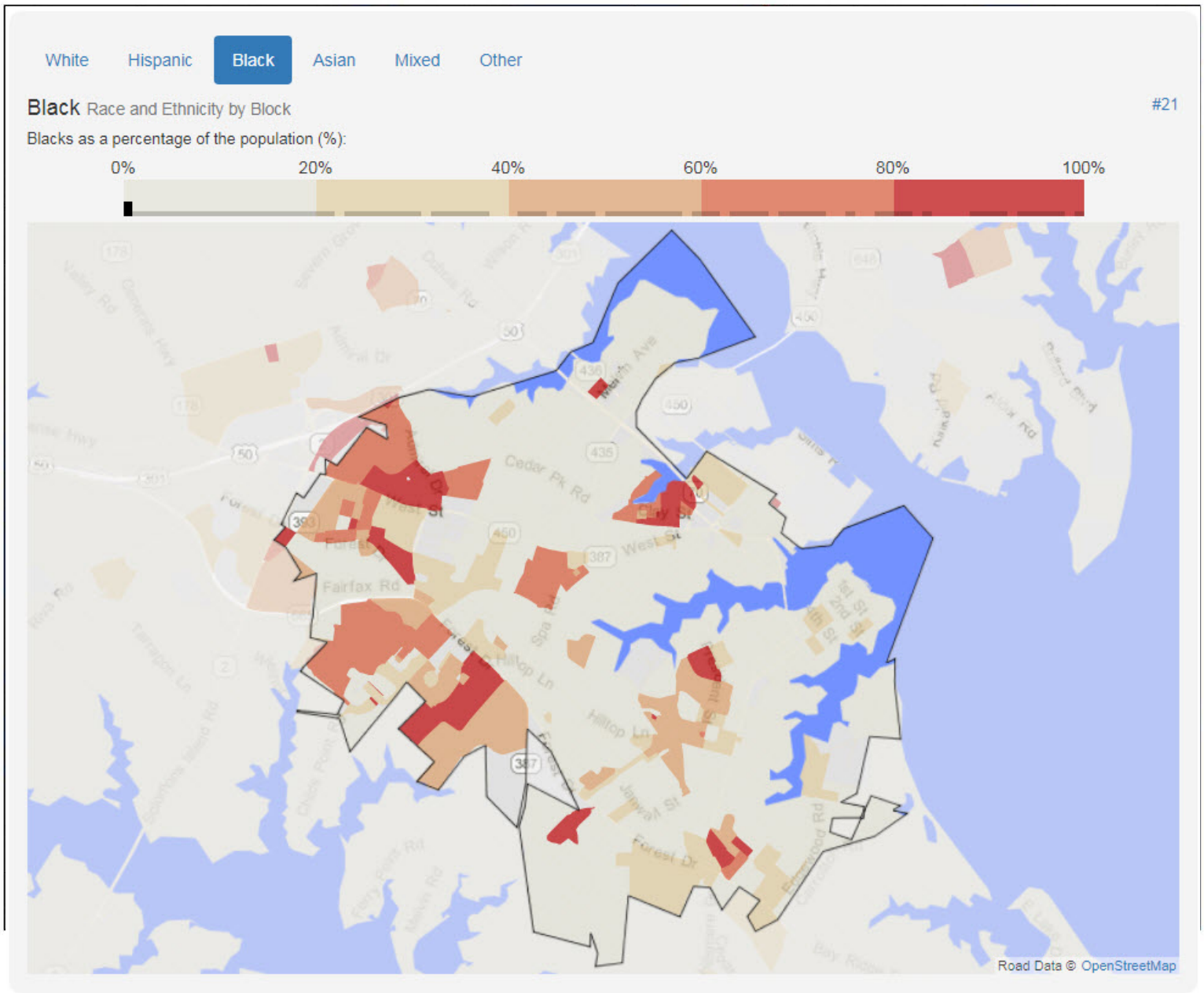


Figure Ten: Race and Ethnicity by Block in Annapolis for Hispanic Ethnicity

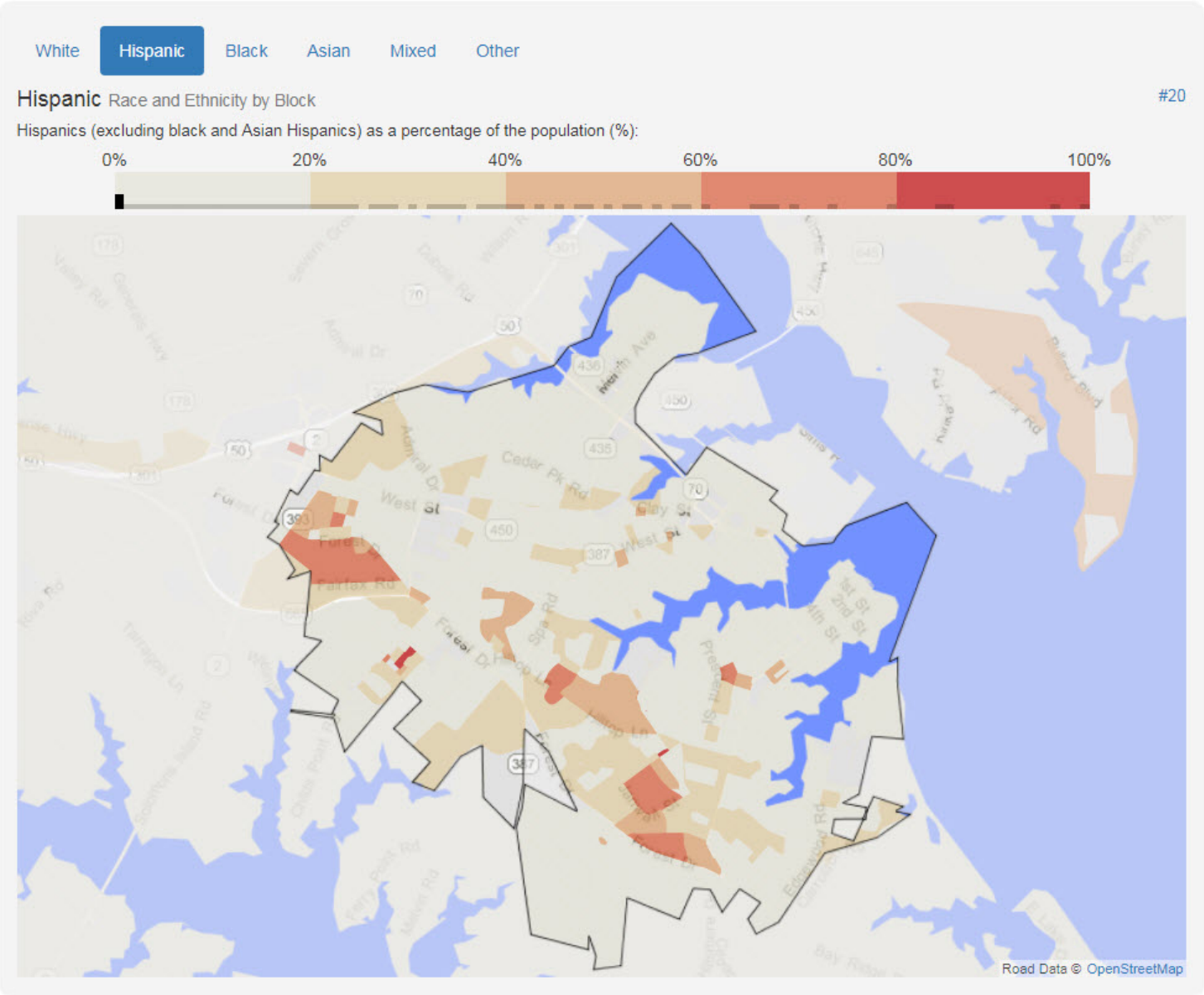
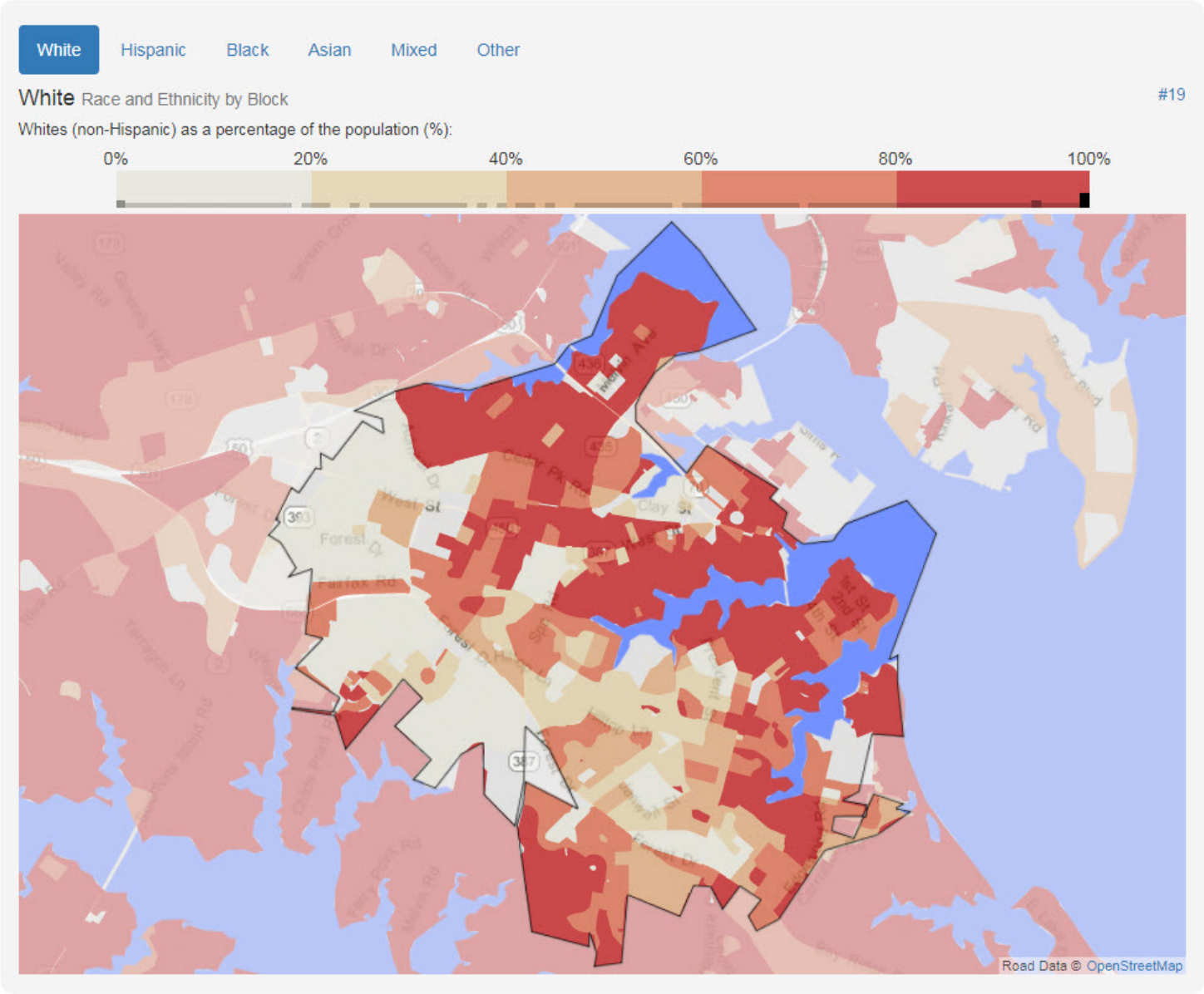
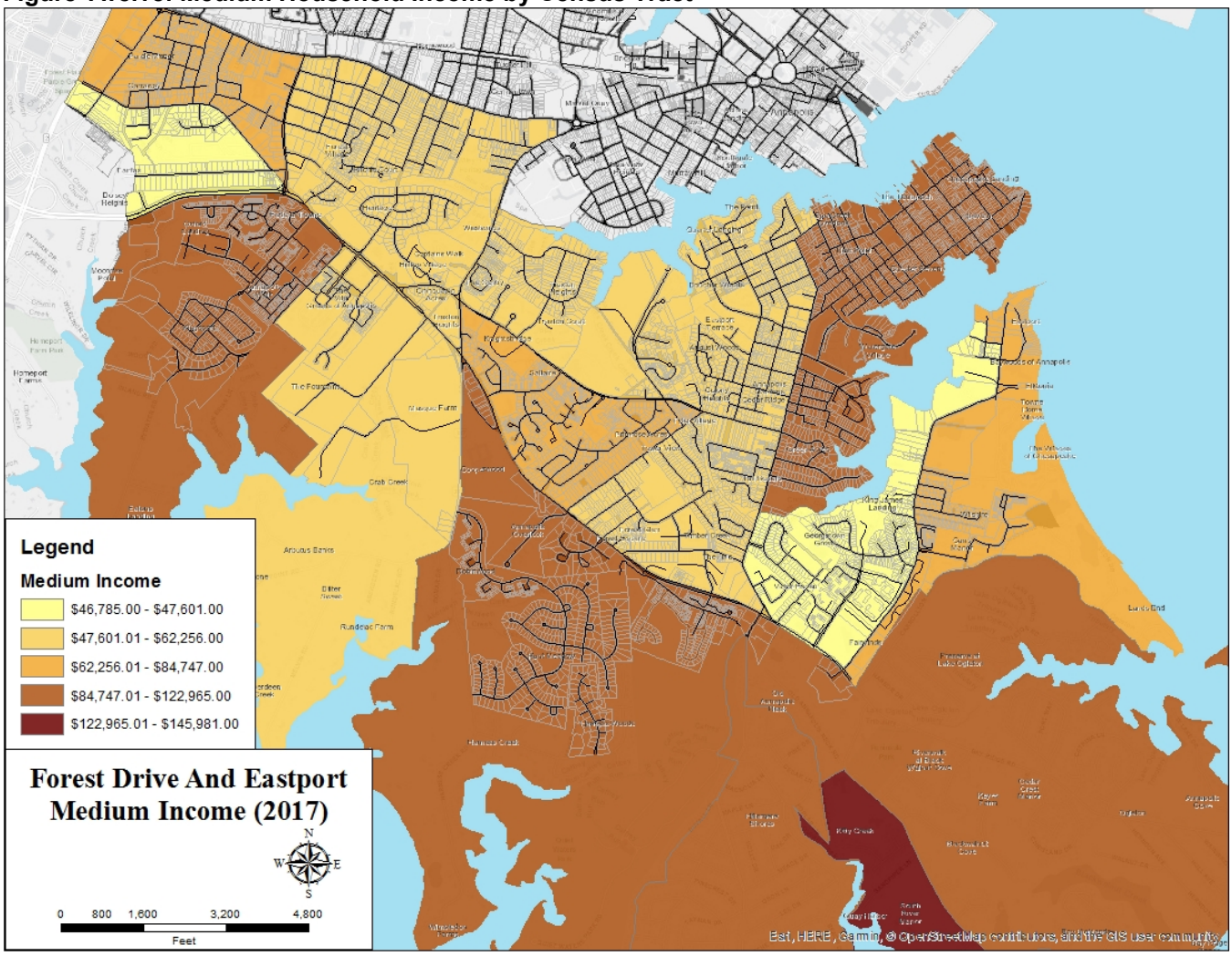


Figure Eleven: Race and Ethnicity by Block in Annapolis for White



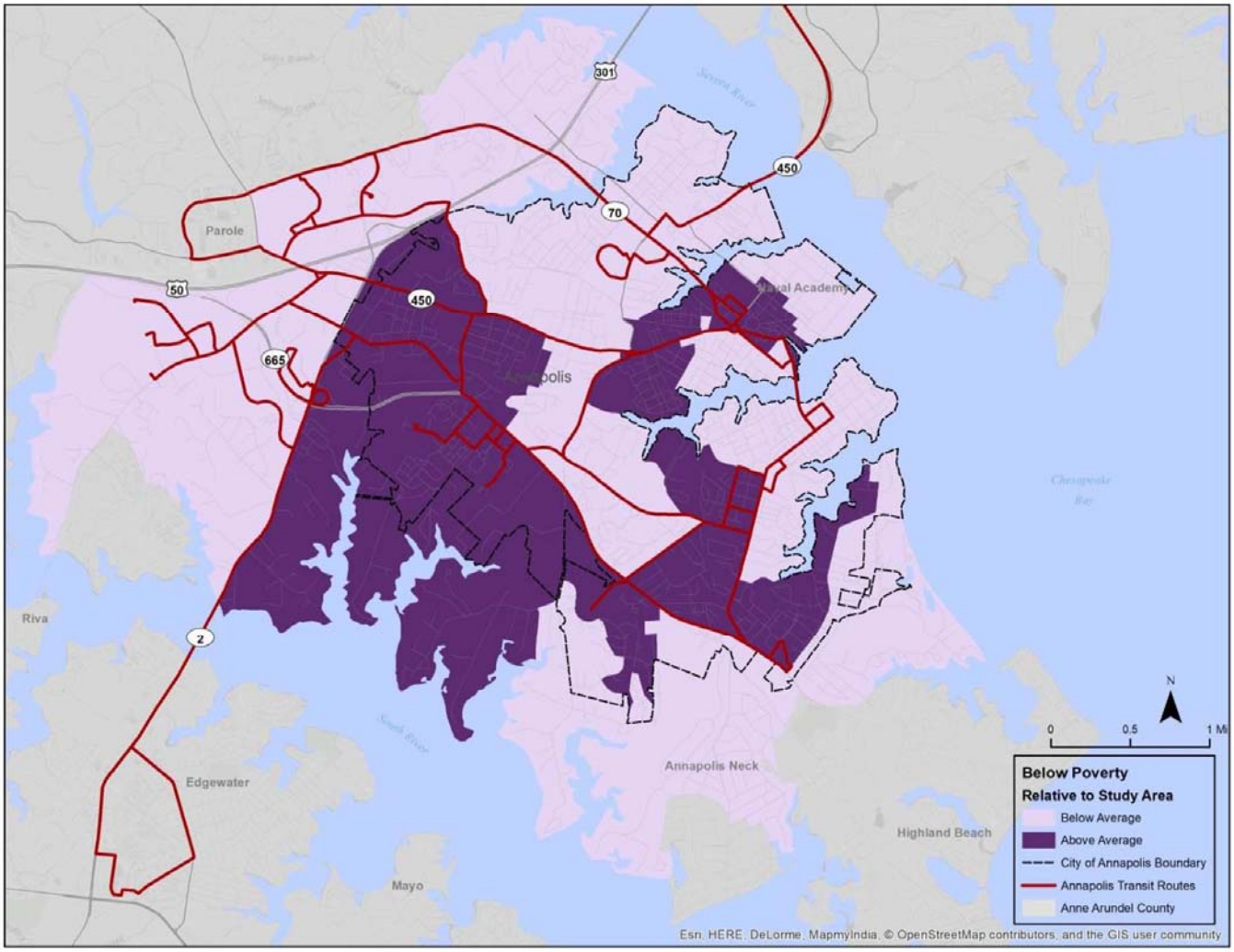
The sector also includes a wide diversity in household incomes. Using the Traffic Analysis Zone (TAZ) boundaries to define areas, the U.S. Census shows medium household incomes in this area to be as depicted in the map below:

Figure Twelve: Medium Household Income by Census Tract



The map below shows above average concentrations of City residents whose income is at or below the poverty level (dark purple areas show above average levels of below poverty levels).

Figure Thirteen: Areas Above or Below the Poverty Level

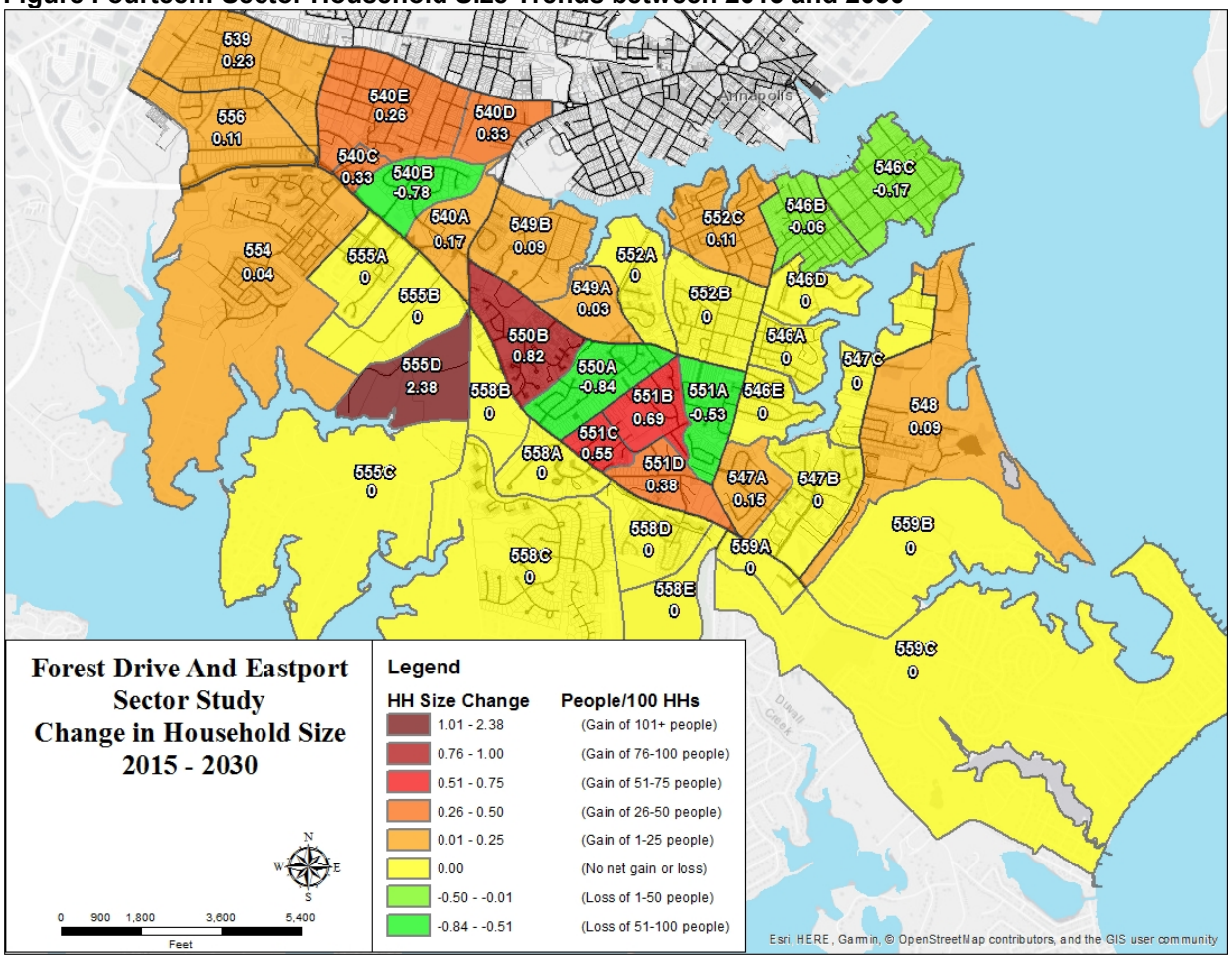


Consistent with a national trend, the number of City residents who are elderly (65 years and older) is anticipated to double in the next 30 years (2050). This trend will bring greater focus on community issues such as support for aging in place, access to health care services, more walking paths as well as care for a rising number of poor elderly residents. It will also increase employment opportunities within the heath care sector that benefit low-skill wage workers.

In 2009, the Comprehensive Plan reported that the City's average household size was 2.30 people per household and that City households would continue to shrink. That trend has since reversed and in 2015 the average household size had risen to 2.41. This new trend is creating population and worker growth that is not tied to new home construction.

This sector includes many of the City's neighborhoods with the largest household sizes. The average household size in the sector was in 2.60 in 2015. The sector average is projected to rise to 2.69 by 2030. The trend towards larger households is not uniform, however. In 2015, the averages reported for the sector's various TAZs ranged from 1.59 to 4.25. Current City projections anticipate continued increases in some areas and continued decreases in others. These diverging trends are shown below in Figure Twelve.

Figure Fourteen: Sector Household Size Trends between 2015 and 2030



The City's recent historic annual growth rate, between 2000 and 2015, was 1% based on the number of new households added. The 2009 Plan had projected that the growth rate between 2009 and 2030 would be 0.60% per year. However, construction has slowed further since then. In the past seven years the actual growth rate has been 0.22%.

A review of the growth rates estimated by the new City demographic database estimates the annual growth rates between 2010 and 2020 to be as follows:

- Households 0.25% per year
- Population 0.55% per year
- Workers 1.67% per year
- Jobs 0.39% per year

A list and map of the City's current development pipeline projects as of January 2018 are provided in Appendix A. This list includes both projects that have been fully approved but not yet constructed and pending projects with applications still under consideration. It is worth noting that some of these projects have been on the City list for as many as 10 years without construction occurring.

The City currently reports that about 22,923 of the City's residents are workers and that approximately 66% of these workers live in this sector. The number of City and sector resident workers is growing as a result of both increasing household sizes and added households. The number of workers is increasing faster than the number of jobs being added. The City's resident worker occupations are as follows:

20.2%	Educational services, health care and social assistance
16.4%	Professional, scientific, and management, administration and waste management services
11.0%	Public administration
10.7%	Arts, entertainment, recreation, accommodation, and food services
7.3%	Retail trade
7.3%	Construction
6.9%	Finance and insurance, and real estate and rental and leasing
6.5%	Other services, except public administration
3.1%	Manufacturing
2.2%	Transportation and warehousing, and utilities
2.1%	Armed Forces
2.0%	Information
1.4%	Wholesale trade
0.1%	Agriculture, forestry, fishing and hunting, and mining

The aim of a jobs-housing balance is to provide sufficient local employment opportunities so that workers are able to work in the community, thereby reducing the overall commuting volumes and distances and building a vital local economy. The City generally has a good ratio of jobs to workers (1.56 jobs for every resident worker in 2020). However, the sector itself does not. There are only 0.64 jobs for every worker. It contains 20% of the City's jobs and 75% of the workers. Both the City and sector are adding more workers than jobs. The City's demographic database estimates that between 2010 and 2020 the worker growth will be 1.67% per year, which is over four times as much as the estimated job growth of 0.39% per year.

Furthermore, while the City's current ratio looks good, a review of the City's job data shows a relatively poor match between the skills and aspirations of resident workers and the types of jobs that exist. As a result, over 80% of the City workers currently commute out of the City to work. Only 13% of the jobs in the City are held by City workers. 87% of the City jobs are filled by workers that commute in from elsewhere. This represents a significant change, as the 2000 U.S. Census reported that 46.6% of City workers held jobs in the City and 30.5% of the jobs in the City are held by City workers. Without increased employment in the City and improved matches in the types of work available, this change is projected to persist.

A review of the thirteen major industry sectors shows the areas of greatest mismatch. In 2016 the City had the greatest shortfall of jobs in the following industry sectors:

- Educational services, health care and social assistance
- Professional, scientific, and management, administration, and waste management services.

The list below shows the jobs to worker balances for all 13 job sectors.

	Table Three: Jobs to Worker Numerical Balance by Industry	City Workers	City Jobs	Ratio	Travel Pattern	Difference
	OCCUPATION BY INDUSTRY (Civilian occupations)	20,850	32,103	1.54	good balance	
1	Educational services, health care and social assistance	4,220	4,017	0.95	workers go out	(203)
2	Professional, scientific, and management, admin. and waste management services	3,409	2,767	0.81	workers go out	(642)
3	Public administration	2,300	5,834	2.54	workers come in	3,534
4	Arts, entertainment, recreation, and accommodation and food services	2,229	4,616	2.07	workers come in	2,387
5	Retail trade	2,099	3,685	1.76	good balance	1,586
6	Construction	1,516	876	0.58	workers go out	(640)
7	Banking, finance / insurance, and real estate, rental and leasing	1,446	4,548	3.15	workers come in	3,102
8	Other services, except public administration	1,353	2,300	1.70	good balance	947
9	Manufacturing	649	1,462	2.25	workers come in	813
10	Transportation and warehousing, and utilities	466	559	1.20	good balance	93
11	Information	424	846	2.00	workers come in	422
12	Wholesale trade	291	484	1.66	good balance	193
13	Agriculture, forestry, fishing and hunting, and mining	11	2	0.18	workers go out	(9)

Source: 2015 Annapolis Economic Profile Data

KEY	
1.0 to 1.8	good balance
0.99 or less	workers go out
1.81 or more	workers come in

An added factor to consider in the sector's jobs-to-worker balance is that the primary sources of employment among the workers living in the sector's four public housing (HACA) communities are reported to be:

- Retail—local retail and grocery stores
- Care Providers—such as Benevolent, Mary T. Maryland and Langton Green
- Public schools—bus drivers, cafeteria workers

Reliable affordable access to jobs is important. Jobs located in close proximity to homes are ideal so that a private vehicle or access to transit during off hours is not needed.

2.2.5 Economy

The City's primary source of general revenue funds comes from real estate property and personal property taxes. In 2017, these taxes represented 61.64% of general fund revenues. A further break out shows that 53.65% comes from real estate property taxes and 8% comes from personal property taxes on businesses. Intergovernmental tax sharing provided another 15%.

As a large portion of the City's land area has tax exempt status, the City's economic development strategy has long depended upon increases in the property values of non-tax-exempt properties to fund City needs and desires. As a result, the City's future depends on its ability to be competitive and to maintain a vital mix of private commercial activities. The table below shows the relative City revenue generation of the various City industry sectors.

Table Four: Relative City Revenue Generator by Sector

1	Retail trade	28%
2	Wholesale trade	15%
3	Banking, Finance / insurance, and real estate, rental and leasing	11%
4	Professional, scientific, and management, administration, and waste management services	9%
4	Arts, entertainment, recreation, and accommodation and food services	7%
5	Educational services, health care and social assistance	7%
6	Construction	6%
7	Manufacturing	5%
8	Other services, except public administration	3%
9	Information	3%
10	Public administration	2%

In 2017, there were about 3,518 businesses in the City and about 31,000 jobs. About 65% of the City's jobs are provided by the City's four largest employers—the State, County, and City governments and the Naval Academy. Approximately 200 additional jobs are provided by the City's fifth largest employer, St. John's College. The City's leading industry sectors, based on the number of people employed, are Public Administration, Retail, Accommodation and Food Services, and Health Care and Social Services. The County's Economic Development Division anticipates that within the near

future the greatest opportunities for new jobs will occur in the areas of health care/social assistance and retail.

Within the sector area, the largest single employer is the County. More than 475 people are employed at the four County schools located here. The various private schools are estimated to employ another 200 people. Five of the City's top fifteen private employers (i.e. non-tax exempt) are located in this sector. All are in the health care and food services sectors. Together in 2017, they employed about 765 people. They are:

- The Spa Creek Genesis Center on Milkshake Lane
- Ken's Creative Kitchens Catering Services on Edgewood Road
- The NMS Health Care Center in Eastport
- The Main & Market Café and Catering on Forest Drive
- The Chart House in Eastport

The Bay Village Assisting Living Center now under construction near Bay Ridge Road and Edgewood Road will add a new source of local jobs, as will the 120,000 sq. ft. re-purposed former State Auto Insurance building currently being converted to office space.

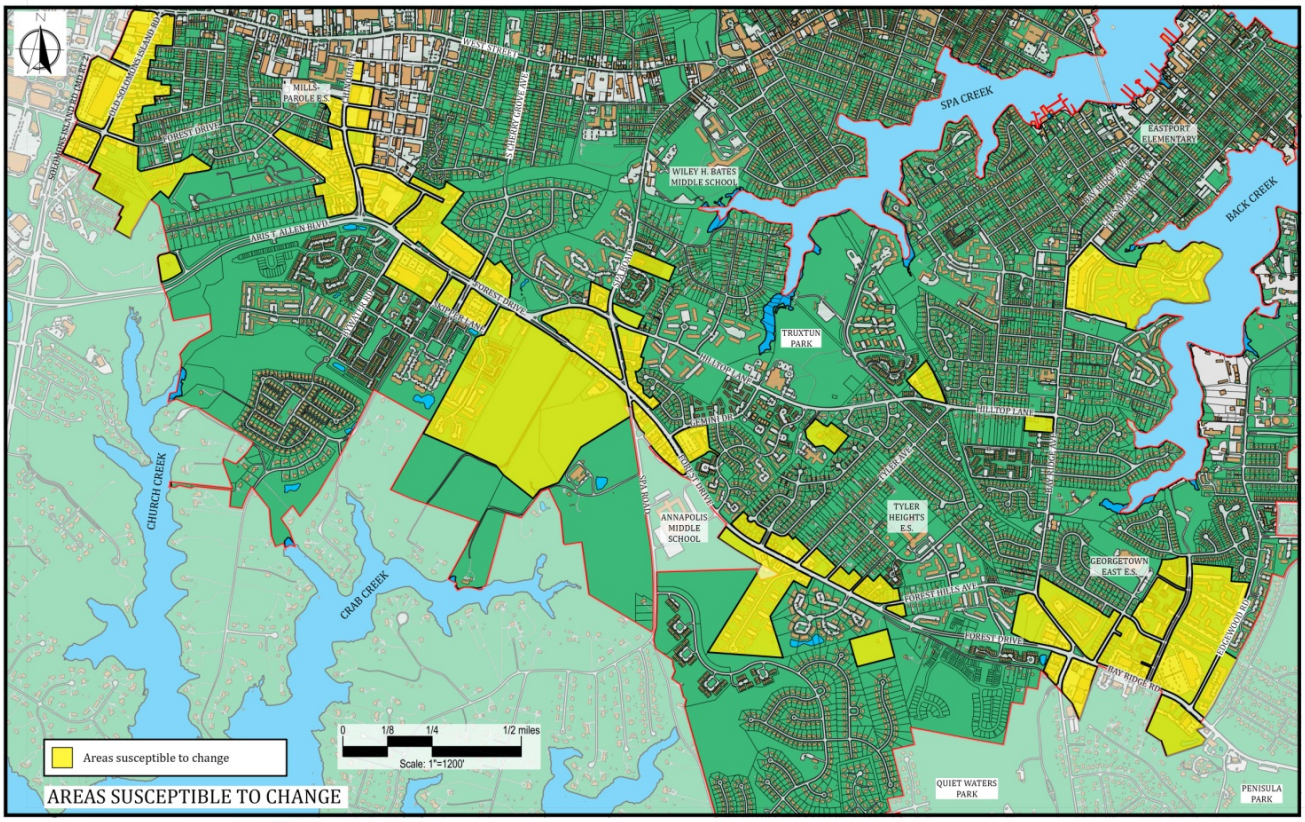
2.2.6 Areas Susceptible to Change

Much of the sector's land areas are stable communities, thriving businesses and newer buildings that are not likely to change. This study's recommendations focus on those areas considered susceptible to change in the next 20 to 30 years. This includes older commercial areas, the designated opportunity sites, and other areas that are being considered based on the following factors:

- Pipeline properties that already are approved for change but not fully built and occupied, as well as pending developments not approved but under consideration by the City (see Appendix A)
- Public housing sites identified as planned for renovations or redevelopment by HACA
- Large underutilized properties and vacant structures
- Properties whose owners have expressed interest in exploring change either through this study or the development approval process
- Older commercial sites whose buildings or uses may be approaching obsolescence
- Corridor frontage properties in areas with narrow ROW widths
- Properties with corridor access issues such as, single-family homes with driveways backing directly onto the corridor, or commercial buildings with curb cuts near arterial intersections
- Properties with split-zoning.

These areas are shown on the map below in yellow.

Figure Fifteen: Areas Susceptible to Change



2.2.7 Mobility

As part of the larger traffic analysis, existing traffic, current mode choices, and current travel behavior were reviewed as part of this study. Projections of future growth and traffic demand were created and are described in detail in Appendix C. Projections considered both the likely future assuming no changes to City policy and possible futures based on adoption of this study.

2.2.7.1 Existing Road Conditions

The Forest Drive and Bay Ridge Road corridor is owned and managed by Anne Arundel County. The State owns and manages Aris T. Allen Boulevard (MD 665), up to the Chinquapin Round Road intersection. The County classifies their portion of the Forest Drive corridor from Bywater Road to Hilltop Lane as a Primary Arterial and classifies the remaining section eastward as a Minor Arterial.

The roadway portion between Bywater Road and Spa Road was initially widened by the County in the late 1990s, with further widening, re-pavement, and striping completed in 2011 between Hilltop Lane and Chinquapin Round Road. Since 2009, the County has made a number of capacity and safety improvements in the corridor. These include improvements in 2015 at Chinquapin Round Road and the new signal system. Added improvements are planned at the Hilltop Road and Forest Drive intersection.

There are eleven signalized intersections along Forest Drive that lie within the City boundary; a twelfth traffic signal exists just to the east of the City line at the intersection of Bay Ridge Road and Arundel on the Bay Road. A thirteenth signal is planned at the entrance to the Parkside Preserve development. A fourteenth signal may be added at Crystal Spring Road in the future. SHA owns three of the signals (Chinquapin Round Road, Bywater Road, and Spa Road). All the corridor traffic signals are controlled and maintained by the County under an agreement with SHA. The County-controlled signals were recently upgraded with new adaptive signal technology. This technology allows the County to manage traffic flow better over the course of the day and week to maximize mainline traffic flows along the corridor.

The City owns three signals within the Sector Study area, all within Eastport. These are older, pre-timed signals that lack the smart technology needed to manage traffic responsively within a grouped signal network. The City-owned signals do not communicate with the County or State signal systems.

The County is embracing the Complete Street approach. Updates to the County's standard road design standards are planned in the near future to establish new typical street sections that are more multimodal, contextual, and responsive to more urban conditions and allow for more efficient use of pavement. The intent of the Complete Streets approach is to design and operate streets that enable safe access for all users including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. The City's 2009 Plan also recommends adoption of new more contextual street standards.

A large part of the stakeholder conversation on traffic congestion focuses on the fact the limited points of access and on the lack of an interconnected street network in this part of the City. The current road network pattern focuses traffic down to a single main point of exit/access to the Peninsula via Aris T. Allen Boulevard and the western end of Forest Drive. This creates a traffic bottleneck. There are few other route options available for drivers to take when a traffic obstruction or City event occurs that causes back-ups. Part of this limitation is caused by the physical constraints of the area's peninsula land forms. Another part of the network limitations are a result of choice. While past plans have proposed new connections, the various relief road options have been explored but not implemented. Several existing local collector streets have been closed to through traffic and many unconnected residential areas have been built. This has focused traffic down to fewer and fewer route choices.

A third factor is that key improvements proposed in the 2009 Plan have not been yet been built. The Plan called for improvements to County and State roadways at the western end of the corridor well as for improvements to several City streets. It envisions connections and extensions of several City streets in order to help restore the local street network and provide redundancy, and calls for traffic calming improvements on collector streets to mitigate through traffic flows in neighborhoods.

Many of the listed City street projects are dependent on developer funding and are tied to development approvals that have not occurred or are not yet finalized. City capital improvement funds for other improvement projects have not yet been established to address improvements to existing conditions.

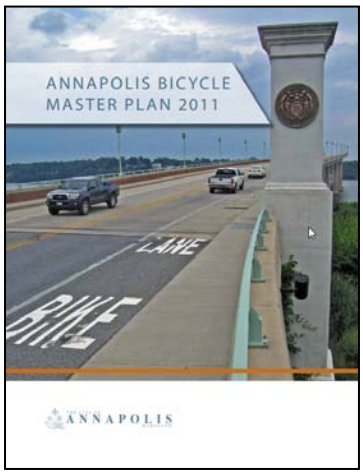
While the State and County have made improvements in the Corridor since 2009 and plan other safety improvements, the current plans and capital improvement budgets for both the State and County do not identify this sector as a priority area for future road capacity improvements. The County's Draft Transportation Functional Master Plan, which will inform the upcoming County General Development Plan is example of this issue. It outlines a constrained approach to road Improvements County wide and focuses on improving transit and converting existing streets to complete street standards. It does not identify MD 665 or Forest Drive as one of the County's key priority areas.

It should be noted that recent the State and County plans were prepared without the benefit of the City's latest demographic data, the analysis of changing City travel behavior that have been identified as a part of this study or the study's corridor vision. The new data and vision may help establish the corridor as possible demonstration area for new transportation toolbox initiatives.

2.2.7.2 Bike and Pedestrian Networks

Sidewalks are present in the County corridor on both sides of Forest Drive, from Chinquapin Round Road to Carrolton Road. In some areas, the sidewalk directly abuts the back of the curb. In other areas, the sidewalk is separated from the curb by a narrow grass strip, frequently containing above-ground utilities. The sidewalks are primarily ADA compliant, though in a few instances sidewalks are blocked by utility poles and regulatory signage. The sidewalk network within the sector's streets does have some gaps, however. The 2016 *Eastport Transportation Study* includes maps of these gaps in Eastport. There are several areas that exhibit evidence of heavy pedestrian activity where sidewalks do not exist. One most visible is a wide dirt path leading from the crosswalk at Forest Drive and Chinquapin Round Road to Tripp Creek Court in the Oxford Landing neighborhood.

Neither Aris T. Allen Boulevard nor the County corridor has any existing on-street bike lanes, bike shoulders separating on-street bikes from vehicles, nor any signage for bikes. A segment of paved multi-purpose path exists on the south side of the corridor along the front of the Safeway and Village Green. The County *Bike and Pedestrian Master Plan* does not currently call for any added improvements in the corridor. Numerous stakeholder requests were received to extend this throughout the corridor as recommended by the City's 2011 *Bike Master Plan*.



The City's *Bike Master Plan* provides a review of existing City facilities in the sector. It puts forward a vision for a future city network and provides a prioritized list of improvements some of which are in the sector. Participating stakeholders in this study reported a strong and growing interest in biking as well as walking in and around this part of the City and the peninsula both for recreation as a means to commute, shop, or reach other local destinations. There are network gaps and safety issues preventing users from choosing this mode of travel. Numerous observations on the current network vision and facilities were made along with requests for more near-term improvements in this sector. This yielded the following list of added projects and priorities:

- A safe North/South bike spine is requested down Bay Ridge Avenue from Eastport to shopping in Bay Ridge and to Quiet Waters Park.
- A safer North/South connection is requested to Inner West Street and downtown along Spa Road from the corridor with a crossing of Forest Drive.
- Improvements are requested to the current East/West spine in the near-term to offer a more direct route extending from the Outer Neck to Parole. This route follows various local streets and private alleys and cuts through several greenway areas.
- Improvements to several gaps/obstructions that cause bikers to travel way out of the way are requested.
    - Connect Old Annapolis Neck Road to Cobblestone Road as an 8-foot wide surface
    - Reopen Lincoln Street for (at least) bike/pedestrian travel

    - Reopen Victor Parkway for (at least) bike/pedestrian travel
    - Delineate a pedestrian zone in the paved frontage of the Shell Station at Bay Ridge Road and Forest Drive
    - Extend Old Bay Ridge Road as a bicycle/pedestrian link from Carrolton Road to Edgewood Road as a 6' wide surface
- Speed control is requested to slow cut-through traffic on shared lane routes on local streets, such as Tyler Street and Silopanna Street.
- Travel at the west end is particularly difficult and several improvements are requested:
    - A multi-use path along Aris T. Allen Boulevard from Chinquapin Round Road to Route 2 is requested.
    - A link from the South Cherry Grove pedestrian bridge east to Chinquapin Round Road via the greenway and Lincoln Street is requested.
    - A shared lane on the old section of Forest Drive from Chinquapin Round Road to Route 2 is needed.
- In the mid- to longer-term, road improvements to create a designated East/West Bike route in the Forest Drive corridor are requested for year-round travel.
- Changes are requested to correct conflicts between pedestrians and bikes using the raised sidewalks on the Sixth Street Bridge between Eastport and downtown.

2.2.7.3 Transit Service

The County is in the process of considering new transit initiatives as part of their Draft Transportation Functional Master Plan. The City is in the process of conducting a review of transit service and its service areas via demographic and commuter changes.

Currently, the sector has a moderate level of local transit service. Two City bus routes serve Eastport and four serve the Forest Drive corridor. The City routes connect sector areas to downtown, inner West Street, to major shopping districts, job centers, and to the medical center.

Stakeholders expressed interest in more frequent and enhanced local transit service. Eastport stakeholders have asked for better bus services between Eastport and the grocery stores in the Bay Ridge Road area and for the Circulator service to extend into Eastport for special events. Additional travel data provided in Appendix C may further support consideration of these and other changes.

Stakeholders also expressed a desire for regional transit. The sector currently has no express access to regional transit. In 2017, a new bus route to downtown Baltimore began service to the City. The closest stop for this service is downtown and it can be reached using the City bus. The recent Anne Arundel County *Major Intersections and Important Facilities* Study included a preliminary analysis of the peninsula's ability to support a regional bus route. It concluded that the area already has sufficient residential density and out-of-city commuter activity that a route should be feasible.

2.2.7.4 Travel Behavior

Both the Step One stakeholder comments and the 2009 Comprehensive Plan's recommendations focus a great deal on changing the way people choose to travel and on the amount of frustration regarding congestion that is involved in living in Annapolis. The 2009 Plan envisions a much less auto-oriented lifestyle in the future, one in which City residents rely less on a private single driver vehicle to get around and spend less time sitting in traffic.

Stakeholders asked for new shopping and dining destinations close to home and new sidewalks and bike lanes to help them change their daily travel choices. Stakeholders reported a growing tendency to drive out of the City and off peninsula to find shops, food, and entertainment that meet their needs. Available travel data supports this trend.

The travel data also reveals that a significant change in the commuting patterns of the City and sector workers has occurred. While the number of resident workers who work in the City has increased modestly between 2000 and 2015, the number of workers who commute out has grown significantly as the City population grew. As a result, there has been a 26.6% decline in the percentage of all City workers who work in the City. In the year 2000, 46.8% worked in the City. As of 2015, this dropped to 20.2%, as almost 80% commute elsewhere. Many are driving further away as the destination data listed in Appendix C shows. This trend coincides with an increase in federal jobs in the region since 2011.

In considering sector workers, the 2009 Comprehensive Plan Appendix reported that, in the year 2000, 37% to 45% of workers living in various parts of the sector worked in the City. About 24% of the Outer Neck workers did as well. A chart is provided in Appendix C showing that the percentage had dropped to 28%. This change is reflected in the volume of traffic flowing moving west to Aris T. Allen Boulevard in the AM peak period and returning in the PM.

Consistent with the trend towards longer commutes, a review of current data on mode choices shows that more Annapolitians rely on driving alone in a private vehicle to get to work now than in 2000. The latest data available on the travel behavior of Annapolitian commuters shows the following:

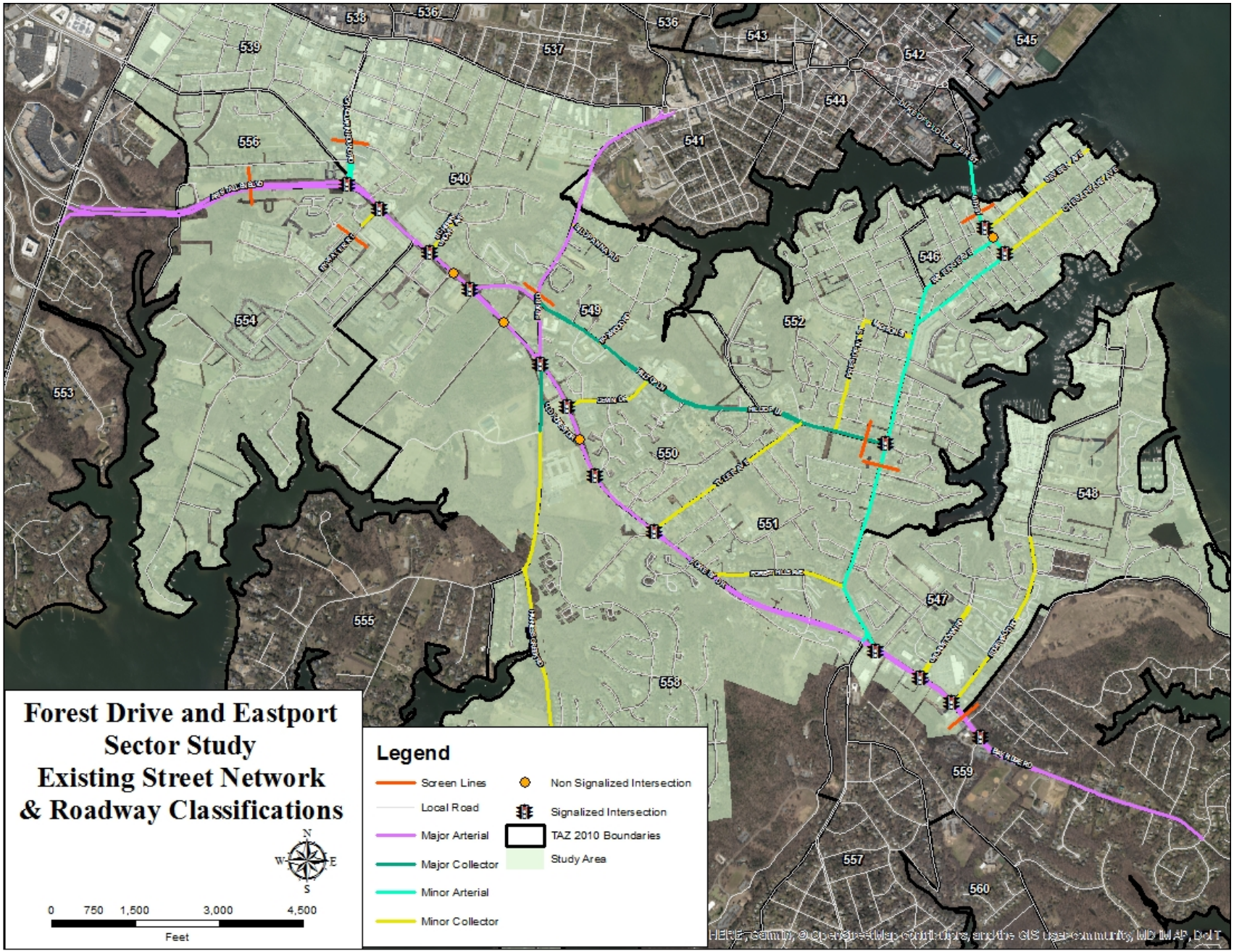
Table Five: Mode Of Commuting to Work for City Workers (to employment either in or out of the city)	**Est. numbers**	**% of total**
Number of commuting workers 16 years and over	20,408	
Car, truck, or van—drove alone	14,776	72.4%
Car, truck, or van—carpooled	1,782	8.7%
Worked at home	1,211	5.9%
Public transportation (excluding taxi-cab)	755	3.7%
Walked	755	3.7%
Other means	613	3.0%
Mean travel time to work (in minutes)	26.4	

Many U.S. cities have been making concerted efforts to change the mode choices their residents and workers make. Their successes have demonstrated that commuter percentages are changeable. Boulder, Colorado for example was able to reduce their drive alone percentages to 53% through investments in multimodal infrastructure and various support programs, especially those for biking. They are reported to have one of the highest rates of bike commuters in the Country. In 2008, they reported that 9.9% biked to work and 8.3% walked. Boulder was able to achieve a 7.7% reduction in people driving alone to work over an eight-year period. The District of Columbia recently achieved a 3% increase in bike commuters.

2.2.7.5 Traffic Analysis

County staff estimates that the 2016 installation of the adaptive traffic signal system has made a 10 to 15% improvement in the corridor's traffic efficiency. They report that the corridor mainline moves at the posted speed and that travel along Forest Drive, from Edgewood Road to west of Chinquapin Round Road typically takes about 6 minutes in non-peak periods. Since 2009, several traffic studies, using older traffic data, have evaluated current and future traffic conditions within the Forest Drive corridor and various parts of the sector. Stakeholders requested that a new review be conducted as part of this study, using 2017 data, to encompass a larger street network, including Eastport. A planning level traffic analysis of the corridor and City Street network was therefore undertaken as part of this study. The full traffic analysis process and technical findings are provided in Appendix C. Figure Fourteen shows the existing street network and roadway classifications.

Figure Sixteen



The existing conditions analysis assessed current traffic conditions and identified existing issue areas using two software programs called Synchro and SimTraffic. In addition to traffic volumes, these tools were used to provide a detailed analysis of corridor traffic operations. The assessment took into account information on traffic volumes, signal timings, and lane configurations. The SimTraffic computer ran created visual simulations of traffic flows in real time. This allowed for further evaluation of traffic conditions. The simulation also created understandable graphics of existing conditions for use in discussion with stakeholders and to simulate various ways that traffic flows could be managed by the City and County, as illustrated in Figure Fifteen.

Figure Seventeen: EB Aris T. Allen Blvd. approaching Chinquapin Round Road, PM Peak Period (Weekday)

While Forest Drive continues to flow well for the majority of a typical weekday, several City street approaches to the corridor are experiencing delays while accessing Forest Drive. Traffic delays and long queues during the weekday AM and PM peak commuter periods were found at several intersections, particularly within the western-most portion of the corridor. The largest volumes and corresponding travel delays occur in the westbound direction during the AM peak period, and in the eastbound direction during the PM peak period. The AM peak period trips are primarily commuters destined for jobs outside of the City limits. However, the PM peak period trips also include non-work-related trips to destinations such as shopping centers, restaurants, and entertainment uses.

Since the Chinquapin Round Road and Bywater Road intersection pair operates at full capacity in the PM peak period, it causes a bottleneck for traffic entering the Forest Drive peninsula. Four features were observed that contribute to this condition:

1. Chinquapin Round Road is the first traffic signal at the terminus of the Aris T. Allen freeway;
2. The spacing between the two signals is very short;
3. Approximately 25% of the traffic entering the corridor is coming from Chinquapin Round Road, which reduces the signal green time for those vehicles queued along Aris T. Allen Boulevard; and
4. Necessary green signal time for northbound Bywater Road traffic adds to the corridor delay within this segment of Forest Drive.

In Eastport, traffic management issues and signal phasing and timing were determined to be the primary cause of traffic congestion.

The analysis of future conditions in the network was run utilizing a refined regional traffic model prepared and maintained by the Baltimore Metropolitan Council (BMC). A new City demographic database was created to provide more accurate input data for this model. Together, both new planning tools were used to assess future travel demand and road capacity assuming baseline conditions and two future land use development scenarios. All future analysis assumed that current travel mode choices would not change. To assess all land use changes in isolation, the analysis also assumed that no changes to the existing road network would occur.

The “baseline” future conditions were analyzed, which considered projected future traffic demands based on the current projected City and County growth. The City growth numbers are consistent with the current Comprehensive Plan and only the approved development pipeline. The modest amounts of growth in the future anticipated under current zoning “baseline conditions” did not alter the existing balance of directional flows during the AM and PM peak periods of travel, nor influence changes to overall travel behavior. It added to delays in the same locations in which delays exist today but did not cause new road segments to reach their capacity, leading to the conclusion that improvements and other remedies selected to address current issues would accommodate this future growth scenario.

A review of possible remedies to current and future baseline conditions was conducted, which yielded a list of several potential roadway capacity improvements that were developed to a planning-level of detail. A SimTraffic analysis was performed to assess the possible positive and negative changes to travel demands and traffic operations (delays and queues) that the list of roadway improvements could cause.

Two future land use scenarios were developed to test the impact of land use changes that might occur as other pending pipeline developments are approved and other redevelopment projects are catalyzed as result of this Sector Study. These were compared to the future baseline conditions anticipated to occur regardless. These

scenarios are described in Appendix C. The two Study Scenarios test a moderate rate of change (Mid) and a higher (High) rate of change. Both contain larger amounts of new employment and commercial uses than the baseline. The higher scenario also assumes a greater amount of change within Eastport. The types and amounts of land use changes tested in the two scenarios represent progress towards build out of both approved and pending city development applications as well as possible added redevelopment in areas likely to change. The amounts of growth tested could occur under current zoning.

Analysis of both of these scenarios showed shifts in commuter travel patterns throughout the network, using available capacity. In both scenarios, some corridor road segments experience an increase in traffic volumes, while others show decreases. Neither scenario shows a network-wide increase in traffic volumes equal to the 1% annual change assumed in previous traffic studies.

Neither scenario causes significant new sections of the road network to reach or exceed capacity. Similar to the baseline scenario, the areas of increased demand in both the Mid and High Scenarios appear in the same locations where delays exist today. The scenarios did not create demands that caused the roadway segments, with capacity today, to reach full capacity in the future. This leads to the same conclusion determined in the baseline scenario evaluation—that improvements and other remedies selected to address current issues could accommodate the growth resulting from this study based on either of the two scenario's growth.

It is important to note that in order to test the impacts of land use changes in isolation, all three scenarios—Baseline, Mid, and High—were tested based on the existing road network. Future improvements will decrease delay in the corridor, as noted in the remedies tests in Appendix C. In addition, should the City and its residents be successful in establishing added local or regional transit or in making other changes to the current mode choices, the traffic volumes projected for all three future scenarios would be further reduced.

2.2.8 Environment

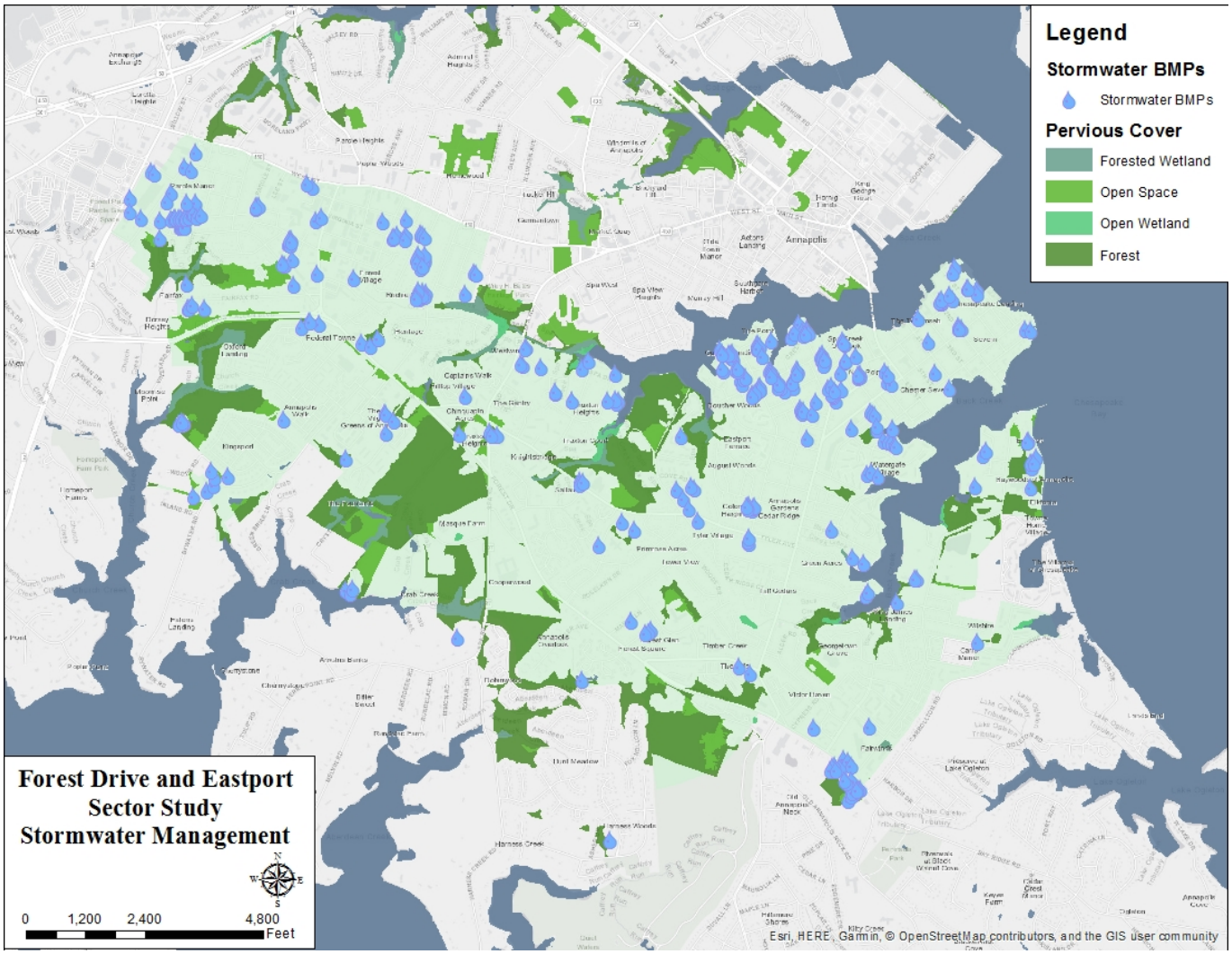
Captivating natural features are no less inherent to the story and culture of Annapolis than its long political history. The water and geography has, at the very least, influenced its gradual growth over several centuries, and enabled certain industries to thrive. Annapolis has a give-and-take relationship with its natural environment. In the sector area, that point rings equally true. Molded by tidal tributaries and waterways, the area is dotted with a variety of coastal landscapes. The quality of those waterways and the environments that accompany them depends in part on the City's treatment of them.

Being less urbanized than Downtown Annapolis, the sector area, in parts, appears as a less altered landscape. At roughly two-thirds of the land area of Annapolis, the sector area contains around 80 percent of its forested and open space land. Some of this land belongs to the City such as in Truxtun Park and Ellen O. Moyer Nature Park, some to homeowners associations, and an increasing amount in preservation attributing to the

City's forest conservation and open space requirements. Even still, there is more than twice as much impervious area as pervious cover, which means more sediment and pollutant carrying runoff flowing into local tributaries and into the Severn and South Rivers and eventually Chesapeake Bay.

Roughly 94 percent of the land in the City is subject to Phase II National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) general permit requirements to meet Chesapeake Bay Total Maximum Daily Loads (TMDLs). In essence, the City must treat 20 percent of the impervious area that currently has no or limited stormwater management. The City is not close to reaching this goal, although, with larger lot sizes and less intensely developed land, sites in the sector area may be more suitable to meeting this target.

Figure Eighteen: Stormwater BMPs, Forest, and Open Space



In 2015, as part of Annapolis' Stormwater Management Inventory and Watershed Improvement Plan, a near complete inventory of stormwater best management practices (BMPs) was compiled from development plans and stormwater management reports into a database documenting type, class, location and treatment area (See Figure 18 above). Of the 741 stormwater BMPs inventoried from the effort, around half are located in the sector area. Many of them are in Eastport and in the Parole area, but not many are located near Forest Drive. One reason for this could be the number of properties developed prior to current stormwater management requirements. As such, they have the potential to contribute to the City's Chesapeake Bay TMDL requirements if they are redeveloped.

3. POTENTIAL SOLUTIONS BY THEMES

As discussed in the previous section, a list of more than 300 issues was developed with public input over the course of the planning process. After the list was developed and grouped by theme, the public was asked to evaluate a series of proposed strategies that would address the issues. The following details these overall goals and solutions, some of which are self-explanatory, and others which will be developed more fully in the next section. They are distinguished as either "Principal Solutions," which are essential to accomplishing the goal, or "Supporting Solutions," which are important to assist in accomplishing the goal.

3.1 Land Use and Design/Community Character

The primary issues under this theme include fostering a strong vision and transforming the corridor from strip-center dominance to a more unique, district part of Annapolis.

Goal: Transform and enhance character by balancing the small changes such as adding streetscape elements with the larger changes in community character and development patterns.

Principal Solutions to Achieve Goal:

3.1.1	Implement the community character recommendations described in detail in the following section with less emphasis on use and more emphasis on form.

3.1.2	Establish new city street design standards that incorporate complete street design standards, multimodal use, and contextual design.

Supporting Solutions:

3.1.3	Add unique streetscape elements to help the corridor look and feel like a special part of Annapolis. Consider adding special banner poles in appropriate areas along the corridor.

3.1.4	Work with local cultural heritage and arts organizations and community groups to bring public art, local cultural activities, and events to this sector of the City. Consider holding a competition for special banner art (with poles) in the corridor– like the "Chickens".

3.1.5	Work with the Greenscape Annapolis initiative, building owners, Board of Education, and HOAs to coordinate volunteer improvements in this area.

3.1.6	Consider street-side public pocket park enhancements in several areas with extra ROW along the corridor.

3.2 Zoning and Approval Process
The primary issues under this theme include addressing outdated zoning that reinforces the suburban character of the corridor.

Goal: Modernize and simplify zoning regulations in this sector to ensure new development establishes a balance of land use patterns consisting of interconnected neighborhood destinations and pedestrian-scaled design.

Principal Solutions to Achieve Goal:

3.2.1	Change the current land-use and zoning maps, and the current zoning text/design guidelines for the land along the corridor, to enable and incentivize transformation from an aging suburban character to an Annapolis-like low scale urban character. (This should include applying a refined mixed-use zone to the corridor and/or revising the B2 zone as well as correcting split-zoned lots.)

3.2.2	Create different prototype standards for the residential and commercial sections. Plan for ample street tree canopy, greenway elements, water quality improvements, banners and public art, and wide walks like in Upper West Street

Supporting Solutions:

3.2.3	Encourage parcel interconnectivity and shared access points for corridor frontage properties.

3.2.4	Establish a street frontage standard, and map the applicable areas to guide preservation and future development.

3.2.5	Incentivize land uses that create neighborhood destinations so that people in the City and peninsula can easily walk and bike, to shorten and reduce trips for dining, shopping and daily services rather than travel off the peninsula and out of the city.

3.2.6	Incentivize land uses that provide local jobs within the city to rebalance the current one-directional peak commuter rush hour travel pattern.

3.2.7	Ensure that the two opportunity areas in this sector help catalyze greater transit service in the City. The 2009 Plan states that they should be developed to promote a high demand for public transit on the corridor to encourage the effective provision of transit city-wide. In other words, the development of the opportunity area and its transit demand should have a positive spillover effect on the quality of City transit service. Development should demand service to such a degree that residents elsewhere in the corridor and City benefit by virtue of their proximity to the bus routes serving these two sites.

3.2.8	Incentivize access changes to corridor frontage properties that have driveways that back onto the arterial or that lack access to a side or parallel street in order to reduce congestion from cars backing into traffic or waiting to make left hand turns.

3.2.9	Attract and enhance services and businesses that serve the City and peninsula so that people do not need to travel out to the County as often.

3.3 Mobility: Vehicular and Transit

The primary issues under this theme include capacity analysis and managing congestion in cooperation with the County as well as making improvements to transit.

Figure Sixteen: Example from Issue/Possible Solutions Spreadsheet

MOBILITY - VEHICULAR AND TRANSIT	
ISSUES FROM STEP ONE	**POSSIBLE SOLUTIONS FOR STEP TWO**
ROAD ADEQUACY AND CAPACITY	
Develop a more balanced urban planning-based evaluation method for assessing development traffic impacts	Develop a traffic model to better understand and project City and peninsula traffic.
Develop a better method to forecast city mobility, accessibility and road capacity	
Sector Plan traffic models should anticipate approved & planned developments	
Study models need to use better data with current traffic counts	
POLICIES & REGULATIONS	
Emergencies - plan for peninsula evacuation & create more emergency routes	Revise the current City traffic study procedures and traffic APF requirements to include the new traffic model and to include multi-modal trips as well as non-vehicular mitigation strategies and performance measures
Incidents - Prevent grid lock during traffic incidents, Need multi-jurisdictional incident policy/plan/ strategies	
Events - protect community mobility during city events downtown and in Eastport	
Promote greater state, county & city coordination of corridor improvement, management & beautification	
Need better tools to understand impacts of added traffic in the city & peninsula	
Need better tools to understand traffic benefits of low scale walkable mixed use neighborhoods	

Goal: Formalize inter-jurisdictional cooperation with the mission of having shared design guidelines, complete streets development, public transit improvements, and investments in new technology to improve road capacity and coordinate with alternative modes.

Principal Solutions to Achieve Goal:

3.3.1	Revise the current City traffic study procedures and traffic adequate public facilities requirements to include assessment of multi-modal trips and non-vehicular mitigation, as well as other items described in Appendix D. Coordinate with the County on procedures for County roads.
3.3.2	Establish complete street standards for the City and require all future city street improvements to address all modes of travel in their improvements.

Supporting Solutions:

3.3.3	Plan for low-scale transit-oriented infill along the corridor and at the two opportunity sites to better support greater transit use.
3.3.4	Work with the County and the State to further improve the Fairfax Road/Chinquapin Round Road/Bywater Road segment.
3.3.5	Support at the City-level use of new technologies and business models that reduce the number of daily trips city households need to make in private vehicles through ridesharing, driverless vehicles, etc.
3.3.6	Envision the City as a series of Ped-shed-scaled neighborhoods and districts that measure about one mile across.
3.3.7	Improve City bus service in the Forest Drive Corridor—strive for more frequent, inexpensive and efficient service.
3.3.8	Improve City services with routing and span-of-service info at bus stops and improved bus boarding accessibility.
3.3.9	Review the location of the well-used Robinwood bus stop pair to address safety issues. Either relocate it to allow pedestrians to cross Forest Drive at the planned traffic signal nearby or add a mid-block pedestrian crossing to improve visibility and warnings.

3.3.10	Improve other local street grids to create network redundancy and route choices.
3.3.11	Evaluate areas of speeding and add traffic calming measures on local streets where cut through traffic moves too fast.
3.3.12	Install smart traffic signals (intelligent transportation systems) on City streets that are capable of better managing congestion generally as well as during events and emergencies and can coordinate with County and State signals that now provide coordinated management on the corridor.
3.3.13	Expand the new BMC refined model to create a refined city-wide traffic model to better understand and project City traffic at the network level.
3.3.14	Implement the street network connections planned for in the Comprehensive Plan for the creation of network redundancy and better access management on the main corridor.
3.3.15	Work with the State and County to establish a commuter transit bus line that can tie to existing and future regional routes. Plan for stops at the two opportunity sites and a supporting park and ride lot and/or kiss and ride at the eastern end of the corridor.
3.3.16	Improve local public transit in the Eastport area to better serve tourists and event traffic.
3.3.17	Work with the State and County to establish an intermodal transit center near the City line adjacent to Parole that can tie into other regional services.
3.3.18	Reconnect existing closed streets, gaps and cul-de-sacs where possible to allow for bike and pedestrian travel.

3.4 Mobility: Bike and Pedestrian
The primary issues under this theme include encouraging pedestrian and bicycling trips as a more viable option for locals.

Goal: Promote a shift from auto-oriented development to multimodal development by investing in strategic upgrades to the pedestrian and bicycle networks.

Principal Solutions to Achieve Goal:

3.4.1	The City should make investments in other modes of transportation and make funding for bike and pedestrian infrastructure improvements a higher priority.

3.4.2	Prioritize improvement at the intersections and gaps in the network located within a quarter mile of major destinations such as schools, parks and neighborhood shopping areas, bus stops, the recreation center, and the library.

3.4.3	Provide safe walking routes to schools and encourage private schools to provide bus services, to reduce the education rush hour (routes should be off Forest Drive where practicable).

Supporting Solutions:

3.4.4	Fill in missing sidewalk connections and gaps along both sides of Forest Drive where applicable (near Annapolis Middle School and dense retail areas).

3.4.5	Work with the County to incorporate a continuous East/West bike route along the corridor as a part of the coordinated City/County ultimate complete street planning. At a minimum, plan for a continuous multipurpose path on the corridor. Extend the route from Route 2 to Edgewood Road in the East.

3.4.5	Reconnect existing closed streets and cul-de-sacs to allow for bike and pedestrian travel at a minimum. Where possible, restore full traffic use. Louis Drive is one example of a needed reconnection.

3.4.7	Plan for and make improvements to establish a nearer-term parallel continuous East/West route through the City neighborhoods using signage, on-street lanes or signed shared street sections on city roads and off-street links as well as an on-street link from Eastport to Quiet Waters Park.

3.5 Greening of Annapolis/Environment

The primary issues under this theme include protection and expansion of existing tree canopy and open space as well as improving water quality and reducing the overall carbon footprint.

Goal: Work with new development, private property owners, and conservancy organizations to link existing and new green spaces together, expand stormwater management, and reduce impervious surfaces to improve water quality.

Principal Solutions to Achieve Goal:

3.5.1	Create a City Greenway Plan that coordinates with the County's Green Infrastructure Plan for the area.

3.5.2	Incorporate local streets into the greenway network. Develop and apply green street design standards as part of the new Complete Street Typology. Retrofit existing local streets as part of beautification and traffic calming

3.5.3	Reduce the development potential of properties identified as "Environmental enhancement area", to protect more forest, provide additional community stormwater management potential, or to provide impervious surface reduction

Supporting Solutions:

3.5.4	Plan for a park-to-park Greenway connection in this sector if possible, using the old railroad ROW.

3.5.5	Require future developments to plan for open spaces and conservation easements to connect into the overall Greenway, and provide incentives or requirements for current developments to do the same

3.5.6	Use the "developer fund" to plant trees along Forest Drive.

3.5.7	Continue implementing the City's 2016 *Watershed Improvement Plan*. Require developers to assist with this effort.

3.5.8	Work with the County to establish a coordinated City/County street tree plan in County Rights of Way.

3.5.9	Adjust regulations to allow and encourage street tree and forested buffers along the corridor to create a continuous greenway (consider strengthening this as a desired mitigation measure in the City forest conservation requirements so that off-site design solutions can be considered).

3.5.10	Continue and expand programs to plant street trees on other City streets such as in the Parole Neighborhood.

3.5.11	Review City standards to better incentivize <u>or require</u> the renovation/redevelopment of sites developed in the corridor prior to current stormwater management requirements.

3.5.12	Review and update parking requirements to help reduce the requirements for impervious surface parking areas.

3.5.13	Support use of new technologies that can help to reduce the number of daily trips City and peninsula households make each day using fossil fuel powered vehicles, <u>to encourage a reduced carbon footprint</u>.

3.6 Vibrant Economy
The primary issues under this theme include creating more jobs and expanding the City's tax base and revenues so as to enable funding of desired sector improvements.

Goal: Expand the City's tax base while also protecting and enhancing community character by setting and reaching measurable goals.

Principal Solutions to Achieve Goal:

3.6.1	The City should work towards implementing the *Economic Development Plan* strategy that will help prepare it for the next fifteen years of rapid technological change.

3.6.2	The City should set measurable goals for increasing the City tax base and should monitor and report on progress towards this goal on a regular basis. The monitoring should include a report on the progress of each of the City's business districts so that this sector study's progress can be tracked.

3.6.3	The City should make placemaking a part of its economic development strategy in this part of the City.

Supporting Solutions:

3.6.4	The City should set measurable goals for improving the amount of neighborhood retail in the City.

3.6.5	Procedures for review and approval of development projects should include consideration of the project's ability to contribute to the tax base as one important criterion for approval.

3.6.6	The City should consider providing incentives to catalyze private reinvestments in the sector that help to achieve the sector vision.

3.6.7	The City should set measurable goals for preserving a "jobs to worker" balance to ensure that resident workers can work close to home and so the City does not further slip towards becoming a bedroom community.

3.6.8	The City should encourage and support the development of emergent business types in the sector area especially those that are clean and green, to both diversify the local economy and meet goals for a "green" Annapolis.

4. COMMUNITY CHARACTER

The previous section lists many solutions proposed to address the issues raised during the course of this study. Some of these solutions can be converted into actions in the short term and appear in the Action Plan in Section 5. Some will take more time to develop and should be addressed for the City as a whole during the upcoming Comprehensive Plan. One of the more complex solutions is the creation of community character designations for the study area based on more specific goals for this part of the City. The creation of these designations entails deciding, within a range of options, what sections of the corridor should look like and how they should function. Once the desired community character designations are in place, zoning and street standards changes should be developed. Zoning should help to simplify the City code and better shape community character by including requirements on character and amenities as does the current MX zoning text.

The new community character designations are not designed to increase the amount of development already planned for or permitted by current non-residential zoning categories.

This solution builds on the vision and character designations already approved in the 2009 Plan. The intent of the added designations is to change to the character of the sector and to catalyze redevelopment of older commercial sites built without stormwater management. They remove old guidance that hinder change and dictate a suburban strip character. The designations are not designed to increase the amount of development already planned for or permitted by current non-residential zoning categories.

4.1 Community Character Goals

Community Character should be designated in order to achieve the following goals:

- Transform the sector over time to create complete walkable bikeable village-like neighborhoods with an attractive connected street network, a greenway network, and destinations that offer food, shops, services, entertainment schools and jobs, within a quarter or half mile of homes.
- There should be a series of compact mixed-use commercial clusters along the main streets in the sector that are connected to residential areas and create attractive low-scale urban and village-like places with a distinctive Annapolis character.
- The corridor should be a shady green boulevard with the capacity to serve the full range of travel modes and having a beautiful distinctive Annapolis character.
- There should be local and regional transit service, sections with green edges, a series of attractive centers with streetscaped frontages and higher density housing nearest the corridor transit routes and centers.
- Preserve the character of Eastport as a vital maritime community with a beautiful distinctive Eastport character, a rich history and a working waterfront while envisioning it as having better access to food and other shops, continued

mobility, better management of events and visitors, and enhanced vital walkable mixed-use commercial areas that serve the community.

4.2 Community Character Designations

The Development Framework Map (Figure Seventeen) uses a series of community character designations to further define the character of recommended land use changes. The Development Framework Plan is supported by a Street Frontage Character Map and a series of recommended street typologies. See Appendix C for more detail. These added elements establish the desired character and orientation along certain streets in order to ensure coordinated placemaking at a neighborhood scale and ensure that the transportation infrastructure will support community mobility in the future.

This map applies the proposed vision to the sector locating and defining the desired character of change throughout the sector. It focuses on the areas considered susceptible to change to create a series of mixed-use walkable "pedestrian-shed" scaled neighborhoods and centers. The character sheets provided here describe the desired character of these places using images of other parts of the City and similar places in the United States. These designations are intended to help implement the policies of the 2009 Plan to direct community character as much as land use.

The community character designations are a defining illustration of the vision of this study; however, they are included here in a preliminary fashion to show what is possible under hypothetical conditions. Realistically, the visual product of this planning process will be informed by future rezoning under the upcoming comprehensive plan process.

The goal of the community character designations is to change the character of possible development, not necessarily to encourage more development. The density proposed with the Urban Center designation, for example, is currently allowed with a planned development. The community character designations are a defining illustration of the vision of this study; however, they are included here in a preliminary fashion to show what is possible under hypothetical conditions. Realistically, the visual product of this planning process will be informed by future rezoning under the upcoming comprehensive plan process. As the solutions and actions are implemented, progress and impacts will be monitored to guide necessary future adjustments in character and development regulations.

Three of the character designations used here were established by the City Comprehensive Plan. Two are new designations created in the draft Upper West Street Sector Plan. Four new designations are added here to describe the places stakeholders have talked about. In total, the nine designations used are listed below.

The 2009 Plan designations:

- (UC) Urban Center
- (UCOM) Urban Commercial
- (UCL) Urban Center Low

The draft *Upper West Street Sector Study* designations used:

- (NEA) Neighborhood Enhancement Areas
- (AR) Adaptive Reuse

The Sector Study adds several additional designations:

- (UVC) Urban Village Center
- (UN) Urban Neighborhoods
- (EEA) Environmental Enhancement Area

The character types are compared to one another in Table Six, below. This information also repeats in the text with the descriptions of each community character designation that includes additional images. There are six areas, or nodes, that are shown in larger detail after the overall map in Figures Twenty through Twenty-Five.

Figure Nineteen: Development Framework Map/Community Character Types

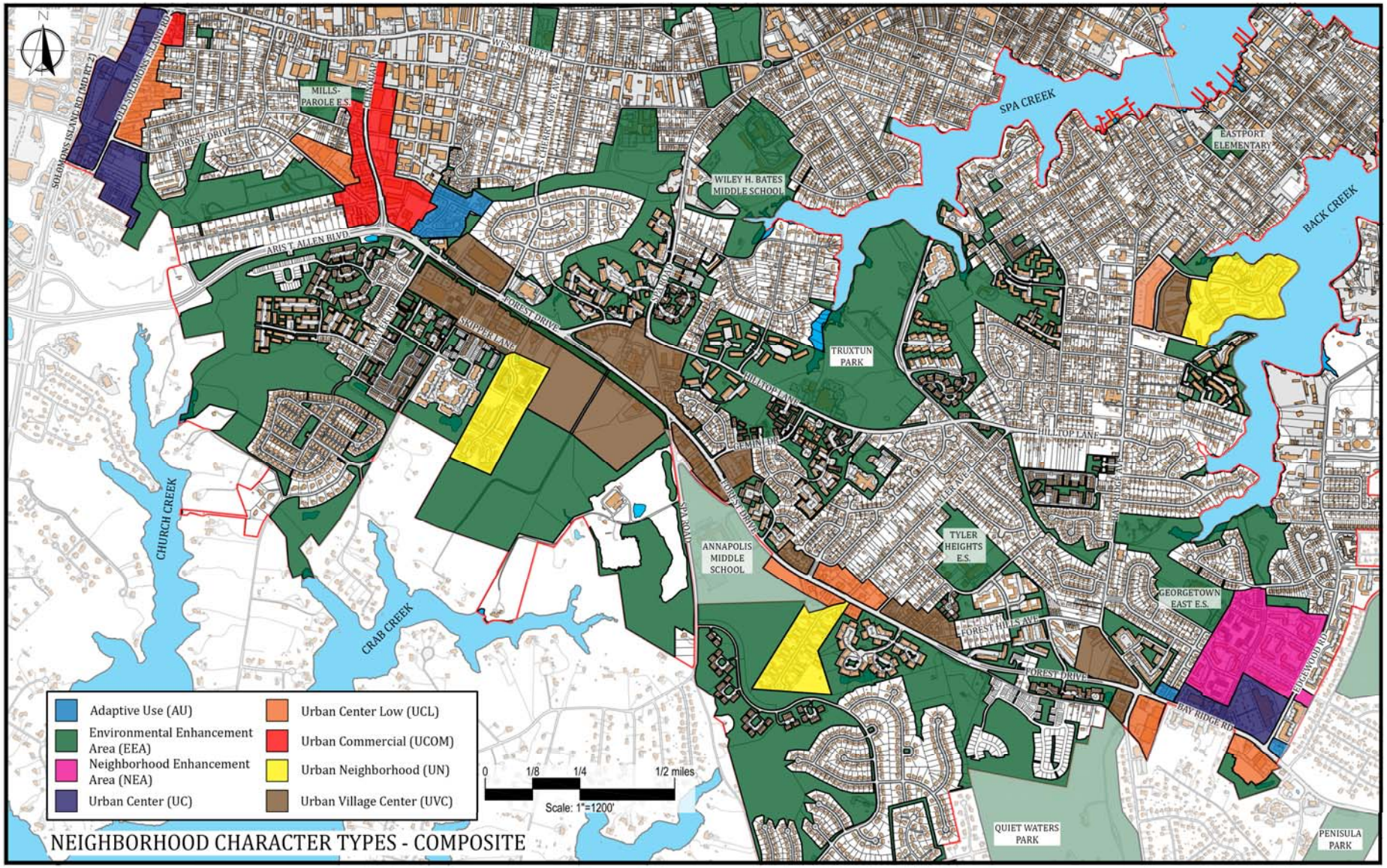


Table Six: Community Character Designation Comparison

Character Type	Community Role	Land Use Mix	Character	Building Heights	Intensity/Density Range	Parking	Transportation
Urban Center (UC)	Large scale mixed use areas that provides retail, dining, office, entertainment, lodging, and housing. It serves as a destination for tourists and residents of the city and the surrounding region.	A mix of commercial and residential uses creating a contained live, work, shop, and play area. Vertical mixed use buildings are encouraged.	The Urban Center will have urban streetscapes, limited building setbacks with zero setback building encouraged. It will have a traditional urban design with strong connections to surrounding neighborhoods. One example is Park Place in Annapolis.	Typically 4 to 8 stories (approx. 96' +/-)	35 to 45 DUA. Intensity is determined by height (up to 3.00 FAR)	Significant amounts of structured parking is anticipated with the possiblity of on-street parking.	Pedestrian and bicycle oriented. Highly transit supportive and the least auto oriented.
Urban Commercial (UCOM)	Provisions for shopping, services, office, entertainment, and/or lodging. It is not intended for ground floor residential uses. It will serve as a destination for the city and the surrounding neighborhoods for shopping, dining, and entertainment.	A mix of commercial and multi-family residential uses which will include retail, office, restaurants, apartments, and condominium units.	It will have urban streetscapes, limited building setbacks with zero setback building encouraged. It will have traditional urban design with strong connections to surrounding neighborhoods. Examples include Main Street and Maryland Avenue in Annapolis.	Typically 2 to 4 stories (approx. 48' +/-)	Intensity is determined by height (up to 2.00 FAR)	A preference for on-street and structured/garage parking	This neighborhood center is more auto-oriented than the Urban Center. It is moderately transit supportive, and it is pedestrian and bicycle oriented.
Urban Center Low (UCL)	Provisions for shopping, services, employment, and housing for city residents and neighborhoods. Serves as a walkable destination.	A balanced mix of commercial and residential uses to include retail, office, restaurants, and residences. Mixed us buildings are encouraged.	The Urban Center Low character type will have urban streetscapes, limited building setbacks with zero setback building encouraged. It will have a traditional urban design with strong connections to surrounding neighborhoods. One example is Washington Street in Alexandria, VA.	Typically 2 to 4 stories (approx. 48' +/-)	2 to 20 DUA depending on the character. Intensity is determined by height.	A preference for on-street and structured parking	This neighborhood center is more auto-oriented than the Urban Center. It is moderately transit supportive, and it is pedestrian and bicycle oriented.
Urban Village Center (UVC)	Provisions for shopping, services, employment, and housing for city residents and neighborhoods. Serves as a complete live/work/shop neighborhood. A "Ped Shed." It shall service a quarter- to half-mile vicinity.	A mix of commercial, institutional, and residential uses to include retail, office, restaurants, institutions and houses. Mixed use buildings/sites as well as live/work units are encouraged.	More traditionally designed with urban streetscapes and strong connections to neighborhoods. Compact lot design standards with zero or limited building setbacks permitted on designated active streets. Examples include Eastport and Annapolis Street in West Annapolis.	1 to 4 stories (48' +/-)	7 to 24 DUA with an FAR of 0.5 to 0.75 (excluding parking garages).	A preference for on-street and structured/garage parking (with possible parking rate reductions). On-site surface parking to the side or rear relative to active streets.	It is moderately transit supportive, and iti s pedestrian and bicycle oriented. It shall have a low speed connected street grid.
Urban Neighborhoods (UN)	Largely a residential area with a mix of compact housing types at a density and design that supports walking and transit.	Current residential use lists for R2. R3, and R4. Plus the ability to add granny flats, home occupation supportive designs, and live/work units.	More traditionally designed with compact lot design standards with common open spaces and greenway elements encouraged. Enhanced streetscapes and strong connections to centers, a compact scale with zero- and limited building setbacks from designated active streets. Cul-de-sacs and/or fenced enclaves are not permitted.	1 to 4 stories (48' +/-)	7 to 24 dwelling units per gross acre	On-street parking where appropriate. On-site surface parking to the side or rear relative to active streets. Structured and garage parking encouraged.	It is pedestrian and bicycle oriented with a low speed connected street grid. It has a low to moderate level of transit support.

Character Type	Community Role	Land Use	Possible Enhancement Elements
Neighborhood Enhancement Areas (NEA)	The connection and enhancement of existing residential areas near centers and corridors.	N/A	Improved pedestrian and bicycle facilities, improved connections to nearby destinations, improved street connectivity and traffic calming on alternate through routes, development of connected greenway networks, street beautification
Character Type	**Community Role**	**Land Use**	**Possible Enhancement Elements**
Environmental Enhancement Areas (EEA)	Protect, enhance and connect forested areas via a greenway element through and between built elements, provide additional stormwater management potential	Public and private lands designated for public and/or private recreational use and/or forest/environmental protection as well as very low density uses such as cemeteries, etc, and underutilized and/or environmentally detrimental impervious areas especially parking lots.	Development of connected greenway networks, improved network of bicycle and pedestrian facilities, habitat preservation/restoration, impervious surface reduction, stream restoration, stormwater management features such as bioswales, bioretention, urban infiltration, etc.

Character Type	Community Role	Character	Parking	Examples
Adaptive Reuse (AR)	Building reuse and rehabilitation that facilitates providing needed goods and services to the local neighborhood.	Retains the architectural character of the neighborhood.	A preference for on-street structured parking. On-site surface parking to the side or rear relative to active street.	Residential to retail, residential to restaurant, residential to office, residential to lodging, residential to public institution (library, community center, etc.)

Figure Twenty

Figure Twenty-One

Figure Twenty-Two

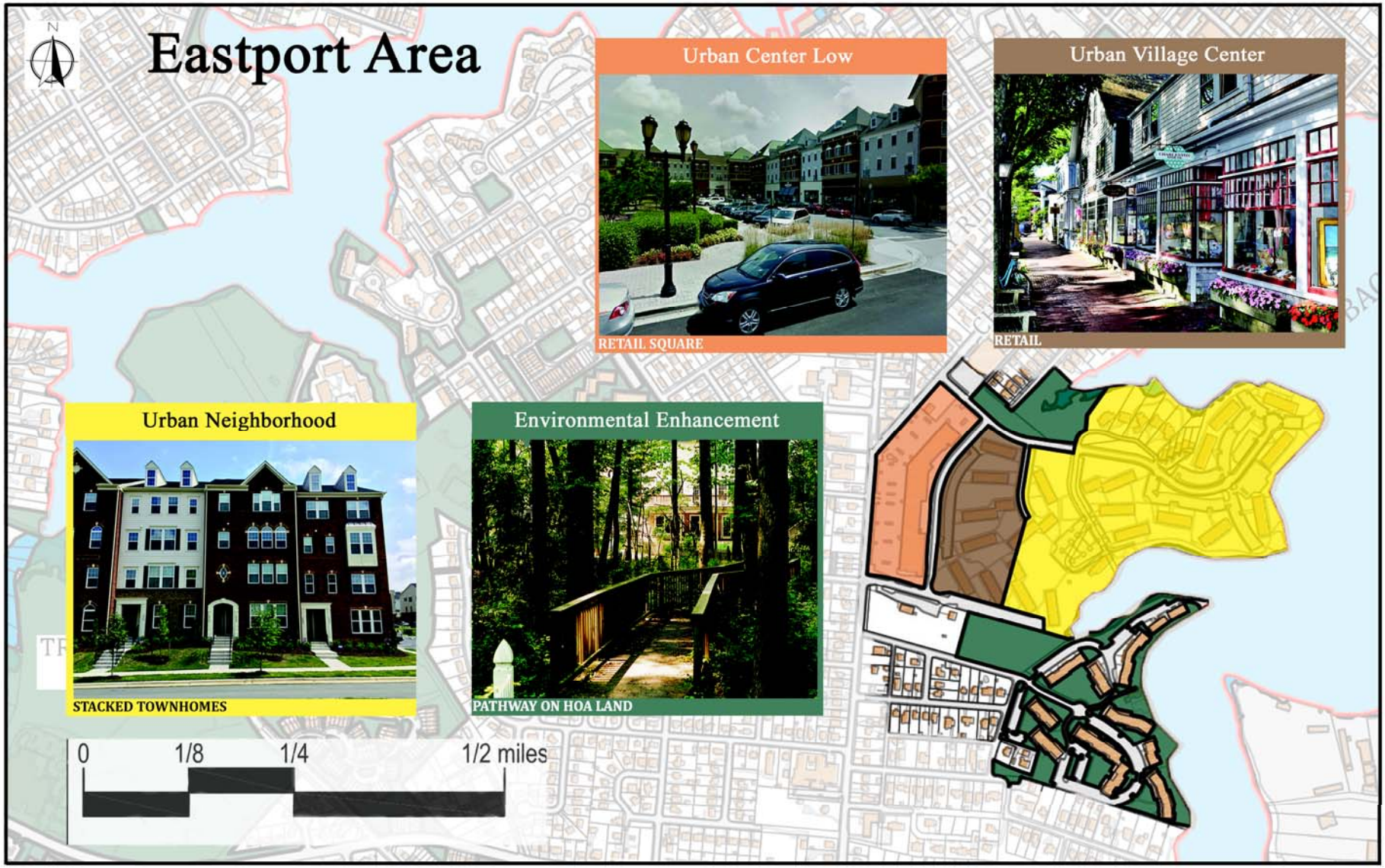


Figure Twenty-Three

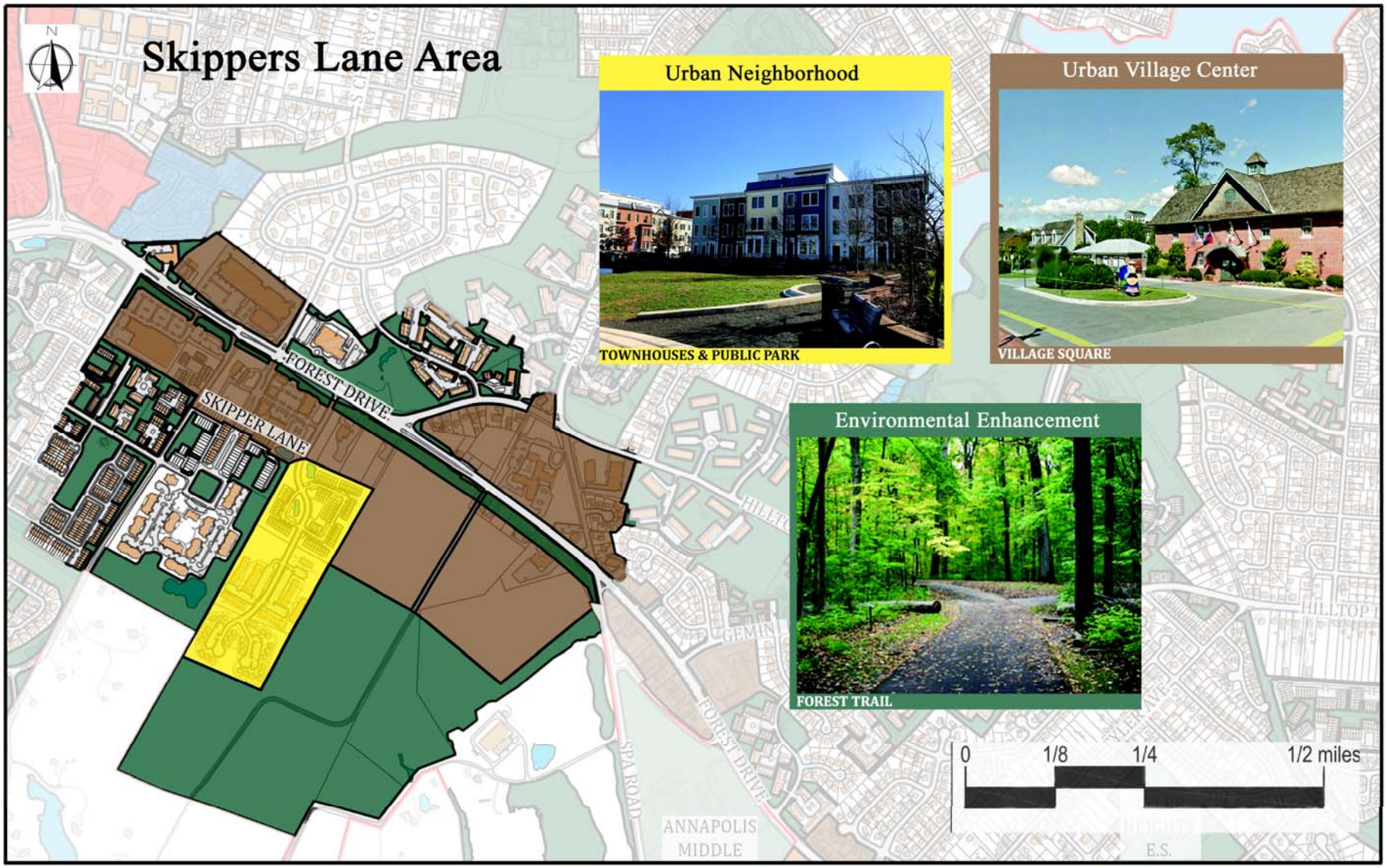


Figure Twenty-Four

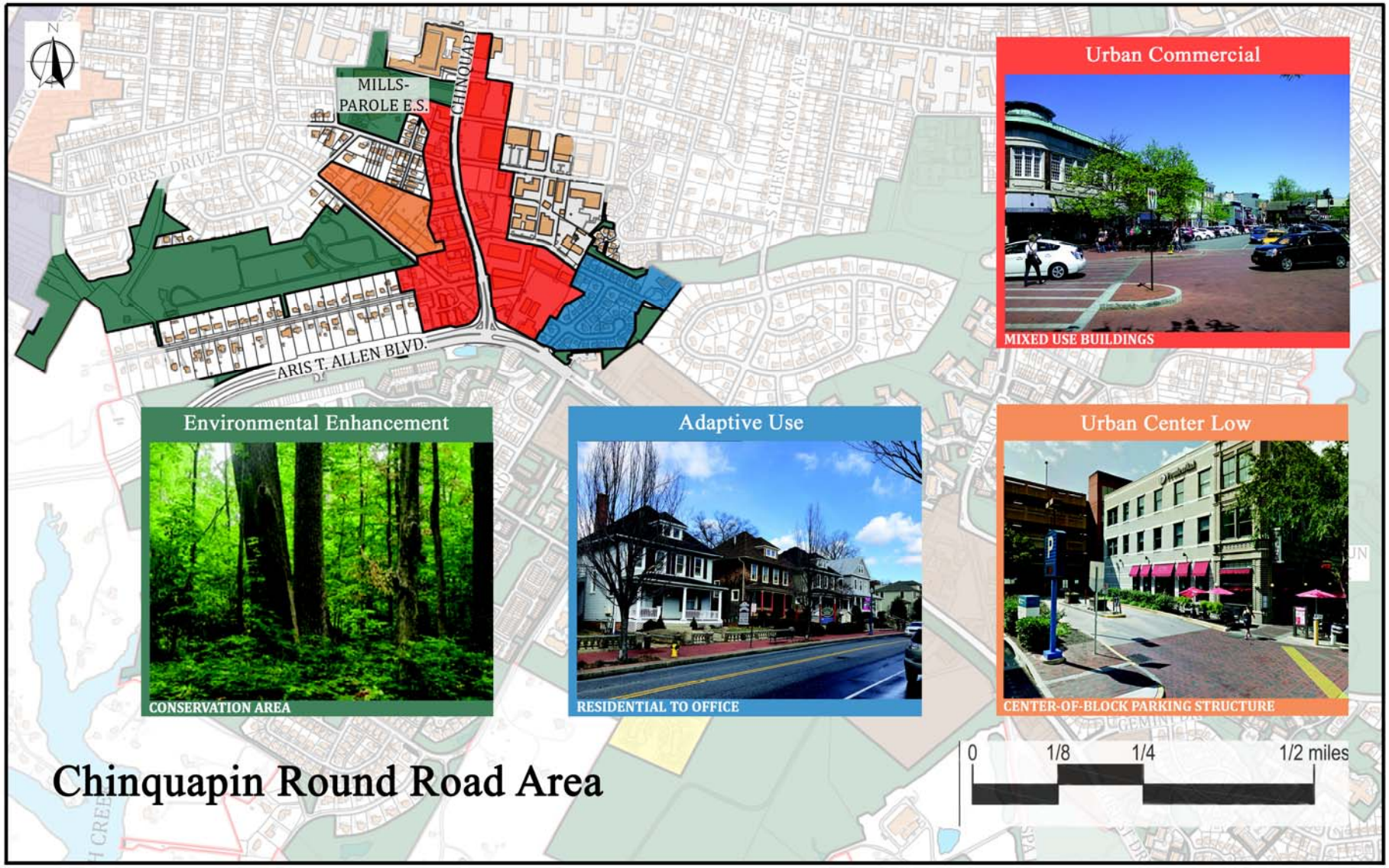
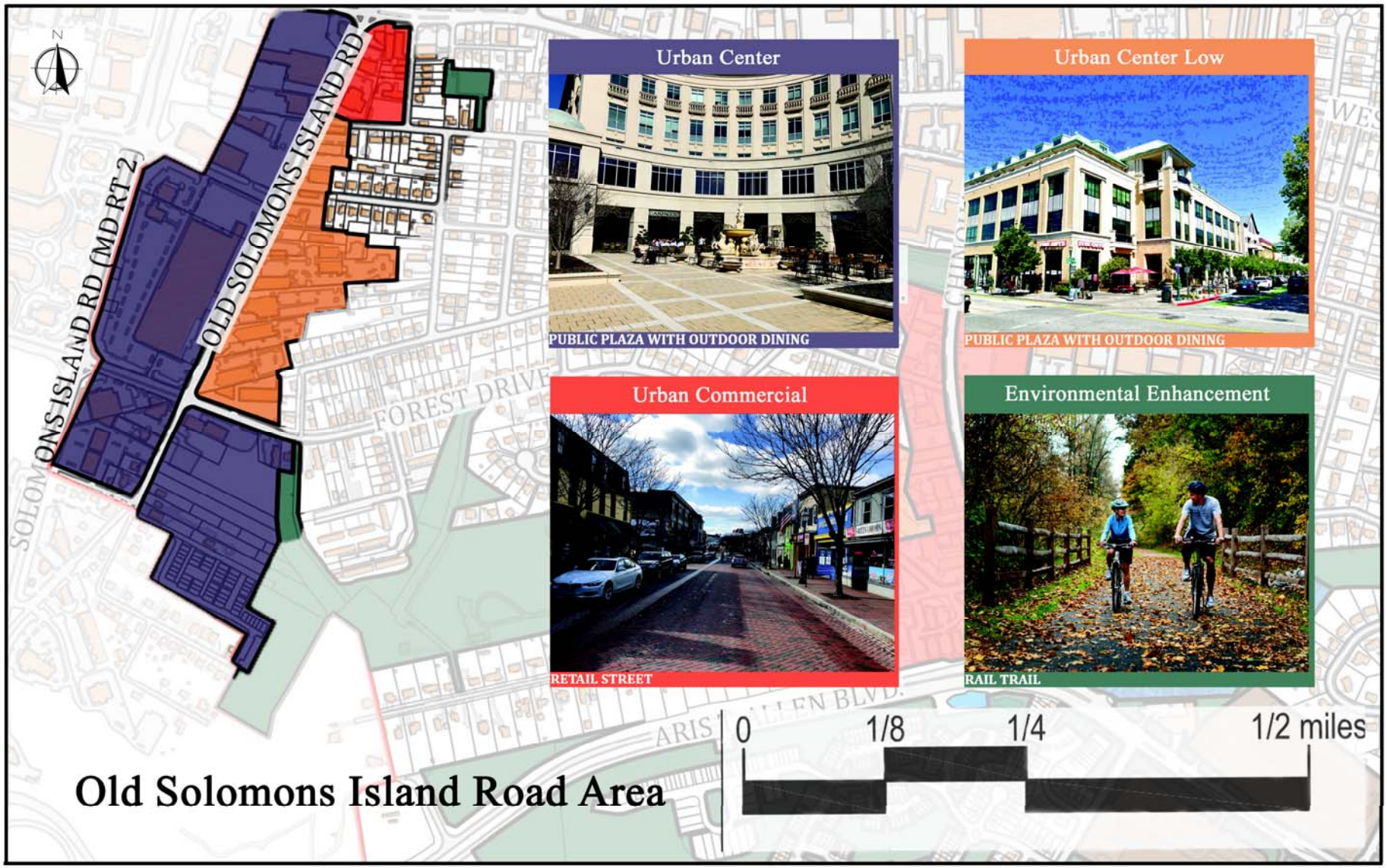
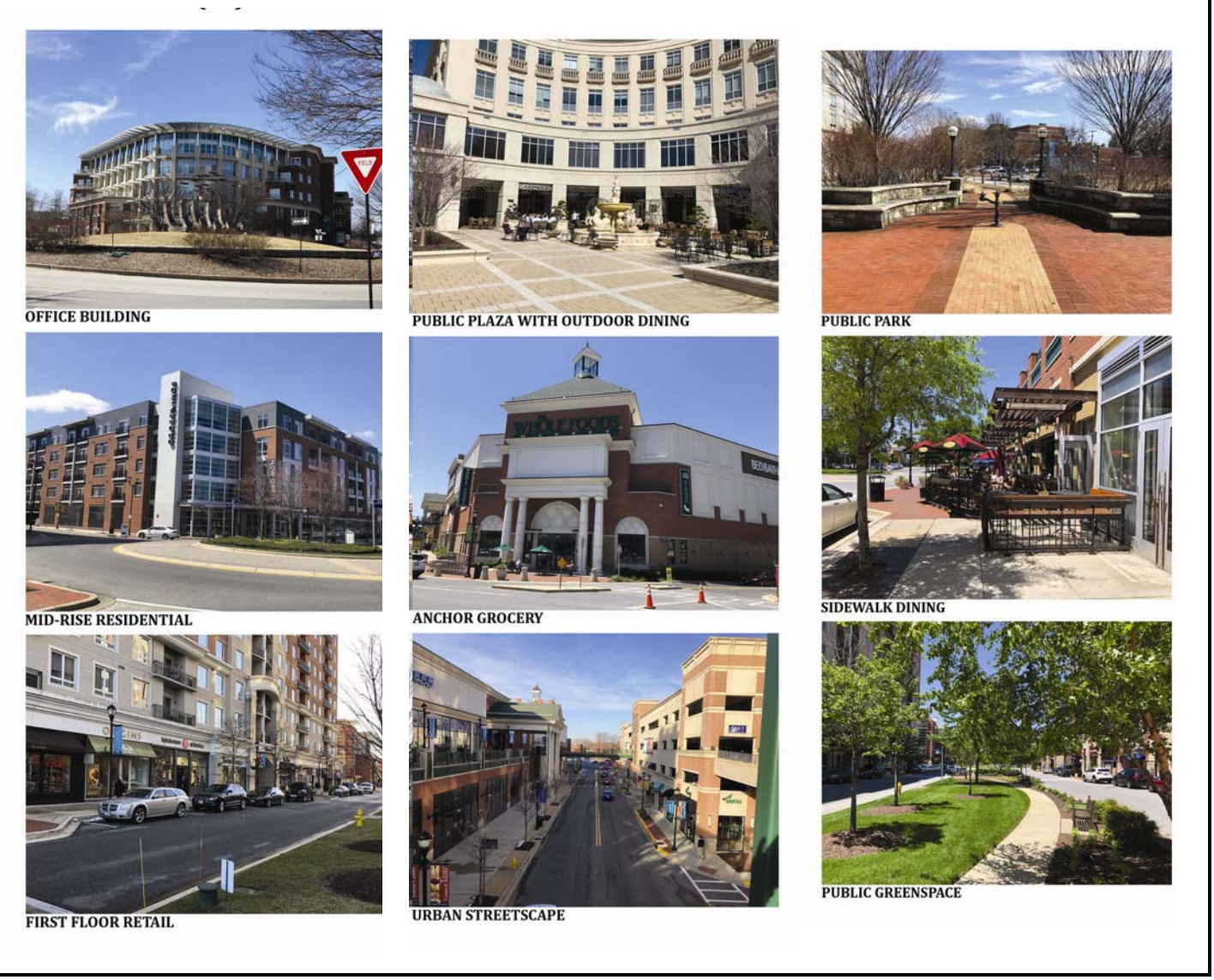


Figure Twenty-Five



This plan recommends the **Urban Center (UC)** character type in parts of the Bay Ridge Road area, Eastport, and Old Solomon's Island Road (see below for more detailed maps). This designation describes large scale mixed use areas that provides retail, dining, office, entertainment, lodging, and housing. It serves as a destination for tourists and residents of the city and the surrounding region. A mix of commercial and residential uses creating a contained live, work, shop, and play area. Vertically mixed use buildings are encouraged. The Urban Center will have urban streetscapes, limited building setbacks with zero setback building encouraged. It will have a traditional urban design with strong connections to surrounding neighborhoods. One example is Park Place in Annapolis and Annapolis Town Center in Parole. Typically, 4 to 8 stories would be allowed (approx. 96' +/-), with 35 to 45 dwellings per acre (DUA). Intensity is determined by height (up to 3.00 FAR). Significant amounts of structured parking is anticipated with the possibility of on-street parking. The area is pedestrian and bicycle oriented as well as highly transit supportive and the least auto-oriented.

Figure Twenty-Six: Urban Center



Urban Commercial (UCOM) is one of the character designations recommended in Chinquapin Round Road and Old Solomon's Island Road. It includes provisions for shopping, services, office, entertainment, and/or lodging. It is not intended for ground floor residential uses. It will serve as a destination for the city and the surrounding neighborhoods for shopping, dining, and entertainment. It has a mix of commercial and multi-family residential uses, which will include retail, office, restaurants, apartments, and condominium units. It will have urban streetscapes, limited building setbacks with zero setback building encouraged. It will have traditional urban design with strong connections to surrounding neighborhoods. Examples include Main Street, Inner West Street, and Maryland Avenue in Annapolis. Typically 2 to 4 stories (approx. 48' +/-) are allowed with intensity determined by height (up to 2.00 FAR). There is a preference for on-street and structured/garage parking. This neighborhood center is more auto-oriented than the Urban Center. It is moderately transit supportive, and it is pedestrian and bicycle oriented.

Figure Twenty-Seven: Urban Commercial

MIXED USE BUILDINGS

MIXED USE STREET

TRADITIONAL URBAN DESIGN

RESTAURANTS

RETAIL STREET

PUBLIC PARK

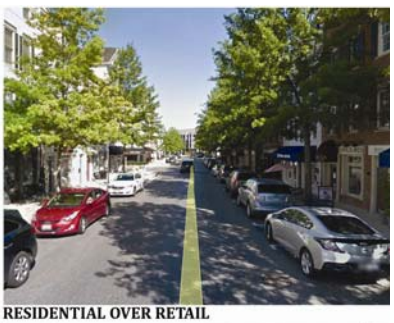
FIRST FLOOR RETAIL

LOW-SCALE RETAIL STREET

RETAIL AND OFFICE MIX

The **Urban Center Low (UCL)** designation includes provisions for shopping, services, employment, and housing for city residents and neighborhoods. The area serves as a walkable destination with a balanced mix of commercial and residential uses to include retail, office, restaurants, and residences. Mixed-use buildings are encouraged. The Urban Center Low character type will have urban streetscapes, limited building setbacks with zero setback building encouraged. It will have a traditional urban design with strong connections to surrounding neighborhoods. One example is Washington Street in Alexandria, VA. Typically 2 to 4 stories (approx. 48' +/-) and 2 to 20 DUA depending on the character. Intensity is determined by height. With a preference for on-street and structured parking, this neighborhood center is more auto-oriented than the Urban Center. It is moderately transit supportive, and it is pedestrian and bicycle oriented. This plan recommends UCL in the Bay Ridge Road area, Chinquapin Round Road area, Tyler Road, and Old Solomon's Island Road.

Figure Twenty-Eight: Urban Center Low


RESIDENTIAL OVER RETAIL

PUBLIC PLAZA WITH OUTDOOR DINING

URBAN STREETSCAPE

RETAIL SQUARE

RETAIL STREET

CENTRAL SQUARE

SIDEWALK DINING

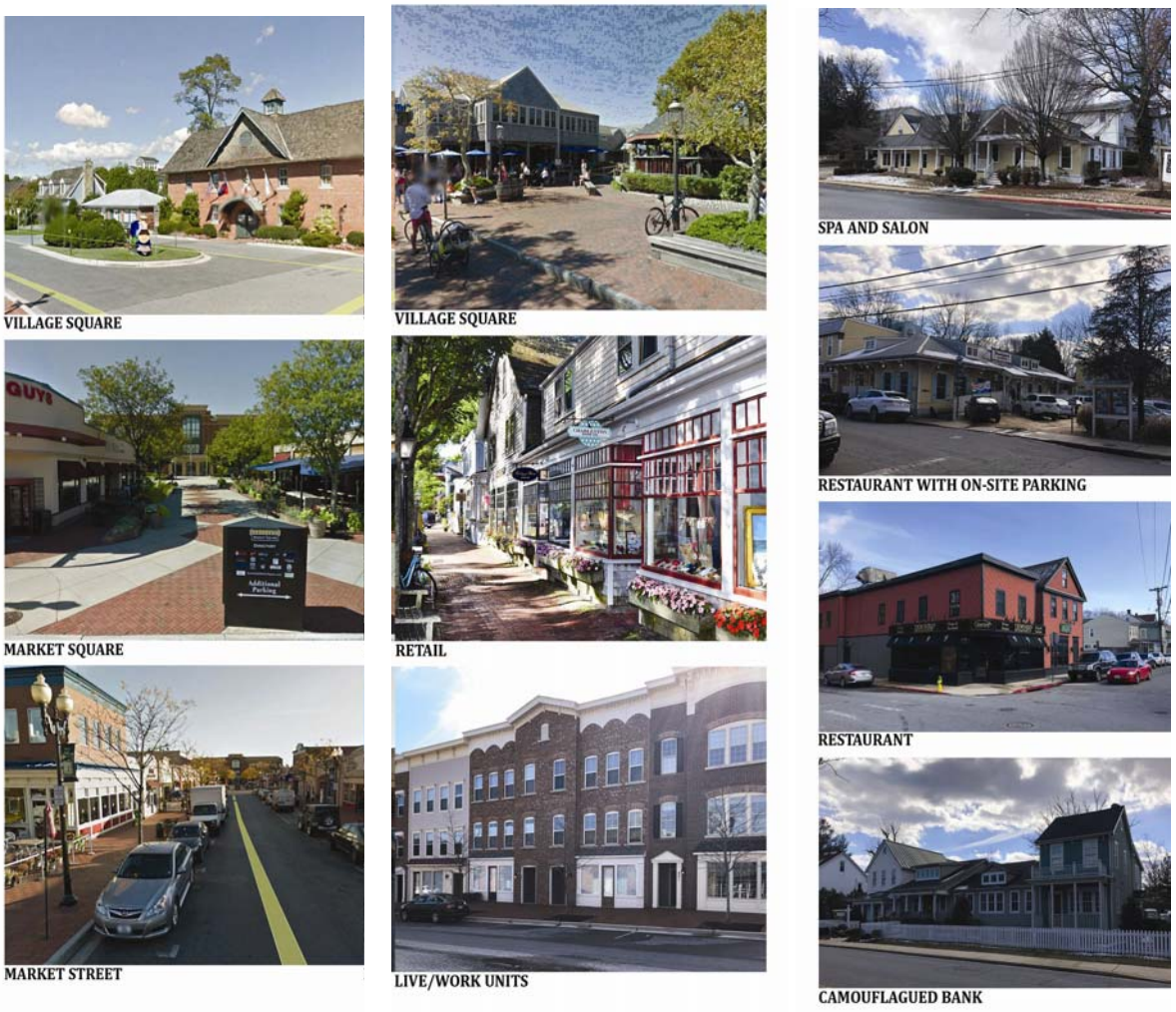
CENTER-OF-BLOCK PARKING STRUCTURE

TOWNHOUSES

RETAIL STREET

Urban Village Center (UVC) is a new designation that provisions for shopping, services, employment, and housing for city residents and neighborhoods. It serves as a complete live/work/shop neighborhood. These neighborhoods are considered "Ped Sheds" that shall service a quarter- to half-mile vicinity. It would be a mix of commercial, institutional, and residential uses to include retail, office, restaurants, institutions and houses. Mixed use buildings/sites as well as live/work units are encouraged. It is more traditionally designed with urban streetscapes and strong connections to neighborhoods. Compact lot design standards with zero or limited building setbacks permitted on designated active streets. Examples include Eastport and Annapolis Street in West Annapolis. Typically, 1 to 4 stories (48' +/-) would be allowed with 7 to 24 DUA with an FAR of 0.5 to 0.75 (excluding parking garages). A preference for on-street and structured/garage parking (with possible parking rate reductions). On-site surface parking to the side or rear relative to active streets would be permitted. It is moderately transit supportive, and it is pedestrian and bicycle oriented. It shall have a low speed connected street grid. Skippers Lane, Eastport, Tyler Road, and the Bay Ridge Road area.

Figure Twenty-Nine: Urban Village Center



Another new designation is **Urban Neighborhoods (UN).** This designation is recommended in Skippers Lane, Eastport, and Tyler Avenue. Largely a residential area with a mix of compact housing types at a density and design that supports walking and transit. It also allows the ability to add granny flats, home occupation, and live/work units. More traditionally designed with compact lot design standards with common open spaces and greenway elements are encouraged. Enhanced streetscapes and strong connections to centers, a compact scale with zero- and limited building setbacks from designated active streets. Cul-de-sacs and/or fenced enclaves are not permitted. 1 to 4 stories (48' +/-) are allowed with 7 to 24 dwelling units per gross acre. On-street parking is allowed where appropriate. On-site surface parking to the side or rear relative to active streets is permitted. Structured and garage parking are encouraged and the area is pedestrian and bicycle oriented with a low speed connected street grid. It has a low to moderate level of transit support.

Figure Thirty: Urban Neighborhoods

Neighborhood Enhancement Areas (NEA) is a designation meant to connect and enhance existing residential areas near commercial centers and corridors. Improved pedestrian and bicycle facilities, improved connections to nearby destinations, improved street connectivity and traffic calming on alternate through routes, as well as development of connected greenway networks and street beautification is a component of this designation. This character type has been designated in the Bay Ridge Road area.

Figure Thirty-One: Neighborhood Enhancement Areas

Environmental Enhancement Areas (EEA) are places that boast essential and desirable natural amenities to be promoted and enriched through conservation, restoration, expansion, and recreational efforts. Elements may consist of stormwater mitigation opportunities for instance with bio-swales, rain gardens, impervious surface reduction, etc., and shoreline or stream restoration. Natural areas can be connected and enjoyed with greenway elements running through and between built community elements. Public and private lands designated for public and/or private recreational use and/or forest/environmental protection as well as very low density uses could be incorporated. Some, but not all, of the areas may be publicly accessible and include a recreational trail. Conservation areas, preservation easements, public school and park sites, HOA managed private open spaces and buffers, stream corridors, City/County owned lands, and cemeteries could serve as places to enhance.

Figure Thirty-Two: Environmental Enhancement Areas

Adaptive Reuse (AR) is a designation that encourages building reuse and rehabilitation and facilitates the provision of needed goods and services to the local neighborhood. It retains the architectural character of the neighborhood and includes a preference for on-street structured parking. On-site surface parking to the side or rear relative to active street is permitted. Residential to retail, residential to restaurant, residential to office, residential to lodging, and residential to public institution (library, community center, etc.) would all be considered adaptive reuse. Portions of the Bay Ridge Road and Chinquapin Round Road areas have been designated with this character type.

Figure Thirty-Three: Adaptive Reuse

RESIDENTIAL TO RETAIL

RESIDENTIAL TO LODGING

RESIDENTIAL TO RESTAURANT

RESIDENTIAL TO PUBLIC LIBRARY

RESIDENTIAL TO OFFICE

4.3 Zoning Changes

To implement the community character designations, the City's Mixed Use (MX) zoning text can be amended and be applied to the UC, UCOM. UCL, UVC areas of the Development Framework Map. A varied height should be established for the corridor as well to include the (UN) areas. In addition, City residential zoning requirements, at least in the corridor, should be revised to permit more compact lot sizes with smaller setbacks and taller (i.e., four-story) buildings in this area in order to encourage compact designs that support transit and preserve open space and reduce the need for variances.

A comprehensive zoning map change process should be undertaken for the sector to apply new zoning designations and correct the split-zoned lots. The process should accommodate applications and ideas from interested parties.

We recommend that Mixed Use (MX) zoning text revision consider incorporating the following:

- Require sites to include a public amenity element along the corridor that is of a scale appropriate to the size of the site. Permitted elements might include art, street furniture, upgraded streetscapes, public spaces, enhanced bus shelters, or other elements.
- Review and revise the MX use list to include the permitted uses in the corridor's current commercial and office zones and expand or add other appropriate uses.
- Generally, there should be less regulation of specific use and more regulation of form.
- Revise the design standards element to fit this corridor and comply with new street frontage designations.
- Revise setback requirements to allow limited or zero setbacks and buffering requirements except where property lines abut existing built residential properties.
- Require buildings to be placed close to the street to create a more walkable urban design character.
- Require compliance with approved Street Frontage Characters, Complete Street Standards, and approved Ultimate Street Sections.
- Allow site intensity and or density to be established by the height limitations in combination with other environmental requirements such as Forest Conservation.
- Require interconnection to abutting properties and residential areas. This might include cycleways, shared access points, alleys, parking lot connections, sidewalks, etc.
- Permit reduced parking with demonstrated justification. Encourage on-street, garage and structured parking.
- Encourage but do not require buildings or sites to include a mix of uses, allow a one-story bonus for mixed use buildings

5. PHASED IMPLEMENTATION ACTION PLAN

Principal Solutions and Actions

Implementation of this plan will require the coordinated efforts of multiple stakeholders over several years. The issues and solutions previously mentioned in this plan have been matched with action items and are shown in their totality in Appendix E. The following tables, however, focus on principal solutions and key actions that are crucial for implementing the main vision of this study—to truly embrace the core concepts of smart growth primarily by shifting to multimodal and mixed use future.

Goal: Transform and enhance character by balancing the small changes such as adding streetscape elements with the larger changes in community character and development patterns.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.1.1	Implement the community character recommendations described in detail in the following section with less emphasis on use and more emphasis on form.	1	Develop Community Character. Continue to refine community character designations and update the zoning code as needed.	Planning & Zoning	Near-Term
3.1.2	Establish new city street design standards that incorporate complete street design standards, multimodal use, and contextual design.	2	New City Street Design Standards/Typologies. Develop and adopt new Complete City street design standards with a set of Annapolis-specific street typologies and a street connectivity requirement. Work with the County to develop complete street standards .	Public Works	Near-Term

ZONING AND APPROVAL PROCESS

Goal: Modernize and simplify zoning regulations in this sector to ensure new development establishes a balance of land use patterns consisting of interconnected neighborhood destinations and pedestrian-scaled design.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.2.1	Change the current land-use and zoning maps, and the current zoning text/design guidelines for the land along the corridor, to enable and incentivize transformation from an aging suburban character to an Annapolis-like low scale urban character. (This should include applying a refined mixed-use zone to the corridor and/or revising the B2 zone as well as correcting split-zoned lots.)	7	Zoning Map Changes. Undertake a comprehensive zoning map change process for the sector to apply the new zoning designations and correct the split-zoned lots—accommodate applications from interested parties based on the sector vision.	Planning & Zoning	Near-Term
3.2.2	Create different prototype standards for the residential and commercial sections. Plan for ample street tree canopy, greenway elements, water quality improvements, banners and public art, and wide walks like in Upper West Street.	1	Develop Community Character. Continue to refine community character designations and update the zoning code as needed.	Planning & Zoning	Near-Term

MOBILITY: VEHICULAR AND TRANSIT

Goal: Formalize inter-jurisdictional cooperation with the mission of having shared design guidelines, complete streets development, public transit improvements, and investments in new technology that helps improve road capacity.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.3.1	Revise the current City traffic study procedures and traffic adequate public facilities requirements to include assessment of multi-modal trips and non-vehicular mitigation, as well as other items described in Appendix D..	9	Amend Transportation Adequate Facilities Ordinance (APFO) and Traffic Impact Analysis Guidelines. Develop and adopt amendments to the City's transportation APFO and the Traffic Impact Analysis Guidelines to assume a multimodal, complete street approach to traffic analysis. Coordinate with the County's current multimodal transportation legislation.	Planning & Zoning	Near-Term
3.3.2	Establish complete street standards for the City and require all future city street improvements to address all modes of travel in their improvements.				

MOBILITY: BIKE AND PEDESTRIAN

Goal: Promote a shift from auto-oriented development to multimodal development by investing in strategic upgrades to the pedestrian and bicycle networks.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.4.1	The City should make investments in other modes of transportation and make funding for bike and pedestrian infrastructure improvements a higher priority.	24	CIP Project Funding. Develop a budget funding program for near-, mid-, and long-term sector improvements projects such as: a. Bike and Pedestrian Improvement Projects including: Eastport to Quiet Waters Park link, trail link from Bay Ridge Road to Hilltop Lane, and local links for east/west bike spine route along reconnected local streets. b. Signals. Smart city traffic signal conversions throughout the sector. c. Road Projects such as City street reconnection and extension project planning, including Gemini Road extension and Louis Drive reconnection. d. Selected Street Edge Pocket Parks. Possible locations Hilltop Lane and Forest Drive; Forest Drive and Spa Road; and Forest Drive and Annapolis Neck Road	Planning & Zoning and Public Works	Mid-Term
3.4.2	Prioritize improvement at the intersections and gaps in the network located within a quarter mile of major destinations such as schools, parks and neighborhood shopping areas, bus stops, the recreation center, and the library.				
3.4.3	Provide safe walking routes to schools and encourage private schools to provide bus services, to reduce the education rush hour (routes should be off Forest Drive where practicable).				

GREENING OF ANNAPOLIS / ENVIRONMENT

Goal: Work with new development, private property owners, and conservancy organizations to link existing green spaces together and create a functional greenway.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.5.1	Create a City Greenway Plan that coordinates with the County's Green Infrastructure Plan for the area.	12	City Greenway Concept. Incorporate concepts for a City Greenway into the upcoming Comprehensive Plan update, coordinate with County Green Infrastructure Plans and the Annapolis Conservancy Board.	OEP and Planning and Zoning	Near-Term
3.5.2	Incorporate local streets into the greenway network. Develop and apply green street design standards as part of the new Complete Street Typology. Retrofit existing local streets as part of beautification and traffic calming projects.				
3.5.3	Reduce the development potential of properties identified as				

	“Environmental enhancement area”, to protect more forest, provide additional community stormwater management potential, or to provide impervious surface reduction				

VIBRANT ECONOMY

Goal: Expand the City's tax base while also protecting and enhancing community character by setting and reaching measurable goals.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.6.1	The City should work towards implementing the Economic Development Plan strategy that will help prepare it for the next fifteen years of rapid technological change.	1	Develop Community Character. Continue to refine community character designations and update the zoning code as needed	Planning & Zoning	Near-Term
3.6.2	The City should set measurable goals for increasing the City tax base and should monitor and report on progress towards this goal on a regular basis. The monitoring should include a report on the progress of each of the City's business districts so that this sector study's progress can be tracked.				
3.6.3	The City should make placemaking a part of its economic development strategy in this part of the City.	3	Corridor Beautification Initiatives. Partner with Greenscape, SOFO, the ECA, the EBA, other HOAs, corridor schools, and centers of worship to beautify the corridor and properties along it.	City and Anne Arundel County	Near-Term

GREENING OF ANNAPOLIS / ENVIRONMENT

Goal: Work with new development, private property owners, and conservancy organizations to link existing and new green spaces together, expand stormwater management, and reduce impervious surfaces to improve water quality in the sector.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.5.1	Create a City Greenway Plan that coordinates with the County's Green Infrastructure Plan for the area.	12	City Greenway Concept. Incorporate concepts for a City Greenway into the upcoming Comprehensive Plan update, coordinate with County Green Infrastructure Plans and the Annapolis Conservancy Board.	OEP and Planning and Zoning	Near-Term
3.5.2	Incorporate local streets into the greenway network. Develop and apply green street design standards as part of the new Complete Street Typology. Retrofit existing local streets as part of beautification and traffic calming projects.				
3.5.3	Reduce the development potential of properties identified as "Environmental enhancement area", to protect more forest, provide additional community stormwater management potential, or to provide impervious surface reduction				
#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.5.3	Plan for a park-to-park Greenway connection in this sector if possible, using the old railroad ROW.	12	City Greenway Concept. Incorporate concepts for a City Greenway into the upcoming Comprehensive Plan update, coordinate with County Green Infrastructure Plans and the Annapolis Conservancy Board.	OEP and Planning and Zoning	Near-Term
3.5.4	Require future developments to plan for open spaces and conservation easements to connect into the overall Greenway.				
3.5.5	Use the "developer fund" to plant trees along Forest Drive.	17	Targeted Preservation and Coordination with Annapolis Conservancy Board. Work with the Annapolis Conservancy Board and City property owners to identify parcels for Tree Canopy and Forest Conservation Banks. Bank sites within the City might include property with priority preservation forest areas, key future greenway areas, excess land areas the County ROW, unprotected forests in areas such as HOA common open spaces, church properties,	OEP and Planning and Zoning	Near-Term
3.5.6	Continue implementing the City's 2016 Watershed Improvement Plan. Require developers to assist with this effort.				

			school sites etc.		

#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.5.7	Work with the County to establish a coordinated City/County street tree plan in County Rights of Way.	23	Forest and Street Tree Bank Option. Supplement the current forest conservation and tree canopy policy to allow the option to create credit banks in the City and Annapolis Neck Peninsula as an incentive both for further preservation and for small site redevelopment. Banks could be located on sites with priority preservation areas, in targeted greenway areas, in the County ROW, etc. Smaller re-development sites in the corridor should be eligible to meet their obligations with off-site mitigation.	OEP and Planning and Zoning	Mid-Term
3.5.8	Adjust regulations to allow and encourage street tree and forested buffers along the corridor to create a continuous greenway	18	Redevelopment Incentive Program. Through zoning changes, develop and adopt administrative processes that can fast-track redevelopment of older existing corridor commercial sites as well as access-constrained residential frontage sites to encourage owners to redevelop or renovate their sites, facades, signage and/or stormwater management.	Planning & Zoning	Mid-Term
3.5.10	Review City standards to better incentivize or require the renovation/redevelopment of sites developed in the corridor prior to current stormwater management requirements.				
3.5.11	Review and update parking requirements to help reduce the requirements for impervious surface parking areas.				
3.5.12	Support use of new technologies that can help to reduce the number of daily trips City and peninsula households make each day using fossil fuel powered vehicles.				

DRAFT

The Forest Drive/Eastport Sector Study

TECHNICAL APPENDICES

A. Pipeline Development, January 2018
B. U.S. City Economic Trends Memo
C. Mobility Analysis
    1. Refined BMC Regional Model
    2. City Demographic Database
    3. Existing Traffic Conditions Analysis
    4. Future Baseline Traffic Evaluation
    5. Possible Remedies to Existing and Future Baseline Conditions
        a. Road Improvements
        b. Land Use Changes—Mid and High Sector Growth Scenarios
        c. Travel Mode Choices
        d. Technology Trends Review
        e. Commuter Destination Review
        f. Preliminary Ultimate Complete Street Sections for Discussion
D. Possible Modifications to Adequate Public Facilities Traffic Ordinance and Traffic Impact Analysis Guidelines
E. Phased Implementation Action Plan with Principal and Supporting Solutions

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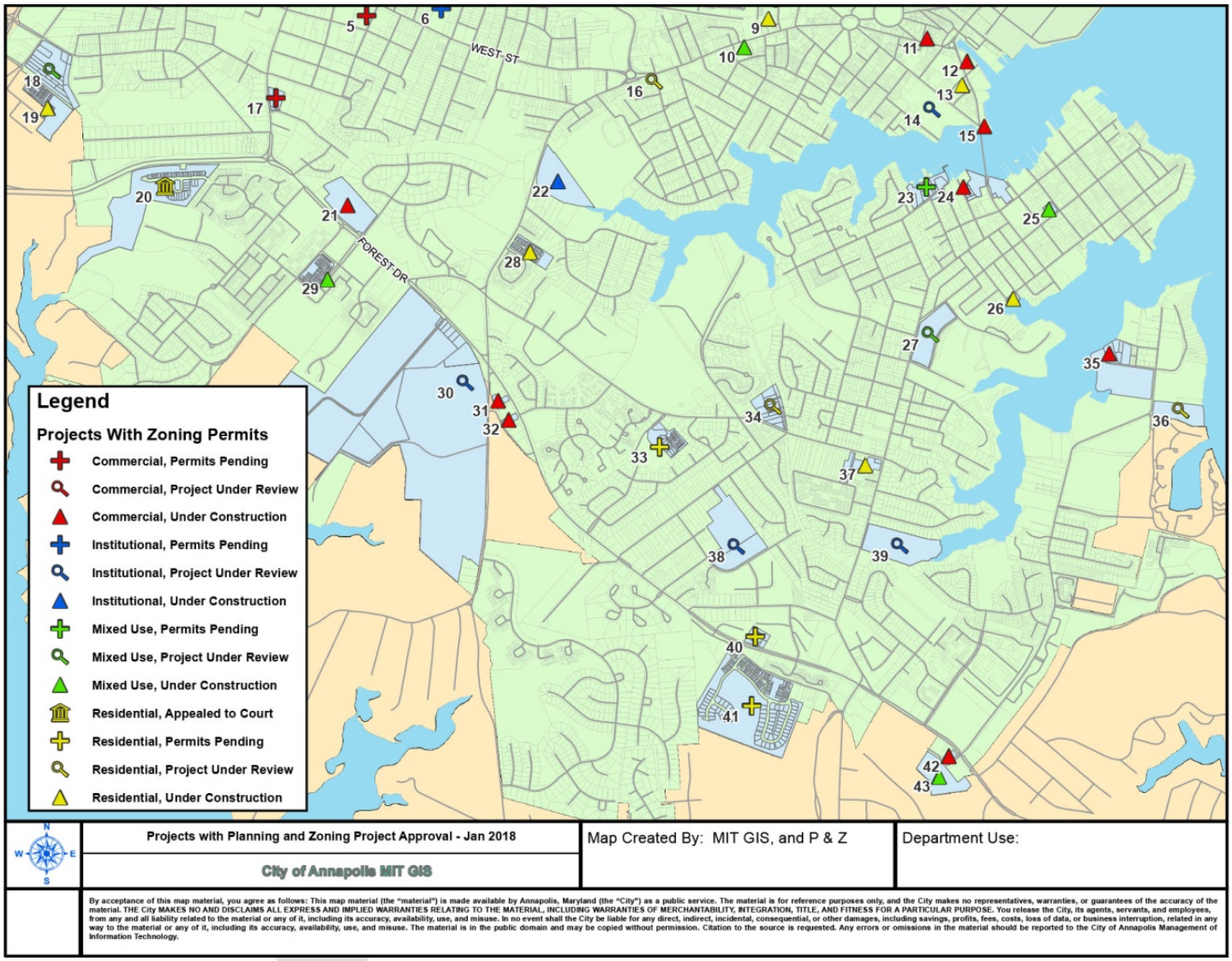
APPENDIX A: Pipeline Development, January 2018

The following map identifies development proposals either “under construction,” “pending,” “under review,” or “under appeal” located within the City that are either within or close to the sector area.



The following chart provides additional details to those development proposals identified in the previous map. The date of the chart is January 2018.

Number	Project Name	Status	Type	Units	Net New	Sq ft	Net Sq ft
1	Rodgers Heights	Under Construction	Residential	5	0	0	0
2	706 & 712 Giddings Ave	Under Construction	Commercial	0	0	22,086	11,374
3	39 Hudson Street	Permits Pending	Commercial	0	0	15,000	15,000
4	Towne Courts	Project Under Review	Mixed Use	42	42	2,400	2,400
5	Acura Dealership	Permits Pending	Commercial	0	0	0	0
6	Annapolis Public Library	Permits Pending	Institutional	0	0	32,500	12,653
7	Terrapin Station	Project Under Review	Residential	6	6	6	6
8	Bowman Housing for Veterans	Permits Pending	Residential	6	2	0	0
9	Timothy Gardens	Under Construction	Residential	14	0	0	0
10	141 West	Under Construction	Mixed Use	24	24	31,852	31,852
11	122 MAIN	Under Construction	Commercial	0	0	2,300	2,300
12	110 Compromise St	Under Construction	Commercial	0	0	11,378	0
13	9 ST MARYS	Under Construction	Residential	9	9	0	0
14	St Marys School	Project Under Review	Institutional	0	0	12,694	12,494
15	Annapolis Yacht Club - Downtown	Under Construction	Commercial	0	0	16,838	0
16	285 West	Project Under Review	Residential	18	18	0	0
17	Lincoln Dr	Permits Pending	Commercial	0	0	13,200	13,200
18	Parole Place	Project Under Review	Mixed Use	-	-	-	-
19	Annapolis Towns at Neal Farm	Under Construction	Residential	50	50	0	0
20	Rocky Gorge	Appealed to Court	Residential	46	46	0	0
21	Manekin	Under Construction	Commercial	0	0	107,324	0
22	Public Works Maintenance Facility	Under Construction	Institutional	0	0	21,000	0
23	South Annapolis Yacht Center	Permits Pending	Mixed Use	9	0	-	14,660
24	Annapolis Yacht Club - Eastport	Under Construction	Commercial	-	-	-	-
25	Eastport Sail Loft	Under Construction	Mixed Use	11	11	2,842	-18,945
26	Woodsback Marina	Under Construction	Residential	2	0	0	0
27	Lofts at Eastport Landing	Project Under Review	Mixed Use	127	127	11,898	0
28	Enclave on Spa	Under Construction	Residential	36	36	0	0
29	Village Greens	Under Construction	Mixed Use	89	89	1,000	1,000
30	Villages at Providence Point	Project Under Review	Institutional	383	383	0	0
31	1503 Forest	Under Construction	Commercial	0	0	22,680	22,680
32	1415 Forest Dr	Under Construction	Commercial	0	0	7,043	2,986
33	Primrose Hill	Permits Pending	Residential	26	26	0	0
34	Central Park	Project Under Review	Residential	45	35	0	0
35	Port Annapolis	Under Construction	Commercial	0	0	5,000	5,000
36	Chesapeake Grove	Project Under Review	Residential	42	42	0	0
37	Griscom Square	Under Construction	Residential	12	12	0	0
38	Tyler Heights Elementary	Project Under Review	Institutional	0	0	44,000	44,000
39	SPCA	Project Under Review	Institutional	0	0	27,415	7,155
40	Thomas Woods	Permits Pending	Residential	10	10	0	0
41	Parkside Preserve	Permits Pending	Residential	130	130	0	0
42	Starbucks	Under Construction	Commercial	0	0	1,993	1,993
43	Bay Village Assisted Living	Under Construction	Mixed Use	0	0	92,020	92,020

APPENDIX B: U.S. City Economic Trends Memo

Annapolis Economic Development and Land Use Presentation
Introduction
According to the National League of Cities, economic development is the top issue mentioned in mayoral state of the city speeches, followed closely by public safety. The biggest challenge is that economic development rules are changing more rapidly than ever before.

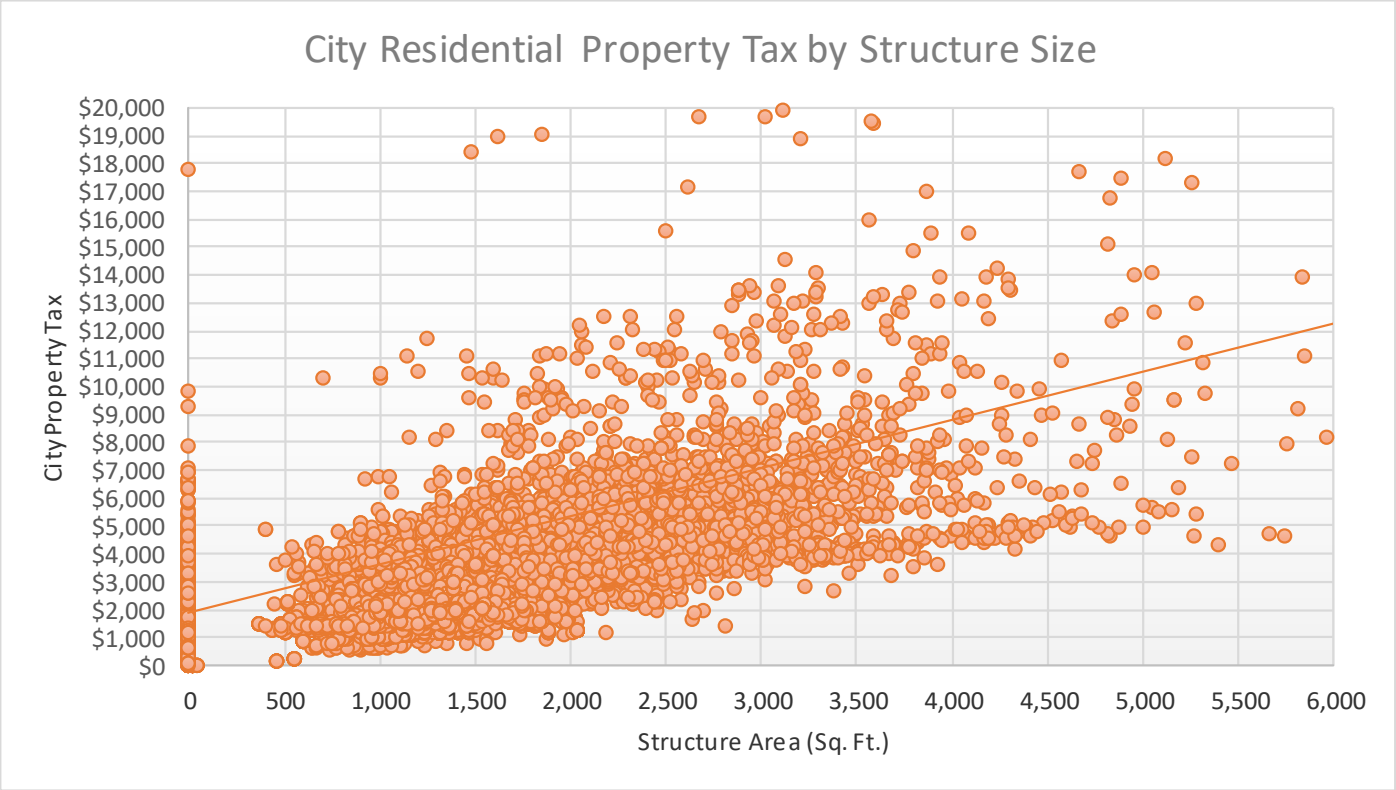
Economic Development
In general, economic development is about building healthy economies to ensure healthy communities. These are just a few of the ways successful economic development benefits communities:

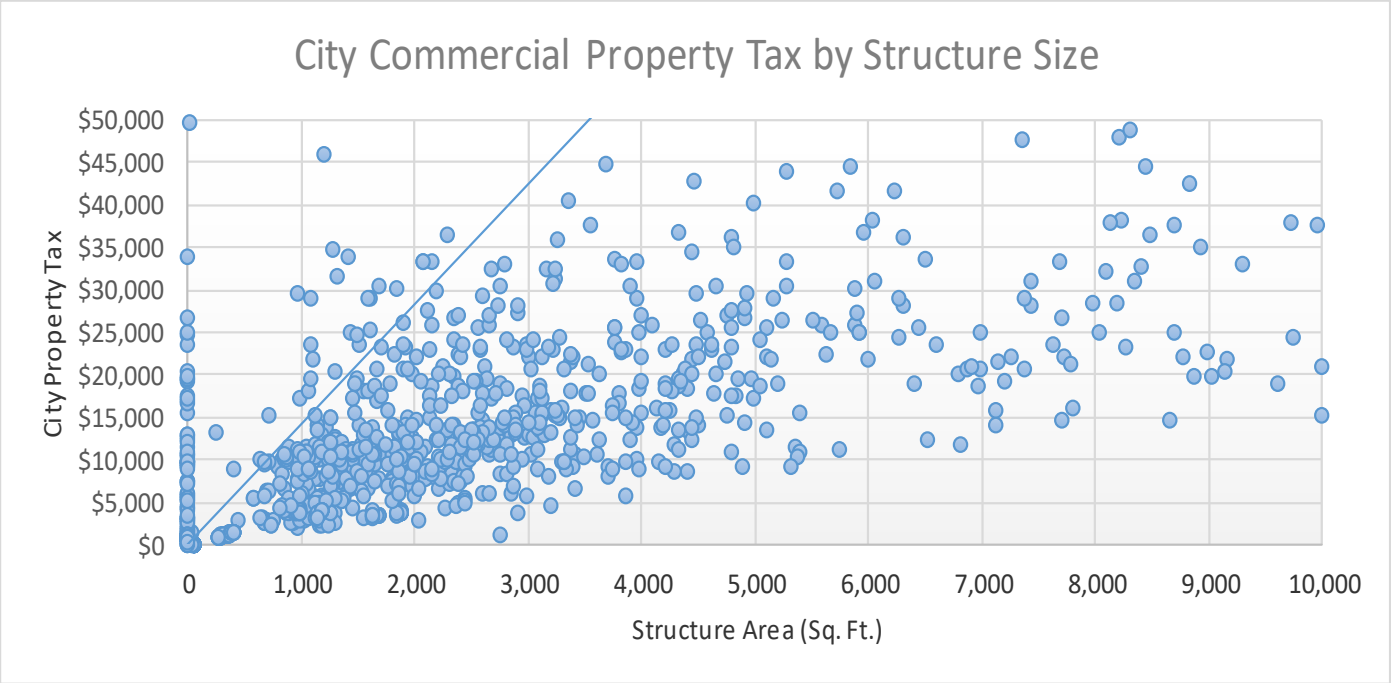
- Increases tax base—to support, maintain, and improve local infrastructure, such as roads, parks, libraries, and emergency medical services
- Creates and retains jobs—to provide better wages, benefits, and opportunities for advancement
- Enhances quality of life—to raise the economic tide for the entire community, including the overall standard of living for residents

Overview of Land Values
A growing body of empirical evidence shows that while commercial and industrial development can indeed improve the financial well-being of a local government, residential development can strain it, if not planned wisely. Similarly to other cities in the U.S., Annapolis collects a larger sum in property tax from commercial properties than from residential properties, on a per value basis. The conclusion to accept then is that suburban-style bedroom communities are not economically sustainable at current tax rates.

Property Tax Rate (per $100 of assessed value)	**County Rate**	**State Rate**	**City Rate**	**Total Rate**
Residential Real Property	**0.561**	**0.112**	**0.738**	**1.411**
Business Personal Property	**1.402**	**-**	**1.94**	**3.342**

Expectedly, from an occupied building of a certain size, the City receives a greater amount in property tax if that building were used as a business than as a residence. For instance, the owner of a 2,500 square foot home, given it has no tax exemptions, would pay on average around $4,000 in property tax to the City per year while the owner of a 2,500 square foot business could expect to pay upwards of $10,000 per year to the City. Of course, businesses on average are larger in size than residences and are valued differently, but this still illustrates the point that businesses generate more revenue for Annapolis than do residences.





Ultimately, it is important to note that not all residential development is created equal in its ability to generate revenue versus its cost to the City. Clustered pockets of denser residential supported by either nearby or above-level retail and office where services can be pooled is much more economically viable than single-family tracts of housing with only vehicular access to commercial and employment activity. This has the added benefit of

preserving the natural and green spaces that are so desired in this part of Annapolis by placing the same amount of suburban-style development say over several acres into an acre or less of land.

Economic Development Trends Having a Big Impact on Cities

1. Placemaking

High quality of life and place are increasingly needed to attract and retain today's companies and workers. Today's workers put more emphasis on quality of life factors such as transportation options, affordability, schools, recreational opportunities, environmental quality, access to healthcare, local vitality, range of service amenities, cultural offerings, and aesthetic qualities. And, companies locate where workers want to be. Hence, today a new "economics of place" is driving economic growth and development. Cities worldwide are now encouraging "livable places" that are mixed-use, economically vibrant, convivial, walkable, bikeable, and transit-friendly.

2. The Knowledge Age

In today's Knowledge Age, wealth is based on the ownership of knowledge and the ability to use that knowledge to create or improve goods and services—*whether you are an auto mechanic or a cybersecurity analyst*. It is an economy in which the driving force is innovation and creativity so that companies can continually offer new and better value to customers and deliver it sooner. Success in this economy also partly depends upon attracting and retaining the "creative class" (aka knowledgeable, innovative and creative workers). This group of the nation's most progressive individuals in technology, knowledge, design, healthcare, law, and the arts accounts for a third of the country's workforce and about half of all wages and salaries. Such workers choose places to live, work, play and learn that place emphasis on quality of life factors.

3. Improved Connectivity

Internet-based technologies allow us to control appliances in our homes through smartphones. Cities are also becoming more connected to help them become more liveable (sensors, crowd-sourced data, etc.) Today's population wants connectivity access, on-demand services and information—and they want it all now. As Annapolis adapts to accommodate digital-native generations, the new "sharing" economy ($335 billion in global revenues expected by 2025, up from today's $15 billion) and other emerging industries—creating a culture of innovation and connectivity, high-speed internet access has become an important factor in attracting new residents and businesses.

4. Increased Diversity

Successful economic development in its simplest form is the creation of economic wealth for all citizens within the diverse layers of society so that all people potentially have access to an increased quality of life. Today, cities must serve a diverse mix of economic, demographic and multi-cultural groups, especially disadvantaged and marginalized residents and businesses, in a manner that enables all residents to contribute to the City's success and prosperity. Despite everything else Annapolis does to promote the City as a hotbed of economic opportunity—inequality and poverty and the resulting social issues could easily drive people, businesses, and economic opportunities away. Economic diversity must be fostered to reduce the City's vulnerability to industry volatility.

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5. Affordable Housing

A region's affordability is a critical driver of business and workforce location decisions. A majority of all age categories worry about savings and cost of living, citing living expenses, especially affordable housing options, as important in deciding where to live. Americans are facing, especially in cities, housing scarcity that is pushing up prices and consuming their incomes. The lack of affordable and workforce housing in Annapolis creates many problems, including inhibiting the ability of employers to recruit qualified employees. To the extent an employee cannot find housing near a potential place of employment, this lack of affordable housing creates a disincentive for accepting a job offer.

6. New Mobility

Denser, less car-dependent cities are becoming the accepted wisdom across the developed world. The new vision is one of more walkable and bikeable, denser, neighborhood-based, self-sufficient communities dominated not by the car, but by the smartphone and the network. Generally, in the near future there will be less commuting, less travel and less separation of functions. Numerous trends are helping to shape this "new mobility" approach: electrification of vehicles, increased immediate access to decision-making data via connectivity, car sharing and autonomous driving. Less car-centric sprawl is moving toward more environmentally-focused, high-density developments that emphasize walkability, a wide range of transportation options, and proximity to key resources and amenities. Walkable streets encourage business activity, generate greater tax revenue per acre and offer a higher return on investment than auto-oriented streets.

7. Regional Context

The globalization of the economy and the advance of technology have made geographic boundaries less important. An increasingly mobile workforce can live almost anywhere, which intensifies the jockeying for economic activity among cities and regions throughout the world.

Annapolis not only faces new questions in defining and preserving its character globally, but also within the context of the surrounding region. In order to provide relevant economic development programs to meet today's ever-changing economy, the City must, more than ever, work collaboratively with external officials, nonprofits and larger employers.

8. Land Use and Government Trends Having a Big Impact on Cities

In the context of an ever-changing global economy, it is incumbent upon Annapolis to embrace the following trends and realign some of its current policies regarding zoning, infrastructure, parking, and other related issues in order to adapt.

a. Densification

Growing populations, rapid urbanization, and limited available land in many of the world's cities invariably means accommodating more people in what are already tight spaces. In most cases, density is the best way to accommodate economic change and population growth. Densifying cities can accommodate population growth within a contained environmental footprint where people can enjoy better connectivity, amenities, open spaces, and social interaction, and potentially become more productive and spawn innovation. Today's well-designed developments include a mixed use of land that provides people with livable areas in which to work and enjoy a high quality of life, where

amenities and reliable transport are within easy walking distance. Well managed and well serviced densification makes economic, social and environmental sense, and will provide a competitive advantage for people and firms in the future.

b. Public-Private Transactions

Public-private partnership (also known as PPPs or P3s) deals by local governments are growing in popularity. In a public-private transaction, a local government enters into an agreement with a private entity, whereby the private entity agrees to build specific public facilities, such as a parking garage or new city hall, in exchange for profitable private property rights relating to the underlying public land. Once selected, usually through a competitive bidding process, the private entity designs and builds the new facility at its expense, pursuant to a development agreement with the local government. In these cases, the developer recovers its costs and receives a return on its investment from uses, while the city receives ground rent and a percentage of revenues.

The key to a successful P3 is the ability to define concrete, measurable goals for which private enterprise can be rewarded, but without over-specification, such as dictating precisely the technologies that must be deployed or the design requirements. Such strictures can lead to higher costs and finding the best solution can be left to the better-qualified private partner once goals are set. Designed and executed well, private-sector expertise harnessed within a P3 has the potential to deliver lower-cost, higher-quality infrastructure and services, making them an essential element of smart growth.

c. Parking Requirement Reductions

The U.S. has close to a billion parking spots, roughly four times more parking spaces than vehicles. And, the average automobile spends 95% of its time sitting in place. Ultimately, parking is a self-reinforcing problem. Cities have trained people to expect that parking would be plentiful and free, which encouraged them to drive everywhere—which made them demand more parking. Today, Annapolis is on the cusp of a new era, when cities have begun dramatically reducing the amount of parking spaces they offer. This shift is being driven by both social and technological change. On the social side, people are increasingly opting to live in urban centers, where they do not need, or want to own a car. They are ride-sharing or using public transit instead. As a result, local governments are creating disincentives for persons to have cars and instead, adapt to the "New Mobility" environment.

d. Updating Zoning Code

<u>Current zoning codes in most American cities are Traditional (or Euclidean), which encourages sprawl because it splits land up into segregated residential, commercial, and industrial zones. It is based on the notion that each space should have one, singular use, inspired by the public health dilemma of locating undesirable uses next to residential areas in the mid-century. Essentially, traditional zoning exists around outdated economic and land practice and makes illegal the dense, walkable mixed-use places people are now flocking to in cities. Suburban sprawl might not be the vision of traditional zoning, but it effectuates the land consumptive practice of providing all of the facility, service, and employment needs of a community, but doing so in areas separate from where the community resides.</u> In addition, setbacks, floor-to-area-ratio, density and other codes have become overly complicated, often with layers of fixes and overlays, rendering it nearly impossible to determine what actually can and cannot be built. With an outdated zoning code, the process is more difficult, costly and time consuming than it needs to be and it is holding back economic growth and increasing housing costs across America.

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The solution to these issues may be the creation of a new hybrid zoning code that blends together elements from Euclidean zoning, Form-based zoning and Incentive zoning. Form-based zoning or codes focus on how development relates to the context of the surrounding community, especially the relationships between buildings and the street, pedestrians and vehicles, and public and private spaces. The code addresses these concerns by regulating site design, circulation, and overall building form. It encourages mixed use, while also preserving the assets and character of a community. It divides a community into different districts based on the character and intensity of land development, as well as the desired form. They are based upon a shared vision of the kind of place the community desires, not on separating a community into different use areas.

Incentive zoning refers to municipal and county planning ordinances that encourage certain aspects such as open space or public amenities in exchange for allowances to density or other bulk regulations. A hybrid-zoning approach to development can benefit both individual landowners and the entire community.

Conventional Zoning		**Form-Based Zoning/Code**
Separates use related to daily activity, often encouraging excessive land consumption and automobile usage.	**Land Use**	Encourages a mix of land uses, often reducing the need to travel extensively as part of one's daily routine
Frequently promotes relatively limited housing choices	**Housing**	Promotes a mix of housing types
Ends up focusing on what uses are not allowed, rather than encouraging what the community actually wants	**Community Desire**	Is "proactive," focusing on what the community wants and not what it dislikes
Applies standards and design requirements in a "one-size-fits-all" manner that then encourages more and more tailored zoning categories	**Appropriate**	Tailors the requirements to fit specific places or neighborhoods by reflecting local architecture and overall character
Uses regulations such as floor area ratio, that shape the form of development in ways that are hard to visualize, sacrificing architectural detailing and sensitivity to existing context	**Aesthetic**	Addresses the design of the public realm and the importance that streetscape design and individual building character have in defining public spaces and a special "sense of place"
Evolves into increasingly complex zoning ordinances to keep up with every former and current use of a property including nonconforming	**Complexity**	Provides information that is easier to use because it is shorter, more concise, and emphasizes illustrations over text

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Considerable expense and time administering the development review process, negotiating special use projects, and adjudicating land use disputes	**Cost**	Up-front investment in crafting a shared public vision, illustrating it graphically, and writing it into law

How are healthy cities adapting to these trends?

- Establishing by-right development (streamlined approvals process for projects that comply with the zoning standards receive their approval without a discretionary review process)
- Taxing vacant land or donating it to non-profit developers
- Eliminating off-street parking requirements
- Allowing accessory dwelling units
- Enacting high-density and multifamily zoning
- Establishing density bonuses
- Incorporating inclusionary zoning
- Rezoning, changing codes, and altering utility and infrastructure provisions to accommodate growth
- Establishing development tax or value capture incentives (allowing public agencies to tax the direct beneficiaries of their investments, e.g. property tax, infrastructure impact fees, air rights, joint-venture development)
- Using property tax abatements
- Incentivizing developers to include affordable and/or workforce housing as a portion of new mixed unit projects (lowering or waiving impact fees and other costs for projects that include affordable and/or workforce housing)
- Streamlining or shortening permitting processes and timelines

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APPENDIX C: MOBILITY ANALYSIS

In order to establish a clearer basis for City planning decisions, and for coordination with the County, the consultant team and City staff undertook an in depth mobility analysis. The results of these tasks are reported in this appendix.

Section 1: Refined Baltimore Metropolitan Council (BMC) Regional Model. The BMC is the Metropolitan Planning Organization for the Baltimore region. They receive federal funding and perform high-level traffic modeling and planning for all of the greater Baltimore Area, including Anne Arundel County and Annapolis. A new City traffic planning tool was developed in collaboration with the BMC that can model current and future travel demand. This is a refined, more detailed, version of the BMC's current regional model. It is referred to in the study as the "refined BMC model".

Section 2: City Demographic Database. This new database was prepared by City staff for use in the refined BMC model. It reports past, existing, and projected future land use and demographic data and reflects current policies, regulations, and pipeline development projects. This data provides the Baseline Scenario conditions for the future in this study.

Section 3: Existing Traffic Conditions Analysis. Traffic counts were performed at nineteen intersections in the study area in 2017, during typical AM and PM peak periods. Two pre-existing traffic operations analysis models, developed by the City and County using Synchro/SimTraffic software, were updated with these counts. These models were run five times each for both the AM and PM peak hours to analyze 2017 conditions along the Forest Drive corridor and within Eastport to identify traffic operations hot spots and intersections with queuing issues. Screenshots from these models, showing the areas with issues, are included.

Using the existing traffic volume data and observations of existing traffic operations, estimates for the percentage of utilized capacity along the network's road segments were quantified. "Capacity Utilization" was derived by comparing traffic volumes, for each direction within each segment, against the field-observed per-lane capacity of the corridor. The per lane capacity was obtained from field observations in which segments that are currently operating at full capacity were identified (as evidenced by constant signal cycle failures and unmet demand). The volume-to-capacity ratio (v/c) is shown as a percentage and mapped to show conditions in the typical AM and PM peak periods. Road segments that are currently operating at or near capacity have been identified.

Section 4: Future Baseline Traffic Evaluation. A Baseline Scenario trial was run on the refined BMC model using the City's demographic database projections through 2030. This trial assessed the sector's future composition, based on existing City and County policies and City zoning. The model estimates the new travel demand generated within the road network segments by analyzing demographic growth projections to estimate the change in traffic volumes and the future utilization of capacity during typical AM and PM peak periods. Road segments that are expected to operate at or near capacity were again identified. No changes to roads or current choices for modes of travel were assumed in the trial so that the impacts of current land use/demographic trends are considered in isolation.

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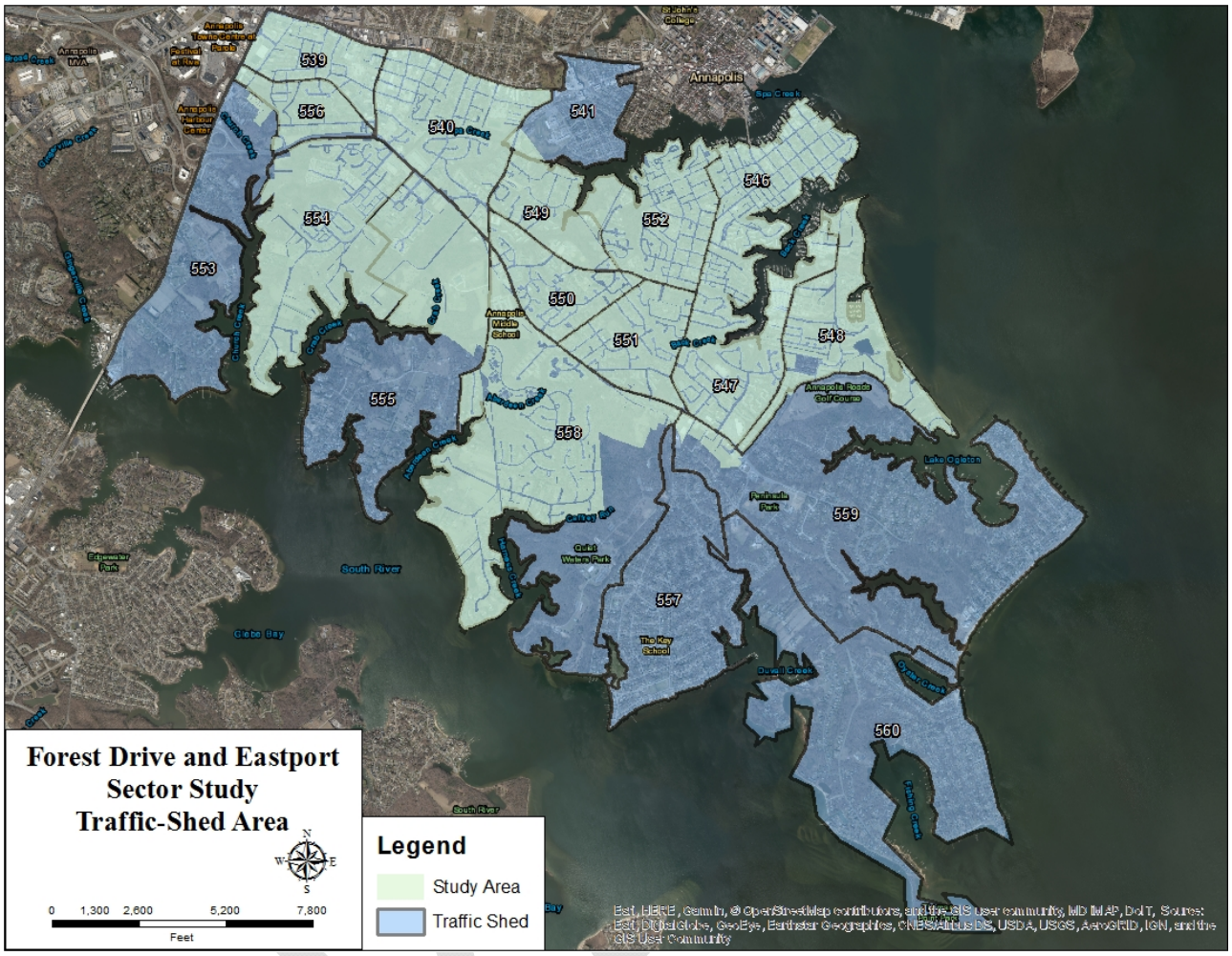
Section 5: Possible Remedies to Existing and Future Baseline Conditions. A list of possible remedies to current hot spot and capacity issues was developed. It includes potential land use changes, mode changes, and road improvements. The possible road improvements discussed for the west end of the Forest Drive corridor were evaluated using the existing conditions Synchro/SimTraffic models, to provide a planning-level assessment of their potential to alleviate system-wide congestion. Land use scenarios were also developed to test their potential to help redistribute traffic volumes along the Forest Drive corridor and throughout Eastport during the AM and PM peak hours. Other remedies were further researched, as follows:

Land use changes - Mid and High Scenarios. Two demographic scenarios were prepared to quantify the possible amounts, types, and locations of land use changes in the sector based on this study's recommendations. The Mid scenario envisions a moderate rate of change consistent with the City's recent growth rates. The High scenario tests a faster rate of change. The High Scenario also tests a comparatively larger amount of change in Eastport.

- Changes in travel modes. A review of current mode choices was performed to identify possible changes to travel mode choices that might occur in this planning timeframe and could impact vehicular travel demand.
- Changes in technology. A review of technology trends was performed to identify possible changes that might occur in this planning timeframe and could impact vehicular travel demand.
- Commuter origins and destinations. A review of available data on commuter origins and destinations was done to identify opportunities for improved local and regional transit service that could impact vehicular travel demand.
- Preliminary Ultimate Complete Street Sections. A series of preliminary Ultimate Complete Street Sections were developed, for further discussion with the County. These identify ways to increase vehicular traffic capacity as well other modes within the current rights of way (ROW). They also provide the means to reserve capacity for added ROW where needed for future road improvements in the County corridor.

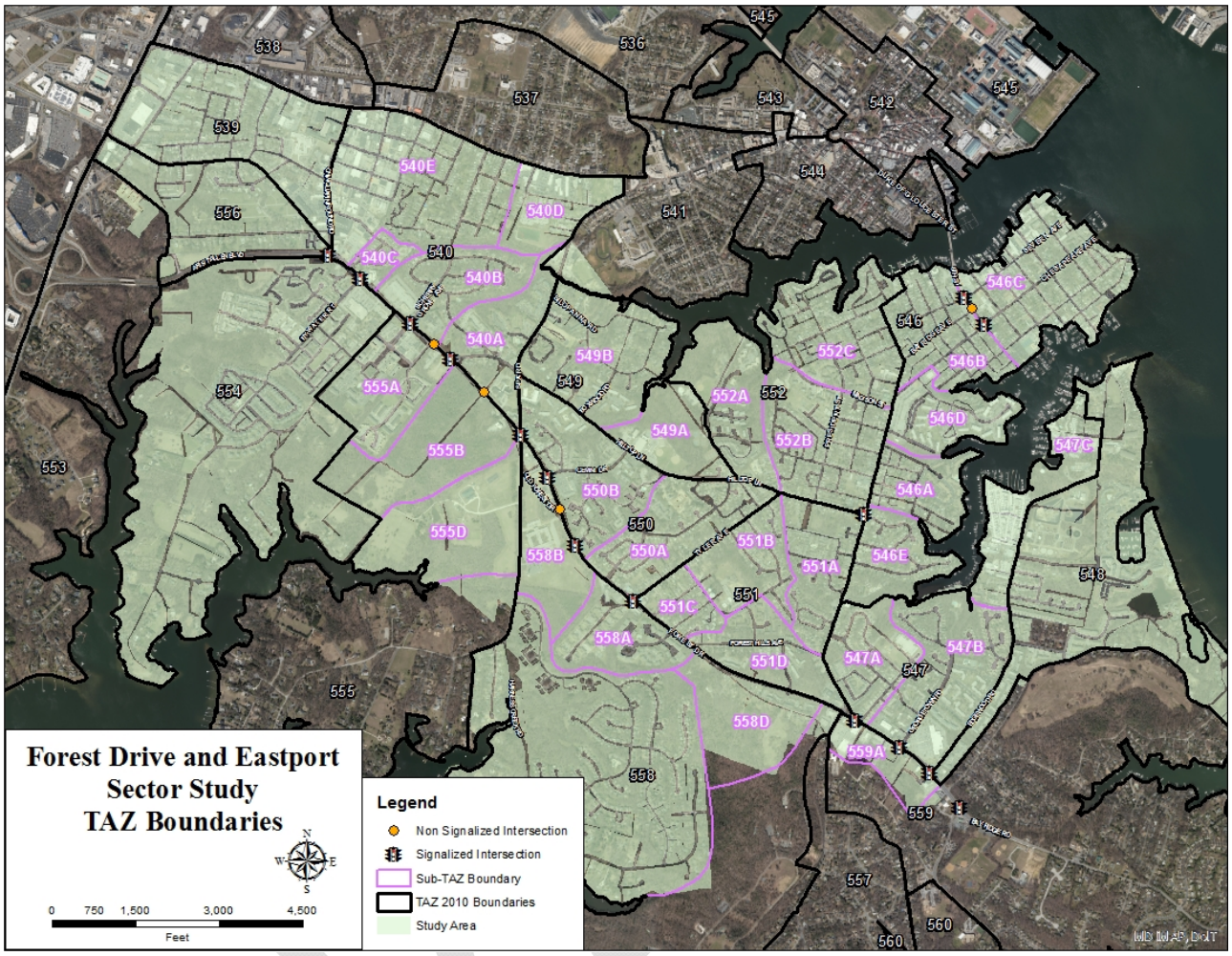
Section 1: Refined BMC Regional Model

The team worked with the Baltimore Metropolitan Council (BMC) staff to develop and run a refined Greater Annapolis version of BMC's regional travel demand model. BMC's regional model includes the major roadway network within the City of Baltimore and Baltimore, Harford, Howard, and Anne Arundel Counties. Geographic regions are divided into Traffic Analysis Zones (TAZs), each of which incorporates demographic/land use information such as number and size of households or number of office or retail employees operating within its boundaries. The model is based on Census data combined with updated data provided regularly by all participating jurisdictions. The data round available at the time of the Model Runs was Round 9. A map showing all local TAZs in on the following page.



The BMC traffic model presents a conservative view of travel demand in that it assumes drivers will make no significant changes in their travel mode choices in the future. For example, it assumes that the percentages of commuters who currently choose to work at home, or to walk, bike, or take transit to work will not increase in the future. BMC has also not yet attempted to quantify the impacts of coming technological changes on travel behavior. Potential technological changes include the introduction of compact mixed land uses and innovations such as ridesharing, self-driving vehicles, home deliveries, and others, all of which may affect the number of trips a home or workplace might be expected to generate.

To better understand local travel patterns within the sector area, the model was refined to include a more detailed street network and refined Traffic Analysis Zones (TAZs). The existing TAZ areas were divided into sub-TAZs, allowing more precise allocation of forecasted trips to the local network, and the local roadway network included in the model was refined to provide accurate connectivity to the refined TAZs. The following map shows the refined “baseline” network and TAZs, with TAZ split boundaries.



Section 2: City Demographic Database

Starting with the BMC's Round 9 demographic data and format, City staff worked with data from the U.S. Census, City development records, and other resources, to prepare a refined City database. The database is being maintained and updated regularly, as it will be used to provide new data to the County and BMC regarding City growth. It quantifies information by TAZ, such as population, average household size, median household income, workers, and jobs.

The data used for the baseline scenario in this study includes a refinement of the Round 9 numbers for the areas within the sector as defined on the previous map, as well as all the other TAZs in the region. These refinements are a part of the ongoing development of the new City database, which better capture recent and future growth in the City and sector. Further City database refinements done as a result of, and subsequent to this study will be included in future BMC data rounds and can be run for further analysis.

The City's baseline scenario future growth projections through 2030 are derived from a combination of ongoing changes in sector household sizes and construction and occupancy of current pipeline development. It considers anticipated build-out/occupancy of projects that are fully approved but not yet fully constructed as well as progress towards build out/occupancy on projects that are close to approval and that might reasonably be expected to be approved and begin occupancy during this time frame. It does not include

projections of occupancy for any new projects for which applications have not been submitted or for projects that are still in the early stages of review. As a result it projects a future in which the share of growth derived from new development tapers off over time.

For the purposes of land use comparisons with and without this study, 2020 projections were used; current growth trends were assumed to continue unchanged through 2020 in all scenarios.

In 2020, the database estimates that the sector, as shown above, will contain the following:

Population	33,718	85% of the City total
Households	13,434	84% of the City total
Resident workers	17,733	82% of the City total
Jobs	11,712	35% of the City total

The forecasted change in the sector between 2020 and 2030 is as follows:

added population	1163	0.38% annual growth rate
added households	203	0.17% annual growth rate
added resident workers	63	0.04% annual growth rate
added jobs	327	0.31% annual growth rate

Section 3: Existing Traffic Conditions Analysis

A review of the 2017 traffic conditions in the County corridor and the City street network was done in order to identify existing delays and areas where roads may be operating near or at their capacity to handle traffic. The team reviewed several other traffic studies that have looked at various sections of the sector since the 2009 Comprehensive Plan. Comments from the County, City staff and from stakeholders helped focus these investigations. Some of the key comments follow:

- Stakeholders reported strong directional commuter flows during the AM and PM peak hours, with delays at the western end of the Forest Drive corridor as commuters leave the City in the morning and return in the evening.
- Further down the Corridor, stakeholders reported frustration with delays while making left turns from the Forest Drive corridor onto City streets, as well as making left turns from City streets onto the corridor. Queuing capacity on certain lanes on the City street approaches to corridor intersections were frequently mentioned.
- In Eastport, drivers reported difficulty in leaving their driveways and making left turns in several areas.
- County stakeholders to the east of the City expressed concerns about maintaining a free-flowing corridor through the City with no reduction in travel times.
- All stakeholders expressed concerns about their ability to leave the peninsula during events or emergencies and to navigate the street network during incidents that block portions of the network.
- The City reported that a multi-agency review of procedures has been conducted and new policies have been put in place to better manage traffic during various types of incidents and emergencies.
- The County reported recent installation of a system of 12 interconnected adaptive traffic signals with cameras. The new signals are programmed to modify signal timings during each signal cycle to respond to changes in traffic flows. They work to respond

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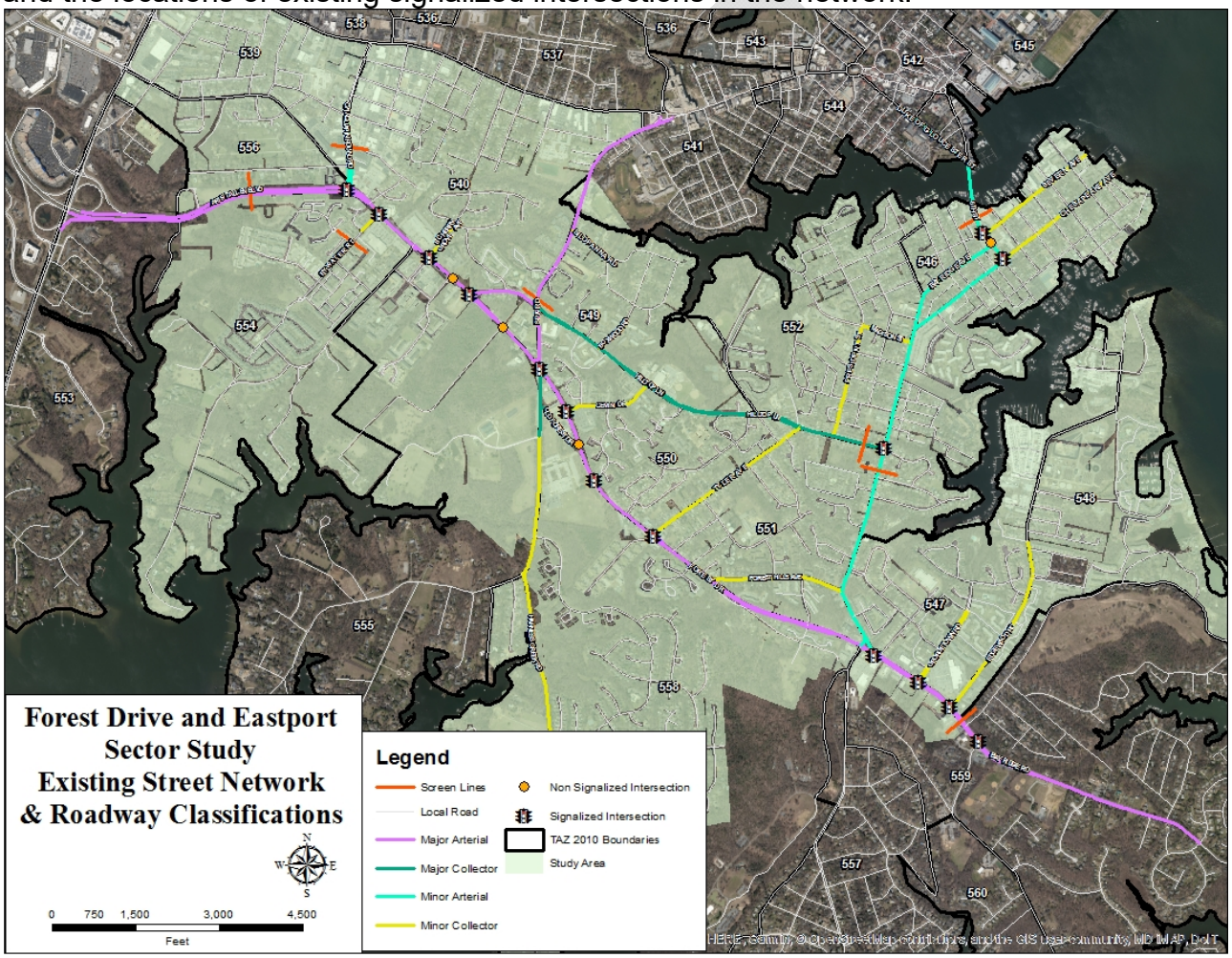
to queuing build-up on the side streets while giving preference to the mainline flow. They are also coordinated to time signal sequences along the corridor. The cameras capture trip data to help in ongoing monitoring and adjustments to signal management.

- County staff reported that this new system has made a 10 to 15% improvement in the corridor's traffic efficiency and that the system has added abilities not yet fully utilized. With these improvements, the corridor mainline moves at the posted speeds. Travel along the corridor through the City typically takes about 6 minutes in non-peak periods.
- Lastly, the County reported two upcoming improvements—one is a safety and capacity improvement for the Forest Drive/Hilltop Lane intersection and one is a developer-funded improvement required for the planned Lidl's grocery store.

The image below illustrates the sector's existing network of collector and arterial streets and the locations of existing signalized intersections in the network.



Traffic counts were collected in 2017 at nineteen intersections to identify current turning movement traffic volumes. Data collection was performed on "typical" weekdays, during a Tuesday, Wednesday, or Thursday when schools were in session. The collection dates for each of the nineteen intersections are listed below.

1. Aris T. Allen Boulevard / Forest Drive at Chinquapin Round Road * ..... Wed, May 10, 2017
2. Forest Drive at Bywater Road * ..... Wed, May 10, 2017
3. Forest Drive at S. Cherry Grove Avenue * ..... Tue, March 21, 2017
4. Forest Drive at Newtowne Drive * ..... Thurs, June 1, 2017

5. Forest Drive at Hilltop Lane * ..... Thurs, May 11, 2017
6. Forest Drive at Crystal Springs Farm Road ..... Thurs, June 1, 2017
7. Forest Drive at Spa Road * ..... Thurs, May 11, 2017
8. Forest Drive at Gemini Drive * ..... Tue, May 9, 2017
9. Forest Drive at Old Forest Drive ..... Thurs, June 8, 2017
10. Forest Drive at Youngs Farm Road * ..... Wed, May 10, 2017
11. Forest Drive at Tyler Avenue * ..... Thurs, May 11, 2017
12. Forest Drive / Bay Ridge Road at Bay Ridge Avenue / Hillsmere Drive * ..... Tue, May 16, 2017
13. Bay Ridge Road at Georgetown Road * ..... Wed, May 17, 2017
14. Bay Ridge Road at Edgewood Road * ..... Thurs, May 18, 2017
15. Bay Ridge Avenue at Tyler Avenue ..... Tue, Nov 14, 2017
16. Bay Ridge Avenue at Madison Street ..... Tue, Nov 14, 2017
17. Sixth Street at Bay Ridge Avenue ..... Tue, Nov 14, 2017
18. Sixth Street at Chesapeake Avenue ..... Tue, Nov 14, 2017
19. Sixth Street at Severn Avenue ..... Tue, Nov 14, 2017

**These intersections have adaptive signals*

Follow-up field visits were made to observe traffic operations and queues at these intersections during the normal weekday PM peak period.

Traffic operations analyses can be performed using multiple techniques. One method is a Critical Lane Volume (CLV) analysis, which evaluates the capacity utilization of an intersection based on the volumes for each movement and the lane configuration of each approach. Outputs of the CLV analysis are volume-to-capacity ratio (v/c) and level of service (LOS). A v/c close to zero is indicative of an intersection that has a lot of available capacity, while a v/c approaching 1.0 has a volume that is approaching the capacity of the intersection, and a v/c of greater than 1.0 indicates an intersection whose demand per hour exceeds the capacity. The assigned LOS corresponds to the calculated v/c and correlates to the control delay. LOS A, B, or C represent good operations with less control delay, while LOS D represents poor conditions, and LOS E and F representing near-failing and failing conditions respectively, with longer levels of delay. Intersections with a v/c of 1.0 or greater are at LOS F.

CLV analyses are easy to calculate and quick to perform and are therefore very useful for preliminary assessments and to help identify the types of improvements that may be recommended for an intersection that is experiencing congestion. However, CLV analyses do not take into account the effects of signal timings, queues, platooning traffic, the effects that delays at one intersection may have on another, or the potential effects of turn lanes with inadequate storage lengths.

For more detailed analysis of intersections and arterial corridors, models are developed using Synchro, which is a software application that incorporates traffic volumes and lane configurations, as does CLV analysis, but also considers the effects of signal timings. Outputs from Synchro include average delay per vehicle for each movement, each approach, or an intersection as a whole; the average delays are equated to LOS to simplify interpretation. While the Synchro analyses are more detailed than CLV analyses, they still do not take into account the effects of queues, platoons, turn lane lengths, or flow between intersections.

Full evaluation of traffic operations at an intersection or along an arterial corridor requires simulation. Models developed in Synchro may be “run” in SimTraffic, which produces a “movie” in which vehicles are introduced into a computerized roadway network and must

obey lane uses, intersection controls, posted speed limits, and any other rules of the road that apply to the real world, while traveling to their destination. Modeled vehicles experience congestion along a roadway segment due to queues caused by an intersection three signals ahead, or have to bypass traffic waiting to turn, which has spilled out into the through lanes, just like real vehicles. Model environments are calibrated to approximate realistic variable travel speeds, lane changing behaviors, etc., and allow modelers to watch the roadway network operate, and test improvement scenarios, to identify the source of congestion issues and evaluate potential solutions.

Outputs from SimTraffic include average delay per vehicle by movement, by approach, or for an overall intersection, and measured queue lengths by movement or by approach. Average delays are equated to LOS to simplify interpretation. Two pre-existing Synchro/SimTraffic models, previously prepared to look at the sector, were utilized to analyze the above list of intersections. One model was provided by Anne Arundel County and was developed for the Forest Drive Corridor; the other was developed for a previous City study of Eastport. The 2017 traffic count data from the studied intersections was used to update these models to represent the AM and PM peak hour traffic operations under "typical" conditions in 2017. The field observations, which include qualitative observations of queues and traffic flows, were used as a basis for refinements to the models, so traffic flows in the models would more closely represent field conditions. Each model was run five times to produce average outputs.

For signalized intersections from a system-wide perspective, metrics include LOS for the overall intersection and queue lengths for each movement and/or approach. Because traffic signals inherently generate delay for vehicles that approach during a red signal phase, and because vehicles along minor approaches may be delayed during a significant portion of a signal cycle, delays for individual approaches are not generally considered to be metrics upon which significant decisions will be based. From a system-wide perspective, delays along a minor approach that is guaranteed a green signal, although not ideal, are not intolerable, particularly when reducing those delays for the minor approach would result in reduced cycle time for mainline traffic, as opposed to worsened average delays for the intersection as a whole.

If it is determined that queues are disrupting traffic flow (such as turn queues that extend beyond their storage and block through lanes) or that queues extend into or beyond an adjacent intersection or major driveway resulting in gridlock or system-wide congestion, those queues should be addressed, whether they are occurring along a major or minor approach, or within a single turn lane. From a design perspective when planning intersection improvements, analysis of lane group delays can also be a useful metric as a means to review overall signal timing and phasing.

For intersections along arterials roads, such as Forest Drive, a signal cycle may include as few as two or as many as six signal phases, ranging from less than 60 seconds to over 180 seconds (3 minutes). Traffic planners and engineers must prioritize distribution of that time to provide optimum service to the largest vehicle flows. Therefore, priority at a signal is typically given to the mainline, and side streets and mainline left-turns that are used by comparatively fewer vehicles are often given less "green" signal time. With this approach, the greater delay experienced getting onto and off the mainline is compensated for by reduced delays at the other intersections along the corridor.

As an example, the County signals within the Forest Drive corridor are currently programmed for a 140-second cycle. Some of the smaller volume intersection movements experience delay times within a single cycle that exceeds 80 seconds of delay, which is defined as a LOS F. Therefore, focusing on overall intersection delays and the queues along the approaches, rather than the delays for each approach, provides a clearer, more accurate representation of conditions within the network. The traffic operations analyses were performed using Synchro/SimTraffic models, which identified several corridor segments and individual legs of intersections where delays are currently experienced.

The following Levels of Service tables report the Synchro/SimTraffic model findings for current conditions at the network's major intersections. They estimate both the delay experienced within the overall intersection and the delay experienced along each approach.

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Forest Drive Intersection Level of Service (SimTraffic)

Intersection / Approach	Existing Condition						Available Storage
	AM Peak Hour			PM Peak Hour			
	LOS	Delay	Queue	LOS	Delay	Queue	
Aris T. Allen Boulevard / Forest Drive at Chinquapin Round Road							
EB Aris T. Allen Boulevard	C	20.4 s/veh	280 ft	F	140.0 s/veh	2040 ft	3000 ft
WB Forest Drive	C	34.7 s/veh	720 ft	C	21.9 s/veh	505 ft	605 ft
SB Chinquapin Round Road	D	45.5 s/veh	415 ft	F	144.3 s/veh	770 ft	355 ft
Overall Intersection	C	30.7 s/veh	--	F	88.1 s/veh	--	--
Forest Drive at Bywater Road							
EB Forest Drive	B	13.3 s/veh	320 ft	E	61.5 s/veh	695 ft	570 ft
WB Forest Drive	D	38.8 s/veh	785 ft	B	18.4 s/veh	360 ft	770 ft
NB Bywater Road	D	45.0 s/veh	275 ft	D	49.5 s/veh	230 ft	260 ft
SB Bywater Road	D	39.5 s/veh	20 ft	D	47.4 s/veh	20 ft	100 ft
Overall Intersection	C	29.4 s/veh	--	D	42.0 s/veh	--	--
Forest Drive at Cherry Grove Road							
EB Forest Drive	B	16.1 s/veh	320 ft	F	100.4 s/veh	1230 ft	1100 ft
WB Forest Drive	B	18.8 s/veh	510 ft	B	16.6 s/veh	450 ft	860 ft
NB Cherry Grove Road	D	46.5 s/veh	210 ft	D	47.9 s/veh	185 ft	240 ft
SB Cherry Grove Road	D	46.0 s/veh	100 ft	D	40.0 s/veh	75 ft	300 ft
Overall Intersection	B	19.6 s/veh	--	E	59.6 s/veh	--	--
Forest Drive at Newtowne Drive*							
EB Forest Drive	A	2.7 s/veh	5 ft	B	14.6 s/veh	430 ft	440 ft
WB Forest Drive	A	3.6 s/veh	35 ft	A	2.6 s/veh	15 ft	385 ft
NB Newtowne Drive	C	19.2 s/veh	70 ft	F	800.0 s/veh	675 ft	240 ft
Forest Drive at Hilltop Lane							
EB Forest Drive	B	16.5 s/veh	330 ft	D	43.1 s/veh	590 ft	355 ft
WB Forest Drive	B	13.5 s/veh	330 ft	B	18.9 s/veh	285 ft	1640 ft
SB Hilltop Lane	F	371.6 s/veh	1150 ft	D	41.5 s/veh	400 ft	545 ft
Overall Intersection	E	74.4 s/veh	--	D	35.7 s/veh	--	--
Forest Drive at Spa Road							
EB Forest Drive	B	17.9 s/veh	180 ft	F	129.5 s/veh	1720 ft	1680 ft
WB Forest Drive	E	79.0 s/veh	840 ft	C	21.5 s/veh	335 ft	815 ft
NB Spa Road	F	204.2 s/veh	980 ft	E	64.0 s/veh	265 ft	610 ft
SB Spa Road	E	60.9 s/veh	240 ft	E	60.7 s/veh	300 ft	325 ft
Overall Intersection	E	70.9 s/veh	--	E	76.2 s/veh	--	--
Forest Drive at Gemini Drive							
EB Forest Drive	A	6.5 s/veh	140 ft	A	8.5 s/veh	165 ft	780 ft
WB Forest Drive	E	78.4 s/veh	690 ft	A	6.9 s/veh	255 ft	570 ft
NB Driveway	A	0.0 s/veh	0 ft	A	0.0 s/veh	5 ft	60 ft
SB Gemini Drive	E	58.0 s/veh	220 ft	D	37.1 s/veh	130 ft	200 ft
Overall Intersection	D	47.2 s/veh	--	A	9.2 s/veh	--	--
Forest Drive at Old Forest Drive*							
EB Forest Drive	A	1.3 s/veh	5 ft	A	1.5 s/veh	5 ft	560 ft
WB Forest Drive	F	65.7 s/veh	640 ft	A	3.2 s/veh	85 ft	615 ft
NB Old Forest Drive	F	131.6 s/veh	130 ft	C	24.8 s/veh	80 ft	270 ft

Forest Drive Intersection Level of Service (SimTraffic), cont.

Intersection / Approach	Existing Condition						Available Storage
	AM Peak Hour			PM Peak Hour			
	LOS	Delay	Queue	LOS	Delay	Queue	
Forest Drive at Youngs Farm Road / Annapolis Middle School							
EB Forest Drive	A	3.1 s/veh	90 ft	A	3.0 s/veh	130 ft	640 ft
WB Forest Drive	F	147.8 s/veh	1440 ft	A	4.6 s/veh	175 ft	750 ft
NB Driveway	D	53.6 s/veh	35 ft	D	37.8 s/veh	15 ft	200 ft
SB Youngs Farm Road	D	50.5 s/veh	65 ft	D	41.7 s/veh	25 ft	135 ft
Overall Intersection	F	84.3 s/veh	--	A	3.9 s/veh	--	--
Forest Drive at Tyler Avenue							
EB Forest Drive	A	6.8 s/veh	120 ft	A	5.7 s/veh	150 ft	540 ft
WB Forest Drive	F	173.7 s/veh	1805 ft	A	5.4 s/veh	105 ft	370 ft
NB Tyler Avenue	E	57.2 s/veh	105 ft	E	60.1 s/veh	110 ft	470 ft
SB Tyler Avenue	D	49.9 s/veh	190 ft	C	27.5 s/veh	95 ft	50 ft
Overall Intersection	F	95.0 s/veh	--	A	7.6 s/veh	--	--
Forest Drive / Bay Ridge Avenue at Hillsmere Drive							
EB Forest Drive	B	18.5 s/veh	245 ft	C	25.5 s/veh	410 ft	960 ft
WB Bay Ridge Avenue	C	23.3 s/veh	300 ft	C	23.8 s/veh	290 ft	280 ft
NB Hillsmere Drive	D	50.3 s/veh	155 ft	E	62.2 s/veh	395 ft	270 ft
SB Bay Ridge Avenue	D	51.7 s/veh	180 ft	D	51.7 s/veh	160 ft	510 ft
Overall Intersection	C	29.5 s/veh	--	D	35.2 s/veh	--	--
Bay Ridge Avenue at Georgetown Boulevard							
EB Bay Ridge Avenue	A	5.0 s/veh	135 ft	A	5.6 s/veh	215 ft	765 ft
WB Bay Ridge Avenue	A	5.5 s/veh	185 ft	A	5.1 s/veh	135 ft	650 ft
SB Georgetown Boulevard	C	28.2 s/veh	195 ft	C	20.2 s/veh	155 ft	215 ft
Overall Intersection	A	7.4 s/veh	--	A	6.7 s/veh	--	--
Bay Ridge Avenue at Edgewood Road							
EB Bay Ridge Avenue	A	8.5 s/veh	235 ft	B	11.2 s/veh	245 ft	640 ft
WB Bay Ridge Avenue	B	10.1 s/veh	250 ft	B	19.6 s/veh	270 ft	370 ft
NB Driveway	D	45.4 s/veh	35 ft	D	52.6 s/veh	70 ft	200 ft
SB Edgewood Road	C	21.4 s/veh	200 ft	C	25.4 s/veh	190 ft	190 ft
Overall Intersection	B	11.7 s/veh	--	B	16.9 s/veh	--	--

Note: The above results are based on planning-level analyses. More detailed analysis and study are required to fully evaluate the existing conditions traffic operations.

LOS:
Signalized Intersection

LOS	Delay
A	≤ 10 s/veh
B	≤ 20 s/veh
C	≤ 35 s/veh
D	≤ 55 s/veh
E	≤ 80 s/veh
F	> 80 s/veh

LOS:
Unsignalized Intersection*

LOS	Delay
A	≤ 10 s/veh
B	≤ 15 s/veh
C	≤ 25 s/veh
D	≤ 35 s/veh
E	≤ 50 s/veh
F	> 50 s/veh

Eastport Intersection Level of Service (SimTraffic)

Intersection / Approach	Existing Condition						Available Storage
	AM Peak Hour			PM Peak Hour			
	LOS	Delay	Queue	LOS	Delay	Queue	
6th Street at Severn Avenue							
EB 6th Street	B	12.6 s/veh	200 ft	B	12.7 s/veh	310 ft	445 ft
WB 6th Street	B	17.1 s/veh	215 ft	B	15.3 s/veh	190 ft	155 ft
NB Severn Avenue	C	25.5 s/veh	120 ft	C	24.8 s/veh	75 ft	365 ft
SB Severn Avenue	B	18.1 s/veh	100 ft	B	19.4 s/veh	180 ft	305 ft
Overall Intersection	B	16.3 s/veh	--	B	15.1 s/veh	--	--
6th Street at Bay Ridge Avenue*							
EB 6th Street	A	1.4 s/veh	30 ft	A	1.9 s/veh	20 ft	180 ft
WB 6th Street	A	4.2 s/veh	180 ft	A	1.6 s/veh	70 ft	300 ft
6th Street at Chesapeake Avenue							
EB 6th Street	A	7.6 s/veh	90 ft	A	5.8 s/veh	85 ft	275 ft
NB Chesapeake Avenue	A	8.3 s/veh	145 ft	A	5.4 s/veh	95 ft	340 ft
SB Chesapeake Avenue	B	15.9 s/veh	105 ft	B	13.1 s/veh	120 ft	320 ft
Overall Intersection	A	9.2 s/veh	--	A	7.0 s/veh	--	--
Bay Ridge Avenue at Madison Street							
EB Madison Street	B	16.0 s/veh	65 ft	B	18.0 s/veh	75 ft	410 ft
WB Driveway	B	14.3 s/veh	70 ft	B	17.2 s/veh	120 ft	100 ft
NB Bay Ridge Avenue	B	10.8 s/veh	235 ft	B	10.5 s/veh	230 ft	360 ft
SB Bay Ridge Avenue	A	7.5 s/veh	185 ft	B	10.2 s/veh	210 ft	360 ft
Overall Intersection	B	10.0 s/veh	--	B	11.4 s/veh	--	--
Bay Ridge Avenue at Tyler Avenue							
EB Tyler Avenue	C	26.1 s/veh	180 ft	C	31.5 s/veh	340 ft	900 ft
WB Tyler Avenue	D	45.2 s/veh	35 ft	D	47.5 s/veh	40 ft	300 ft
NB Bay Ridge Avenue	B	11.4 s/veh	210 ft	B	13.6 s/veh	200 ft	320 ft
SB Bay Ridge Avenue	B	10.8 s/veh	175 ft	B	17.8 s/veh	385 ft	360 ft
Overall Intersection	B	14.7 s/veh	--	C	20.6 s/veh	--	--

Note: The above results are based on planning-level analyses. More detailed analysis and study are required to fully evaluate the existing conditions traffic operations.

LOS:
Signalized Intersection

LOS	Delay
A	≤ 10 s/veh
B	≤ 20 s/veh
C	≤ 35 s/veh
D	≤ 55 s/veh
E	≤ 80 s/veh
F	> 80 s/veh

LOS:
Unsignalized Intersection*

LOS	Delay
A	≤ 10 s/veh
B	≤ 15 s/veh
C	≤ 25 s/veh
D	≤ 35 s/veh
E	≤ 50 s/veh
F	> 50 s/veh

Based on these tables, the list below highlights the most congested corridor segments and intersection approaches during each peak period:

- AM Peak Hour:
    - Southbound (SB) Hilltop Lane approaching Forest Drive

    - Westbound (WB) Forest Drive approaching Spa Road—this congestion along Forest Drive results in operational issues at several additional locations, as follows:
        - SB Gemini Drive approaching Forest Drive
        - Northbound (NB) Old Forest Drive approaching Forest Drive
        - NB Tyler Avenue approaching Forest Drive

- PM Peak Hour:
    - Eastbound (EB) Aris T. Allen Boulevard approaching Chinquapin Round Road
    - SB Chinquapin Round Road approaching Forest Drive
    - EB Forest Drive approaching Bywater Road, S. Cherry Grove Road, Hilltop Lane, and Spa Road—this congestion along Forest Drive results in operational issues at multiple additional locations, as follows:
        - NB Newtowne Drive approaching Forest Drive
        - NB and SB Spa Road approaching Forest Drive
    - NB Tyler Avenue approaching Forest Drive
    - NB Hillsmere Drive approaching Forest Drive

The tables also provide an assessment of current queuing conditions. Queues are identified as a potential issue when their length approaches or extends beyond an adjacent intersection or major driveway, where the presence of the queue may disrupt traffic operations resulting in conflicts and/or gridlock. Extensive queues along Forest Drive demonstrate the level of congestion through multiple roadway segments; along WB Forest Drive, from east of Tyler Avenue to Spa Road, during the AM peak hour, and along EB Forest Drive, from west of Chinquapin Round Road to Spa Road, during the PM peak hour. Excessive queues along the approaches to Forest Drive are a byproduct of congestion along Forest Drive, and in some cases a result of adjacent intersections or driveways being located too close to Forest Drive along the approach.

The following SimTraffic screenshot images show the areas in the corridor currently experiencing delays and vehicular queuing during peak commuter periods. The vehicles are color-coded to represent intended movements through the intersection or modeled network: white = through; yellow = right-turn; teal = left-turn, and green = leaving network.

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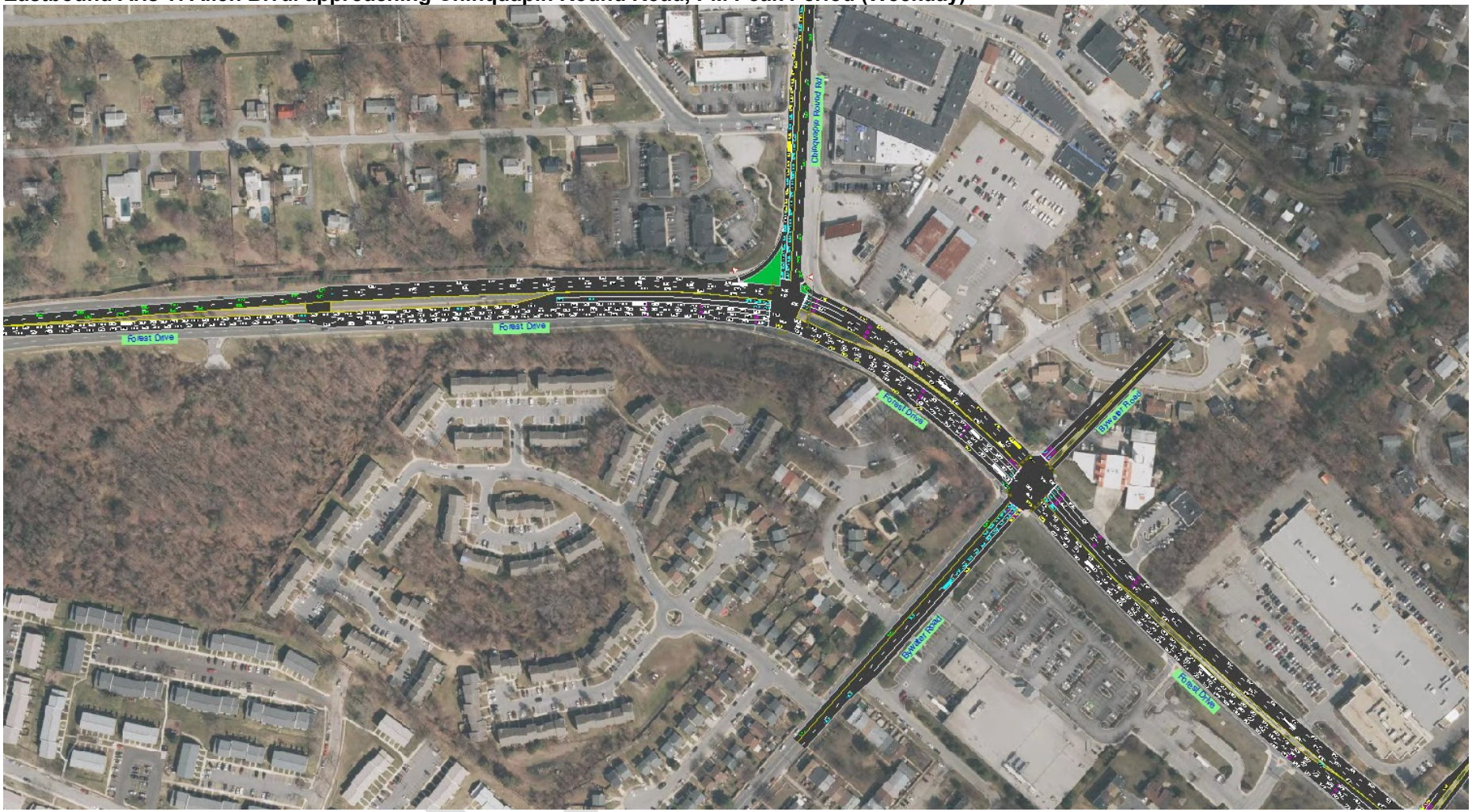
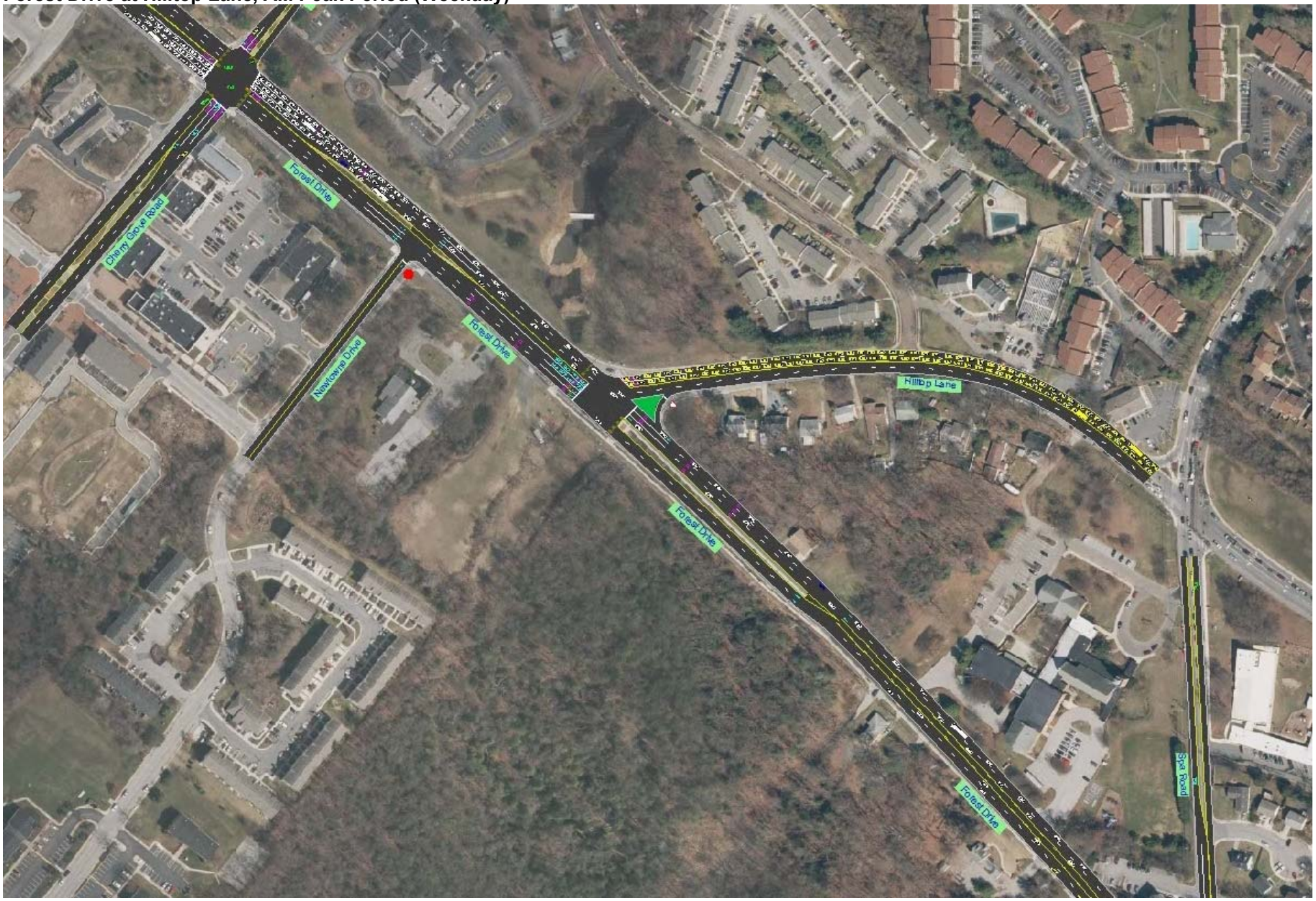
Westbound Forest Drive approaching Chinquapin Round Road, AM Peak Period (Weekday)

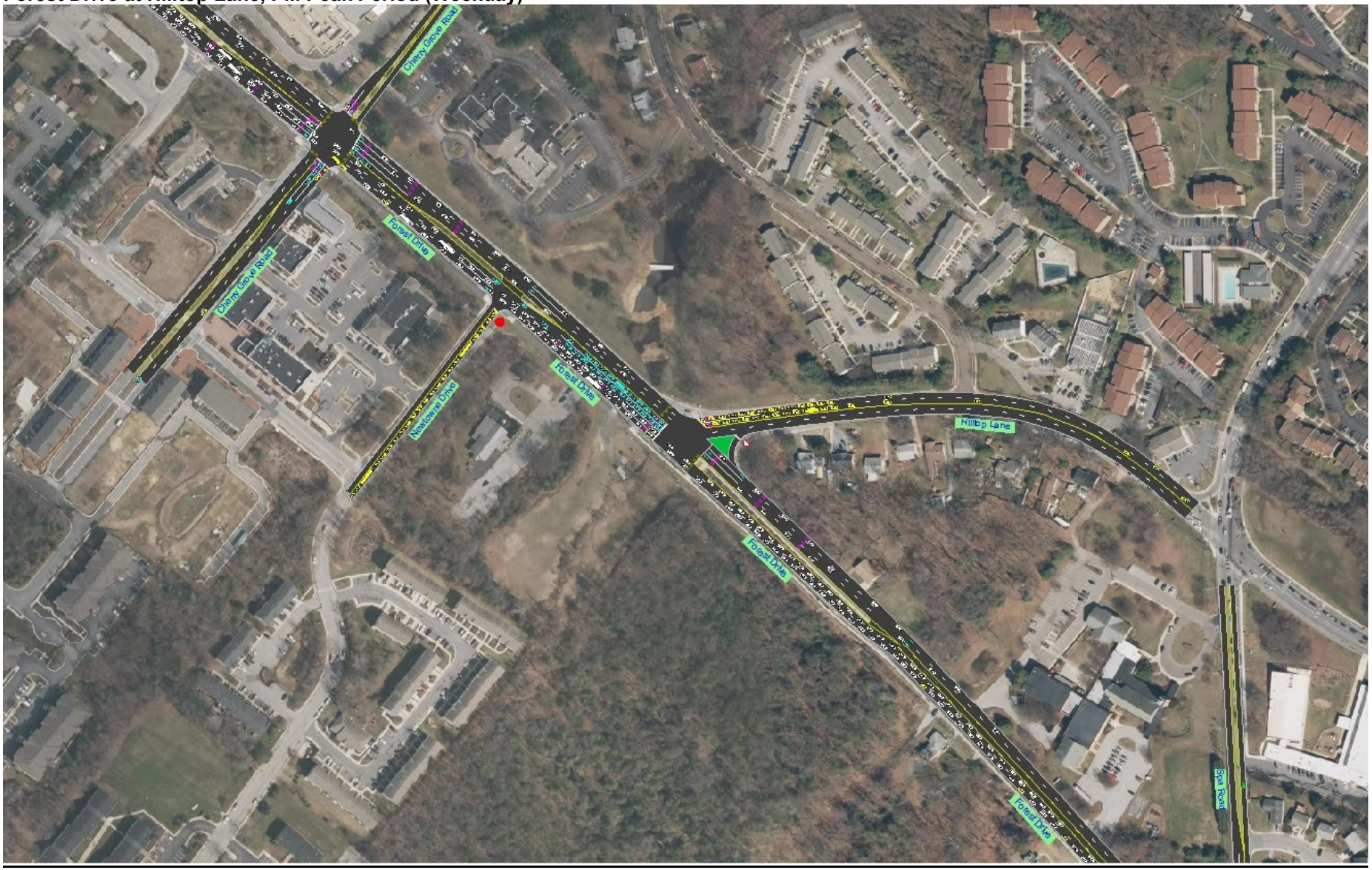
Eastbound Aris T. Allen Blvd. approaching Chinquapin Round Road, PM Peak Period (Weekday)



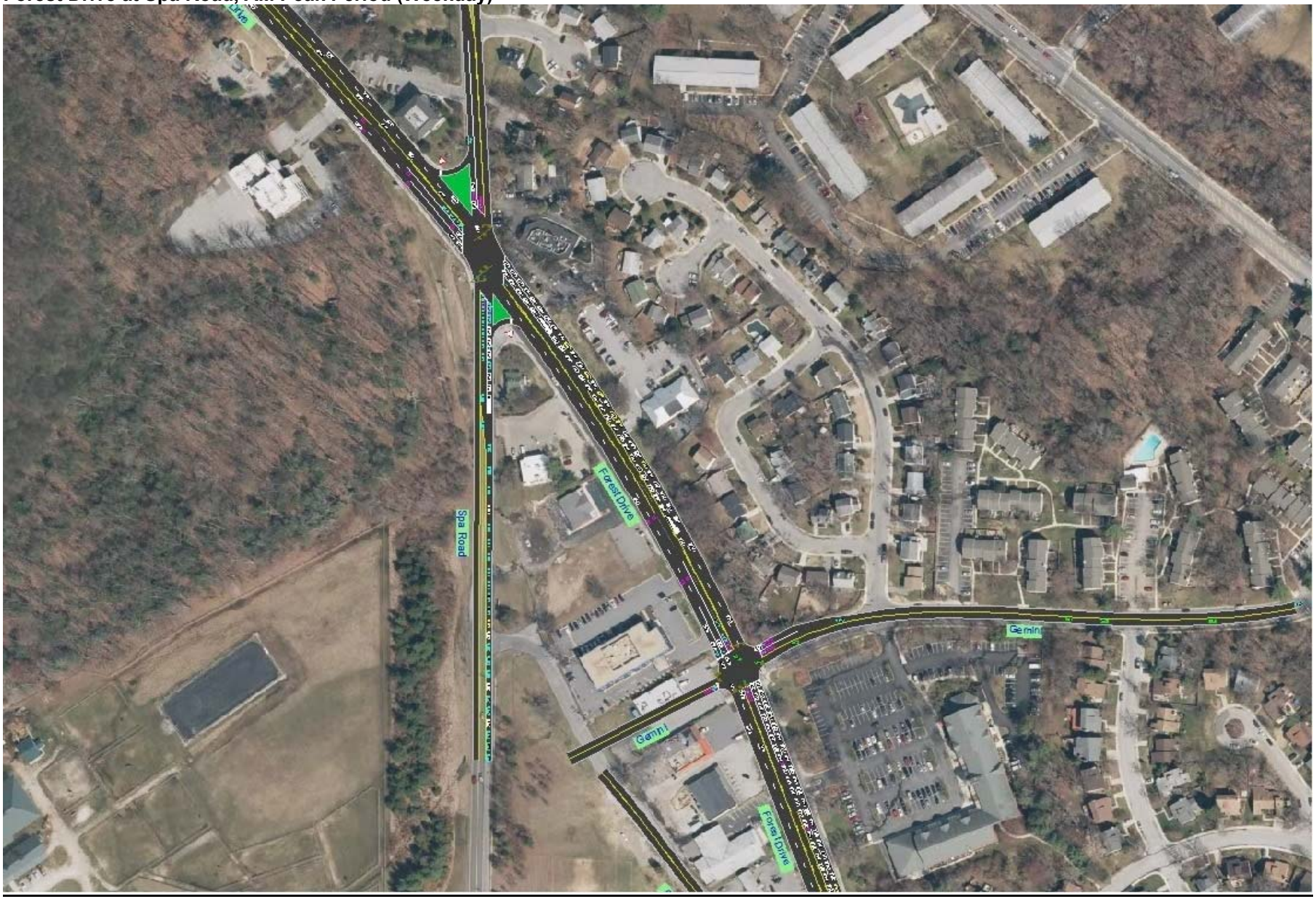
Forest Drive at Hilltop Lane, AM Peak Period (Weekday)



Forest Drive at Hilltop Lane, PM Peak Period (Weekday)



Forest Drive at Spa Road, AM Peak Period (Weekday)



Under existing conditions, network traffic volumes are greatest in the west end of the corridor as large numbers of commuters depart the peninsula to go to work in the AM peak and then return in the PM peak. The directional distribution is approximately 38% EB and 62% WB during the AM peak period, and approximately 57% EB and 43% WB during the PM peak period, indicating a notable directional imbalance during the AM and PM peak periods. A similar trend occurs along Bay Ridge Avenue, with traffic flowing NB in the AM peak period and SB in the PM peak period. The smaller difference in the directional split during the PM peak period is due to significant numbers of non-commuter trips, presumably for shopping and entertainment that are also leaving the peninsula, and the City, during the evening peak hour. The through traffic flows in the west end PM period also includes many local trips to the shopping areas on the south side of the corridor between Bywater Road and S. Cherry Grove Road that add delays at mid-block turns along this primary arterial.

Traffic volumes are generally least along the eastern half of the Forest Drive corridor. In the AM peak, traffic volumes increase along the primary City collector routes as they approach Forest Drive and along Forest Drive as the corridor approaches Chinquapin Round Road. In the PM peak, as commuters are returning home, the reverse occurs; traffic volumes are highest along Forest Drive at Chinquapin Round Road then gradually filter out through the peninsula's roadway network.

Traffic volumes through Eastport are oriented more towards travel across the Sixth Street Bridge into downtown Annapolis, with AM experiencing slightly more traffic NB into the downtown area and PM travel experiencing slightly more traffic SB into Eastport (46/54 in the AM, and 52/48 in the PM).

Current Road Capacity Analysis

The method used to qualitatively evaluate utilized road capacity along Forest Drive, Bay Ridge Road, Bay Ridge Avenue, and Sixth Street was performed using 2017 traffic count data, BMC model results for 2017, and a series of field visits performed on typical weekdays to observe utilization of available capacity at the signalized intersections in the study area. Utilization of available capacity is defined by the amount of "downtime" experienced during each signal cycle (time during which no vehicles are proceeding through the intersection along the highest volume approach during each signal phase), and the presence of unmet demand along each approach (waiting vehicles that are unable to enter the intersection during a green signal phase for that movement).

Findings

This evaluation found that portions of Forest Drive, at the west end of the corridor, are currently operating at or near capacity, primarily between Chinquapin Round Road and Bywater Road. No roadway segments in Eastport were determined to be operating at or near capacity. The capacity issues identified at the west end appear to dictate the overall capacity of the Forest Drive corridor during peak periods. This is explained further in the following paragraphs.

Traffic entering and exiting the peninsula along Forest Drive does so via Chinquapin Round Road and Aris T. Allen Boulevard. As a result, the section of Forest Drive between Chinquapin Round Road and Bywater Road has become the bottleneck that regulates traffic flow both into and out of the peninsula. Eastbound, in the PM peak period, high

volumes of traffic queue along both SB Chinquapin Round Road and EB Aris T. Allen Boulevard, with the majority of this traffic destined for EB Forest Drive. The inflow from these two approaches is metered, or restricted, by the traffic signal at Bywater Road; while the traffic signal for EB Forest Drive is green at Bywater Road, SB Chinquapin Round Road and EB Aris T. Allen Boulevard provide a constant flow of traffic into the peninsula.

However, every time the signal for EB Forest Drive turns red to allow traffic to depart Bywater Road, traffic flow along SB Chinquapin Round Road and EB Aris T. Allen Boulevard stops. The constant demand/flow of traffic onto EB Forest Drive, east of Chinquapin Round Road, shows that this section of the network, in the peak direction during the PM peak period, is operating at 100% capacity, meaning that there is significant unmet demand along EB Forest Drive between these two intersections, and no time in which vehicles along either SB Chinquapin Round Road or EB Aris T. Allen Boulevard are not waiting to enter this segment.

During the AM peak period, a similar condition can be observed along WB Forest Drive, as traffic flows from NB Bywater Road compete with traffic flows along WB Forest Drive to access NB Chinquapin Round Road and WB Aris T. Allen Boulevard. Again, this constant demand/flow of traffic onto WB Forest Drive shows that WB Forest Drive, between Bywater Road and Chinquapin Round Road, in the peak direction during the AM peak period, is operating at 100% capacity.

The maximum available capacity for each roadway segment in the Forest Drive corridor is therefore defined by the AM and PM peak period volumes along Forest Drive between Chinquapin Round Road and Bywater Road, with adjustments made for the number of lanes along other segments of the corridor.

Similar capacity estimates were developed for the roadway network in Eastport. Observations of utilization by the peak directions of traffic at the signalized intersections were used to determine the ultimate capacity of these roadways.

An evaluation of utilized capacity along Forest Drive, Bay Ridge Road, Bay Ridge Avenue, and Sixth Street was performed based upon these observations. The maps on the following pages show the existing AM and PM Peak hour link capacity utilization of the road network, during a typical weekday in 2017, based on the traffic counts and model results.

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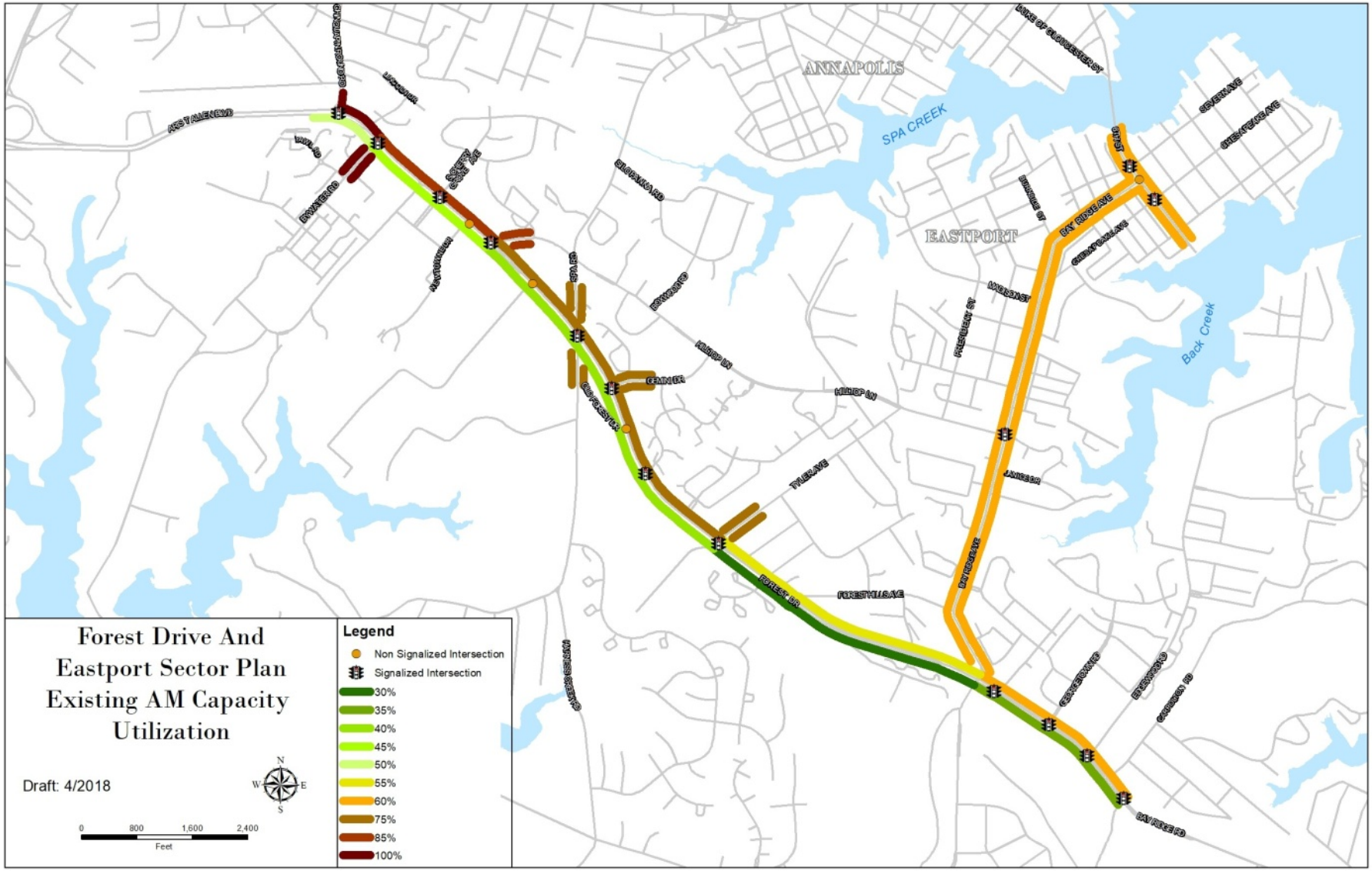
Forest Drive And
Eastport Sector Plan
Existing AM Capacity
Utilization
Draft: 4/2018
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800
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Feet
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Legend
Non Signalized Intersection
Signalized Intersection
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35%
40%
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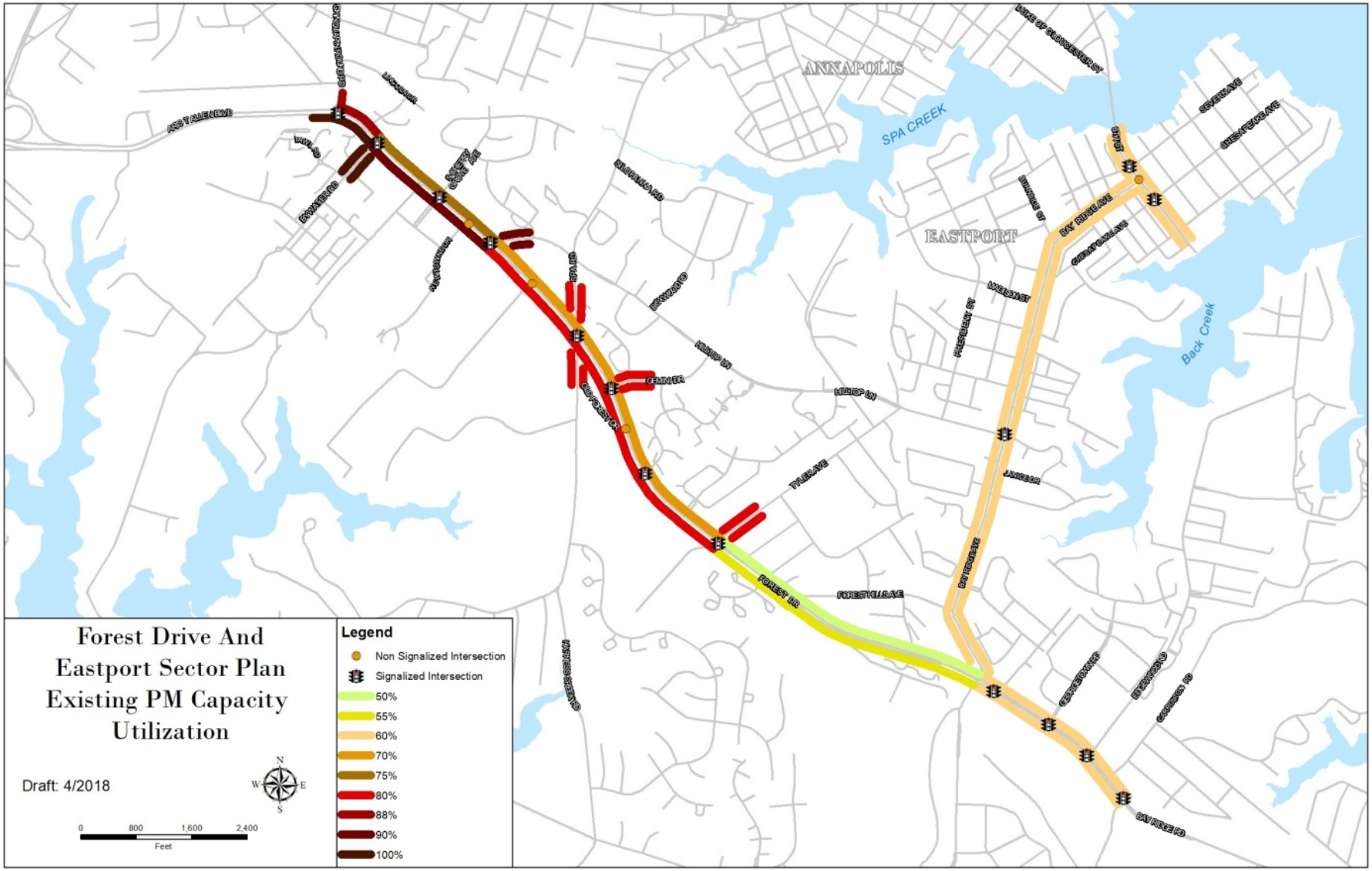
60%
75%
85%
100%
ANNAPOLIS
EASTPORT
SPA CREEK
Back Creek
AIS TALE BLVD
BOWMAN RD
SPA RD
GEMINI DR
HILLTOP LN
TYLER AVE
FOREST DR
FOREST HILL AVE
BAY RIDGE AVE
JAMES DR
CHESTER AVE
BAY FREE RD


Forest Drive And
Eastport Sector Plan
Existing PM Capacity
Utilization
Draft: 4/2018
Legend
Non Signalized Intersection
Signalized Intersection
50%
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60%
70%
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80%
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EASTPORT
SPA CREEK
Back Creek
AIS TAIL LINK
SOUTH COURT AVE
SPA RD
GAINER
FOREST DR
HILLTOP LN
TYLER AVE
FOREST HILL AVE
BAY RIDGE AVE
JAMES ST
BAY RIDGE AVE
BAY TREE RD

As discussed previously, the data and analyses show that existing 2017 traffic volumes along Forest Drive are typically much higher along the west end of the corridor and are relatively minor along the east end of the corridor, with several significant decision points, such as Hilltop Lane, Spa Road, Tyler Avenue, and Bay Ridge Avenue, carrying traffic to and from other areas within the peninsula.

The most significant queues and delays are experienced at critical points along WB Forest Drive during the AM peak hour, primarily approaching Spa Road, and along the SB Hilltop Lane and NB Spa Road approaches to Forest Drive. The model shows that under both existing and future conditions, right turns onto Chinquapin Round Road account for over a quarter of the movements along the WB Forest Drive approach during both the AM and PM peak hours.

During the PM peak hour, LOS E and F conditions are primarily experienced along EB Forest Drive, at Chinquapin Round Road, Bywater Road, and S. Cherry Grove Avenue, as traffic first enters the peninsula. Queues and delays are also experienced along SB Chinquapin Round Road during the PM peak hour.

Capacity is available throughout the corridor in the non-peak direction during each peak period, and along both directions of travel toward the east end of the peninsula. Additionally, east of Bywater Road, the signalized intersections within the system are typically operating well within available capacity during the AM and PM peak periods of a typical weekday, with queues along the minor approaches able to clear during each signal cycle. Queues and delays along more significant approach roads, such as Hilltop Lane, and Spa Road, may require one or two cycles for vehicles to clear, particularly during the AM peak period. The upgraded traffic signal system along the Forest Drive corridor is currently working to improve traffic flow along the corridor.

Section 4: Future Baseline Traffic Evaluation

To understand the likely future traffic conditions under current roadway and land use conditions, a “Future Baseline” analysis was conducted.

Using the refined BMC model and the Baseline Scenario City demographic data, future condition traffic volumes in the sector were assessed for the years 2025 and 2030 to create a baseline view of traffic demand growth projected to occur without any changes resulting from this Sector Study. The refined model was calibrated against the existing traffic data, and run, by BMC, to produce AM and PM peak period traffic volumes, by roadway segment for the 2017, 2025, and 2030 conditions.

<u>Model Findings</u>

The resulting analyses show that in 2030, the current areas with road capacity issues are still an issue. However, no additional road link sections have worsened to the point of reaching 100% capacity. The data also shows that the annual rate of traffic growth between 2017 and 2030 varies widely within the various segments and traffic direction along the network, averaging less than 0.5% growth-per-year, with a high segment of 1%. These growth rates are lower than had been assumed in earlier studies, which had anticipated a 1% annual increase in traffic over the network as a whole. This demonstrates that improvements to current problems will accommodate this growth.

These results show that the Baseline Scenario traffic growth expected within the peninsula with the anticipated land use changes, new development, and redevelopment occurring is expected to be relatively low. Improvements recommended to address the current problems will largely accommodate this growth. While localized effects of development may be felt at individual intersections, the effects to the network are expected to be minor.

The following maps show the projected sector network road link capacity during the AM and PM peak period in the year 2030.

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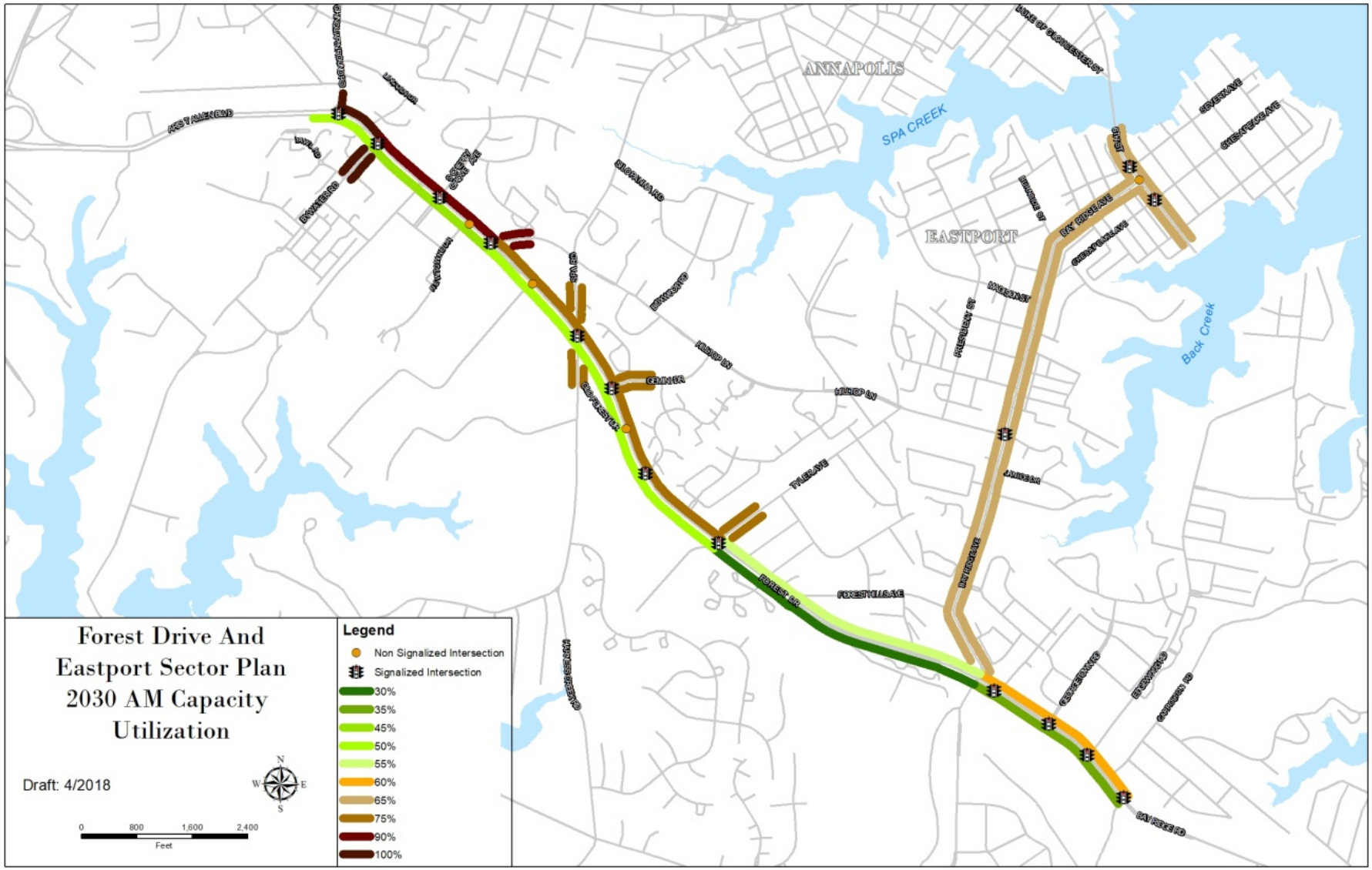
Forest Drive And
Eastport Sector Plan
2030 AM Capacity
Utilization
Draft: 4/2018
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EASTPORT
SPA CREEK
Back Creek
FOREST DR
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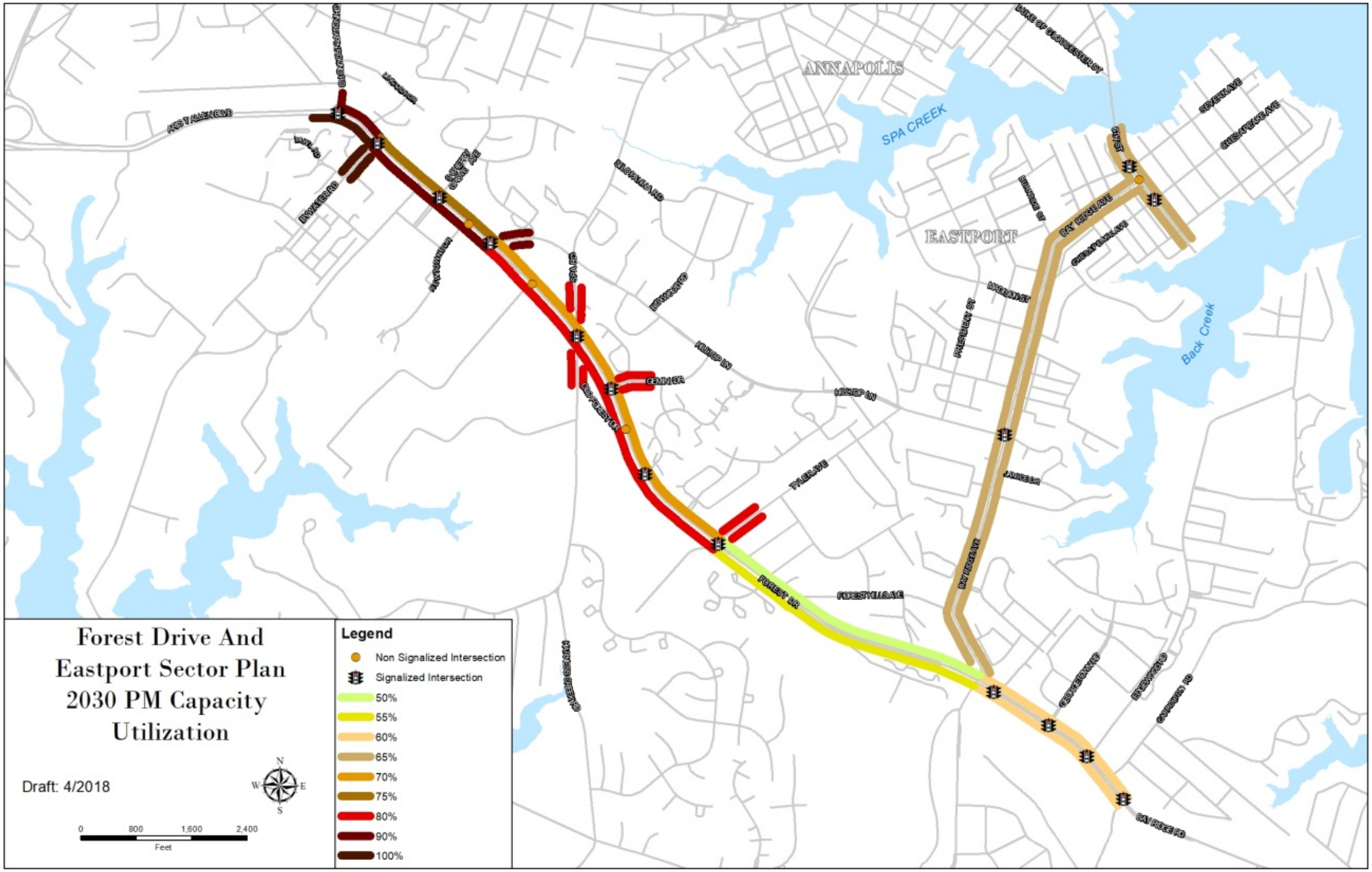
HILLTOP LN
TYLER AVE
COMMER
BAY RIDGE AVE
BAY RIDGE RD
SPA RD
FREDERICK ST
JAMES ST
CHASE ST


Forest Drive And
Eastport Sector Plan
2030 PM Capacity
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Non Signalized Intersection
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ANNAPOLIS
EASTPORT
SPA CREEK
Back Creek
FOREST DR
FOREST HILL AVE
TYLER AVE
HILLTOP LN
BAY RIDGE AVE
BAY RIDGE RD
CAMINO

A summary of the analysis results of specific locations within the sector shows:

- Traffic entering and exiting the Forest Drive corridor on the west end will continue to experience delays;
- Peak hourly traffic volumes at the west end of the corridor will not worsen, for the portion at capacity, because it is the limiting portion of the corridor, while the portion near capacity will not reach 100% and only worsen by up to 5% of total capacity;
- Traffic flow throughout the rest of the corridor is expected to continue to flow relatively smoothly because of the constrained conditions at the west end of the corridor;
- Individual segments along the corridor, particularly east of Hilltop Lane, can accommodate additional traffic while still operating under capacity; and
- Capacity utilization along most sections of Forest Drive, Bay Ridge Avenue and Sixth Street is not expected to experience much change.

A review of the network segments within the sector shows the following growth and capacity utilization by 2030:

- Forest Drive, between Chinquapin Round Road and Gemini Drive, is expected to experience relatively low average annual travel demand growth rates, ranging from 0.2 to 0.7% per year between 2017 and 2030 with similar growth rates in both the peak and non-peak directions of travel.
- Between Gemini Drive and Bay Ridge Avenue/Hillsmere Drive, Forest Drive is expected to experience moderate growth, ranging in the peak direction of travel between 0.4 and 0.6%, and ranging in the off-peak direction of travel between 0.2 and 1.0% per year.
- East of Bay Ridge Avenue/Hillsmere Drive, Bay Ridge Road is expected to experience minimal growth, no more than 0.3% between 2017 and 2030. This section of the corridor is therefore expected to keep operating well within the roadway capacity for the foreseeable future, with the current land use assumptions in place.

A review of the City street approaches to Forest Drive shows the following potential changes in volumes by 2030 (increased peak volumes over 1% per year):

- NB Chinquapin Round Road from Forest Drive (1.1% in the AM)
- SB Gemini Drive approaching Forest Drive (2.5% in the AM; 1.0% in the PM)
- NB Gemini Drive from Forest Drive (2.1% in the PM)
- NB Tyler Avenue from Forest Drive (4.5% in the AM; 2.6% in the PM)
- SB Tyler Avenue approaching Forest Drive (1.7% in the AM; 1.2% in the PM)

Analyses for Eastport show that the average annual growth rates are expected to range between 0 and 0.7% between 2017 and 2030.

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SECTION 5: Possible Remedies to Existing and Future Baseline Conditions
Possible strategic responses and remedies to current and future baseline travel demands and traffic conditions include (but are not limited to) physical road improvements. A combination of other measures may be the most cost-effective solution to reduce the need for further road widening. Other measures can reduce or redirect peak hour travel demand, reduce the number of private vehicle trips, and increase the functional capacity of the existing pavement. Many of these measures can be undertaken by the City and its stakeholders. Others will take more time to be implemented and will need to be explored further as pilot projects coordinated with the County. The array of potential measures includes the following:

- Add local employment in the sector and compact mixed-use land-use infill to create complete neighborhoods
- Conversion of City and County streets to Complete Street designs with a connected network of pedestrian and bike facilities
- Increased City street connections combined with traffic calming on local streets.
- Improved City and County signal coordination and improved City signal operations to improve detection, timing and City network coordination. Access management along the Forest Drive corridor to consolidate driveways and connect frontage sites to side streets
- Enhanced carpooling with new technologies and on-demand services and major employer coordination
- Enhanced local transit service
- New regional transit service
- Intelligent Transportation Systems and real-time traveler information online, in the field, and in the vehicle

Possible road improvements are listed in Sub-Section A, with an evaluation of the possible impacts. Land use scenarios are described in Sub-Section B, also with an evaluation of the possible impacts. Sub-Section C addresses the possible impacts of mode shift changes, while Sub-Section D considers the impacts of coming technology changes. Transit opportunities based on sector commuter destinations are addressed in Sub-Section E. Sub-Section F provides possible corridor street sections.

Sub-Section A: Road Improvements
Based on a review of the existing conditions traffic volumes and the anticipated future traffic flows generated by the Baseline Future Land Use Analysis reviewed in Section 4, 2030 travel demands are expected to be accommodated by the same improvements that are anticipated to address existing condition issues identified in Section 3. Phased movements to the network should be made improve the ability for traffic to leave the peninsula during AM peak periods and incidents, to mitigate the current AM traffic metering or bottleneck effect in the corridor, and to increase the network's overall capacity to adequately accommodate existing and projected flows.

To maximize efficiency of the arterial intersections, traffic flows along the mainline must be given preference. Improvements to the capacity of City streets that intersect with the Corridor must be considered carefully. Modifications to the current Adequate Public Facilities Ordinance (APFO) mitigation options would allow the City more flexibility in making these decisions in coordination with the County. Changes could allow required

mitigation efforts to address a multi-modal/Complete Street approach to adequacy and design. Such a change, for example, would allow improvements to be done elsewhere in the network and to include bike and pedestrian improvements that change local travel behavior.

Several possible road and signal improvements have been identified for further discussion. The improvements suggested for the west end of the corridor (Chinquapin Round Road to Spa Road) have been tested using the Synchro/SimTraffic model to analyze their effectiveness at a planning level. Final selection and implementation of specific road improvement projects that best address the issues at the least cost will require further investigation and coordination between the jurisdictions responsible for that section of roadway. All improvements should utilize Complete Street sections to minimize pavement and ROW acquisition and widening

These improvements are referenced as "possible" because they may, in the end, not be desirable. The City and County will not always be able to build themselves more capacity. Indeed, each new road project has many drawbacks, such as cost and environmental impact, especially in terms of increased impervious surface and a decrease in land that can be used for stormwater management. The other travel demand management strategies that are identified earlier in this section as well as strategies identified in the main body of this plan (such as increasing density and modal shifts) represent a paradigm shift in how jurisdictions can manage capacity and congestion. In many ways, these new strategies are more ideal for managing a resource that is not infinite—roadway capacity.

Suggested Capacity Improvements:
<u>AM improvements:</u>

- Make westbound capacity improvements to sections of State, County, and City road segments in the west end to better accommodate projected peak period flows off the peninsula. Possible elements might include:
    1. Providing an additional through lane along WB Forest Drive between Hilltop Lane and Chinquapin Round Road. This lane will drop as a dedicated free right-turn lane onto NB Chinquapin Round Road (it should have its own receiving lane, which can drop in the vicinity of Fairfax Drive).
    2. Completing the second through lane along NB Chinquapin Round Road from Forest Drive to MD 450 (the section between Fairfax Road and Virginia Street has only one through lane)
    3. Providing a third right-turn lane along SB Hilltop Lane.
- Reconfiguring the NB and SB Spa Road approaches to Forest Drive, as follows:
    1. Providing two dedicated left-turn lanes and one combined through/right-turn lane along both approaches.
    2. Consider eliminating the split-phased signal operation for NB/SB Spa Road.
    3. Providing a second approach lane along SB Spa Road and extending currently planned second turn lane along NB Spa Road if needed.
    4. Re-opening the Louis Drive and Lincoln Street link as part of land use changes in the area.

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PM improvements

- Reduce the queuing and signal time for SB Chinquapin Round Road by:
  1. Extending the existing short dedicated right-turn lane along SB Chinquapin Round Road approaching Aris T. Allen Boulevard at least as far north as Fairfax Street/Forest Drive North.
  2. Providing a continuous second through lane along SB Chinquapin Round Road from MD 450 to Aris T. Allen Boulevard (this connects several existing sections)
- Reduce queues and delays along EB Forest Drive, at the west end of the corridor, as follows:
  1. Retaining the existing bottleneck by electing not to make improvements that move queues further down the corridor, or Improve PM flows, by providing an additional through lane along EB Forest Drive, beginning along Aris T. Allen Boulevard, and dropping as a second left-turn lane at Hilltop Lane.
  2. Providing a dedicated right-turn lane along EB Forest Drive onto SB Spa Road (100 to 150 feet in length)
  3. Reducing the PM peak hour green time for NB Bywater Road travelers and encourage re-routing to other corridor access points to the east via Belle Dr.. Extending Skippers Lane to Bywater to help redirect Bywater trips.
  4. Extending Skippers Lane to Spa Road to reduce the volume of local shopping trips and left-turn movements occurring on the Corridor during the PM peak period.
- Add or extend center left-turn center lanes on the corridor per the proposed Ultimate Complete Street sections provided.
- Improve City street approaches to the Corridor in response to individual movement delays: extend both Skippers Lane and Gemini Drive to Spa Road to provide added route options for this single exit sub-peninsula traffic shed.

With the suggested capacity and signal improvements in place, the Synchro/SimTraffic model reveals the following potential levels of service, based on intersection delay and queue length.

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Forest Drive Intersection Levels of Service (Improved Condition)

Intersection / Approach	Improved Condition						Available Storage
	AM Peak Hour			PM Peak Hour			
	LOS	Delay	Queue	LOS	Delay	Queue	
Aris T. Allen Boulevard / Forest Drive at Chinquapin Round Road							
EB Aris T. Allen Boulevard	B	16.1 s/veh	270 ft	C	28.3 s/veh	710 ft	3000 ft
WB Forest Drive	C	26.8 s/veh	610 ft	C	23.9 s/veh	455 ft	605 ft
SB Chinquapin Round Road	D	42.2 s/veh	280 ft	F	102.6 s/veh	905 ft	355 ft
Overall Intersection	C	24.8 s/veh	--	D	39.2 s/veh	--	--
Forest Drive at Bywater Road							
EB Forest Drive	B	10.9 s/veh	225 ft	E	56.1 s/veh	765 ft	570 ft
WB Forest Drive	B	13.1 s/veh	180 ft	B	12.7 s/veh	200 ft	770 ft
NB Bywater Road	D	43.4 s/veh	280 ft	D	49.6 s/veh	235 ft	260 ft
SB Bywater Road	D	41.3 s/veh	20 ft	D	46.1 s/veh	20 ft	100 ft
Overall Intersection	B	15.0 s/veh	--	D	38.7 s/veh	--	--
Forest Drive at Cherry Grove Road							
EB Forest Drive	B	11.3 s/veh	205 ft	F	103.1 s/veh	1325 ft	1100 ft
WB Forest Drive	B	10.2 s/veh	290 ft	B	14.8 s/veh	280 ft	860 ft
NB Cherry Grove Road	D	46.5 s/veh	220 ft	D	45.3 s/veh	195 ft	240 ft
SB Cherry Grove Road	C	27.8 s/veh	75 ft	E	60.0 s/veh	80 ft	300 ft
Overall Intersection	B	12.6 s/veh	--	E	64.0 s/veh	--	--
Forest Drive at Newtowne Drive*							
EB Forest Drive	A	2.1 s/veh	45 ft	A	9.2 s/veh	410 ft	440 ft
WB Forest Drive	A	2.6 s/veh	60 ft	A	2.5 s/veh	25 ft	385 ft
NB Newtowne Drive	B	14.6 s/veh	65 ft	F	50.9 s/veh	130 ft	240 ft
Forest Drive at Hilltop Lane							
EB Forest Drive	B	10.4 s/veh	310 ft	B	10.8 s/veh	415 ft	355 ft
WB Forest Drive	B	17.1 s/veh	390 ft	B	11.5 s/veh	235 ft	1640 ft
SB Hilltop Lane	D	49.3 s/veh	330 ft	D	37.1 s/veh	285 ft	545 ft
Overall Intersection	B	19.8 s/veh	--	B	15.3 s/veh	--	--
Forest Drive at Spa Road							
EB Forest Drive	C	22.8 s/veh	385 ft	B	10.1 s/veh	200 ft	1680 ft
WB Forest Drive	D	41.7 s/veh	865 ft	B	12.3 s/veh	215 ft	815 ft
NB Spa Road	F	118.0 s/veh	470 ft	F	102.9 s/veh	220 ft	610 ft
SB Spa Road	F	151.0 s/veh	245 ft	F	203.5 s/veh	703 ft	325 ft
Overall Intersection	D	50.7 s/veh	--	C	34.2 s/veh	--	--
Forest Drive at Gemini Drive							
EB Forest Drive	B	10.1 s/veh	225 ft	A	8.0 s/veh	180 ft	780 ft
WB Forest Drive	B	14.5 s/veh	450 ft	A	7.1 s/veh	245 ft	570 ft
NB Driveway	A	0.0 s/veh	0 ft	D	38.6 s/veh	10 ft	60 ft
SB Gemini Drive	D	53.8 s/veh	180 ft	D	36.6 s/veh	125 ft	200 ft
Overall Intersection	B	14.7 s/veh	--	A	8.8 s/veh	--	--
Forest Drive at Old Forest Drive*							
EB Forest Drive	A	2.2 s/veh	10 ft	A	2.0 s/veh	15 ft	560 ft
WB Forest Drive	A	3.8 s/veh	100 ft	A	3.9 s/veh	95 ft	615 ft
NB Old Forest Drive	B	13.8 s/veh	75 ft	E	40.9 s/veh	90 ft	270 ft

Forest Drive Intersection Levels of Service (Improved Condition), cont.

Intersection / Approach	Improved Condition						Available Storage
	AM Peak Hour			PM Peak Hour			
	LOS	Delay	Queue	LOS	Delay	Queue	
Forest Drive at Youngs Farm Road / Annapolis Middle School							
EB Forest Drive	A	2.0 s/veh	45 ft	A	4.7 s/veh	245 ft	640 ft
WB Forest Drive	A	5.9 s/veh	90 ft	A	3.7 s/veh	80 ft	750 ft
NB Driveway	D	52.1 s/veh	35 ft	D	50.9 s/veh	20 ft	200 ft
SB Youngs Farm Road	D	46.0 s/veh	65 ft	D	40.0 s/veh	30 ft	135 ft
Overall Intersection	A	4.9 s/veh	--	A	4.5 s/veh	--	--
Forest Drive at Tyler Avenue							
EB Forest Drive	B	10.2 s/veh	240 ft	A	8.2 s/veh	235 ft	540 ft
WB Forest Drive	B	10.6 s/veh	250 ft	A	5.3 s/veh	95 ft	370 ft
NB Tyler Avenue	D	54.3 s/veh	110 ft	E	56.6 s/veh	130 ft	470 ft
SB Tyler Avenue	D	36.2 s/veh	150 ft	C	28.4 s/veh	95 ft	50 ft
Overall Intersection	B	12.6 s/veh	--	A	8.7 s/veh	--	--
Forest Drive / Bay Ridge Avenue at Hillsmere Drive							
EB Forest Drive	B	13.8 s/veh	255 ft	C	29.1 s/veh	500 ft	960 ft
WB Bay Ridge Avenue	B	14.4 s/veh	290 ft	C	21.4 s/veh	300 ft	280 ft
NB Hillsmere Drive	D	51.8 s/veh	295 ft	E	66.5 s/veh	420 ft	270 ft
SB Bay Ridge Avenue	E	55.8 s/veh	180 ft	E	57.2 s/veh	165 ft	510 ft
Overall Intersection	C	25.2 s/veh	--	D	36.8 s/veh	--	--
Bay Ridge Avenue at Georgetown Boulevard							
EB Bay Ridge Avenue	A	4.8 s/veh	155 ft	A	5.7 s/veh	210 ft	765 ft
WB Bay Ridge Avenue	A	5.8 s/veh	185 ft	A	6.2 s/veh	160 ft	650 ft
SB Georgetown Boulevard	C	30.9 s/veh	200 ft	B	18.4 s/veh	155 ft	215 ft
Overall Intersection	A	7.6 s/veh	--	A	7.0 s/veh	--	--
Bay Ridge Avenue at Edgewood Road							
EB Bay Ridge Avenue	A	7.7 s/veh	180 ft	A	9.3 s/veh	260 ft	640 ft
WB Bay Ridge Avenue	B	12.8 s/veh	280 ft	C	22.1 s/veh	295 ft	370 ft
NB Driveway	D	52.1 s/veh	40 ft	D	51.5 s/veh	70 ft	200 ft
SB Edgewood Road	C	24.4 s/veh	235 ft	C	23.8 s/veh	190 ft	190 ft
Overall Intersection	B	13.3 s/veh	--	B	16.3 s/veh	--	--

Note: The above results are based on planning-level analyses. More detailed analysis and study are required to fully evaluate the potential improvement concepts.

LOS:
Signalized Intersection

LOS	Delay
A	≤ 10 s/veh
B	≤ 20 s/veh
C	≤ 35 s/veh
D	≤ 55 s/veh
E	≤ 80 s/veh
F	> 80 s/veh

LOS:
Unsignalized Intersection*

LOS	Delay
A	≤ 10 s/veh
B	≤ 15 s/veh
C	≤ 25 s/veh
D	≤ 35 s/veh
E	≤ 50 s/veh
F	> 50 s/veh

Recommendations to reduce the peak-hour AM and PM traffic volumes include:

- Attract enough new employment opportunities to the City and in the eastern half of the Corridor that the number of commuters leaving the corridor is reduced and the current strong directional peak hour flow of the corridor is rebalanced.
- Improve regional and local transit services and carpool/ride sharing services to key commuter destinations to enable commuters to use other commuting modes. Consider a route to Washington, D.C. and enhanced local service to the Chinquapin Round Road area.

Responses to existing issues and reported stakeholder concerns in Eastport might include:

- Adjust the cycle times at the existing traffic signal at Bay Ridge Road and Tyler Avenue to maximize through travel signal time and significantly reduce the green cycle for the WB Tyler Avenue approach leg of the intersection. This will improve overall intersection service;
- Upgrade the three existing traffic signals in Eastport to fixtures that provide detection so that travel signal times can be maximized. This can improve the existing queuing issues at the Sixth Street and Severn Avenue signal;
- Add a stop sign if warranted at the intersection of Bay Ridge Avenue with Monroe Street to introduce platooning and wider gaps within the traffic flows along Bay Ridge Avenue so that vehicles can more quickly and safely make left-turns in and out of the intersecting streets or access points. This would help improve the queuing issues at this location;
- Add a series of mini-roundabouts at local intersections along Bay Ridge Avenue and throughout Eastport to facilitate access from minor approaches and to provide u-turn opportunities for vehicles that are unable to turn left from their stop-controlled approaches;
- When possible, further upgrade signals to create an Adaptive Control Signal (ACS) network capable of adapting to event and incident traffic.

Sub-Section B: Land Use Changes—Mid and High Sector Growth Scenarios

Two future sector growth scenarios were developed to assess the possible changes in future travel demand and behavior that might exist in 2030 as a result of implementing the sector study's land use recommendations. Both scenarios incorporate current approved pipeline development and estimate the amount of new changes that might occur in those sector areas identified as susceptible to change in this timeframe.

One scenario (Mid) assumes a moderate rate of change between 2020 and 2030 while the other (High) assumes a higher rate of change. The High Scenario also assumes a larger change in Eastport Sub-TAZ #546-D. The year 2020 was selected as the baseline year, as current growth trends were assumed to continue unchanged until then. The 2020 Sector Baseline conditions and additions between 2020 and 2030 are as follows:

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Forest Drive Sector– Summary of Changes				
Demographic Category	**2020 Baseline Totals**	**Change**		
		From 2020 Baseline to 2030 Baseline	**From 2020 Baseline to 2030 Mid**	**From 2020 Baseline to 2030 High**
Number of Households	13,434	203	938	1,428
Total Jobs	11,712	327	1,261	1,651
Total Population	33,718	1163	2,271	3,738
Number of Workers who are residents	17,733	327	1,288	2,012
Eastport Sub-TAZ #546-D – Summary of Changes				
Number of Households	370	0	145	424
Total Jobs	284	9	9	74

The comparative rates of growth represented by the three scenarios are as follows:

Forest Drive Sector– Comparative Rates of Growth										
	2020 Baseline Totals	Baseline Scenario 2030			Mid Scenario 2030			High Scenario 2030		
		Added from 2020	% Total Growth	% Annual Growth	Added from 2020	% Total Growth	% Annual Growth	Added from 2020	% Total Growth	% Annual Growth
Households (HH)	13,434	203	1.51%	0.17%	938	8.93%	0.45%	1,428	13.59%	0.68%
Jobs	11,712	327	2.8%	0.31%	1,261	16.57%	0.83%	1,651	21.70%	1.09%
Population	33,718	1163	3.5%	0.38%	2,271	8.55%	0.43%	3,738	14.08%	0.70%
Resident Workers	17,733	327	0.35%	0.35%	1,288	9.45%	0.47%	2,012	17.76%	0.74%
Average Added HH/year			20		94			143		

The Mid and High scenarios were analyzed using trial runs of the refined BMC model. These trials projected new travel demands generated in the road network segments, identified potential changes in traffic volumes throughout the study area, and estimated and mapped the future utilization of capacity during typical AM and PM peak periods.

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Road segments at or near capacity were again identified. No roadway or current travel mode choice changes were assumed so that the positive and/or negative effects of the proposed changes to land use/demographic could be considered conservatively and in isolation. Should other improvements and remedies be made in the future, the identified scenario impacts would be mitigated to achieve a better outcome.

A comparison of the future travel patterns modeled for the Baseline, Mid and High land use scenarios shows that in all three scenarios the current areas of congestion existing in 2017 continue to be the areas of issue in 2030. In all three scenarios the model findings show that the network's other road segments accommodate the added volumes projected.

The differences in traffic impacts between the three scenarios are modest. The higher amounts of land use changes envisioned under the Mid and High Scenarios result in modest redistributions of trips within the network main lines. The High scenario causes greater increases in traffic volumes in Eastport more than the other two scenarios,

The greater number of sector jobs added in both the Mid and High Scenarios appear to help mitigate the growth of commuter trips exiting the peninsula in the future thus accommodating enhanced local economic activity with comparatively modest amounts of added traffic at the west end. A comparison of the increases in AM peak period volumes passing through Chinquapin Round Rd. along with the job increases assumed are as follows:

- Baseline Scenario—3.4% increase in traffic with a 2.8% increase in jobs
- Mid Scenario—5.4% increase in traffic with a 16.57% increase in jobs
- High Scenario—7.8% increase in traffic with a 21.70% increase in jobs

The chart on the following page compares of the traffic volume changes projected throughout the network for all three scenarios based on current modes of travel.

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The chart below compares of the traffic volume changes projected throughout the network for all three scenarios.

Modeled Growth Rates

Segment / Direction / Peak	Modeled Baseline Conditions				2030 Mid Scenario		2030 High Scenario	
	Existing (2017) Volumes	Future (2030) Volumes	Total Growth	Annual Growth	Volumes	Change from 2030 Baseline	Volumes	Change from 2030 Baseline
Forest Drive (Chinquapin Round Road to Hilltop Lane)								
Westbound (AM Peak Hour)	8222	8501	3.4%	0.3%	8960	5.4%	9164	7.8%
Eastbound (PM Peak Hour)	9687	10314	6.5%	0.5%	10438	1.2%	10469	1.5%
Forest Drive (Hilltop Lane to Hillsmere Drive/Bay Ridge Ave)								
Eastbound (AM Peak Hour)	2890	3262	12.9%	1.0%	2805	-14%	2942	-10%
Westbound (PM Peak Hour)	4590	4803	4.6%	0.4%	4577	-4.7%	4765	-0.8%
Forest Drive/Bay Ridge Road (Hillsmere Drive/Bay Ridge Ave to Carrollton Road)								
Eestbound (AM Peak Hour)	2558	2556	0.0%	0.0%	2657	4.0%	2738	7.1%
Westbound (PM Peak Hour)	3763	3770	0.2%	0.0%	3892	3.2%	4000	6.1%
Eastbound (PM Peak Hour)	4568	4682	2.5%	0.2%	4754	1.5%	4837	3.3%
Bay Ridge Avenue (Tyler Avenue to Forest Drive)								
Southbound (AM Peak Hour)	984	940	-4.5%	-0.3%	1019	8.4%	1058	12.6%
Northbound (AM Peak Hour)	1828	1917	4.9%	0.4%	1992	3.9%	2022	5.5%
Southbound (PM Peak Hour)	1603	1710	6.7%	0.5%	1883	10.1%	1910	11.7%
Northbound (PM Peak Hour)	1612	1570	-2.6%	-0.2%	1705	8.6%	1768	12.6%
Bay Ridge Avenue (Chesapeake Avenue to Tyler Avenue)								
Southbound (PM Peak Hour)	1849	2067	11.8%	0.9%	1970	-4.7%	2058	-0.5%
Northbound (PM Peak Hour)	2474	2555	3.3%	0.3%	2473	-3.2%	2545	-0.4%
Approach Streets - AM Peak Hour								
S. Cherry Grove Rd. (NB, from Forest Dr.)	124	119	-4.0%	-0.5%	258	117%	272	129%
Crystal Spring Farm Rd. (NB, approaching Forest	37	36	-2.7%	-0.2%	523	1353%	706	1861%
Crystal Spring Farm Rd. (SB, from Forest Dr.)	21	21	0.0%	0.0%	228	986%	320	1424%
Annapolis Neck Road (NB, approaching Forest	112	113	-0.8%	-0.1%	229	103%	229	103%
Approach Streets - PM Peak Hour								
Crystal Spring Farm Rd. (NB, approaching Forest	31	31	0.0%	0.0%	362	1067%	502	1519%
Crystal Spring Farm Rd. (SB, from Forest Dr.)	42	41	-2.4%	-0.2%	574	1300%	777	1795%

Note: The above results are based on planning-level analyses. More detailed analysis and study are required to fully evaluate the future conditions of detailed traffic operations.

Mid Scenario 2030:
Land use changes under the Mid Scenario are expected to result in some redistribution of trips within the peninsula. The number of sector jobs added does not appear to be enough to reduce the number of commuter trips leaving the peninsula by 2030. However, the scenario's elevated growth is accommodated without significantly increasing the number of peak hour trips into or out of the peninsula (at the west end of the corridor) when compared to 2030 baseline conditions. The analyzed land use changes under the Mid Scenario result in some redistribution of trips within the peninsula but not as much as occurs in the High Scenario. The anticipated increases do not outpace the current capacity of the road network assuming that the recommended operational enhancements proposed to address current issues have been implemented.

<u>Changes along the Corridor</u>
Under the Mid Scenario, the 2030 volumes along Forest Drive are expected to remain similar to the volumes shown in the Baseline Scenario 2030 conditions, assuming the suggested capacity improvements described in Sub-Section A are not in place. Key growth segments within the peak periods are as follows:

AM peak period:

- Up to a 5.4% increase in trips along WB Forest Drive between Hilltop Lane and Chinquapin Round Road is anticipated, which may slightly degrade operations along this section. This would result in this segment staying at 100% of current capacity for a longer period of time if no capacity improvements have been made or other measures taken to reduce the percentage of commuters driving alone.
- Up to a 4.0% increase in trips is anticipated along EB Bay Ridge Road east of the Hillsmere Drive/Bay Ridge Avenue intersection, which may slightly degrade operations along this section.
- Reductions in the off-peak direction of travel (eastbound) in the middle segment of Forest Drive are anticipated, which will not have a significant effect on traffic operations. The SimTraffic model shows up to a 14% reduction in traffic volumes along EB Forest Drive between Spa Road and Tyler Avenue.

PM peak period:

- Up to a 1.2% increase in trips along EB Forest Drive between Chinquapin Round Road and S. Cherry Grove Road, and up to a 1.5% increase in trips east of the Bay Ridge Avenue/Hillsmere Drive intersection.
- Up to a 3.2% increase in trips along WB Forest Drive between Edgewood Road and Bay Ridge Avenue/Hillsmere Drive is anticipated which may slightly degrade operations along this section.
- Reductions in the off-peak direction of travel (WB) in the middle segment of Forest Drive is anticipated, which will not have a significant effect on traffic operations. The SimTraffic model shows up to a 4.7% reduction in traffic volumes between Spa Road and Tyler Avenue.

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Changes to City Street approaches to the Corridor

Notable volume increases (more than double the 2030 Baseline volumes):

- S. Cherry Grove Road, north of Forest Drive, as the current building under renovation becomes occupied;
- Crystal Spring Farm Road approaching Forest Drive, as development is expected to occur on the opportunity site;
- Old Annapolis Neck Road, to the south of Forest Drive, as approved development is constructed.

Notable volume reductions are anticipated to occur on Tyler Avenue, north of Forest Drive; and along Old Forest Drive, south of Forest Drive.

Changes in the Eastport Area

- SB Bay Ridge Avenue: Up to an 8.5% increase in volumes in the AM peak period, and up to a one percent increase near Tyler Avenue in the PM peak period, which will slightly degrade operations.
- NB Bay Ridge Avenue: Up to a 4% increase in volumes approaching Sixth Street in the AM peak period, and up to an 8.6% increase approaching Sixth Street in the PM peak period, which will slightly degrade operations.

The following diagrams show the anticipated traffic capacity utilization (AM and PM peak period) on today's existing network based on the Mid level scenario in the year 2030.

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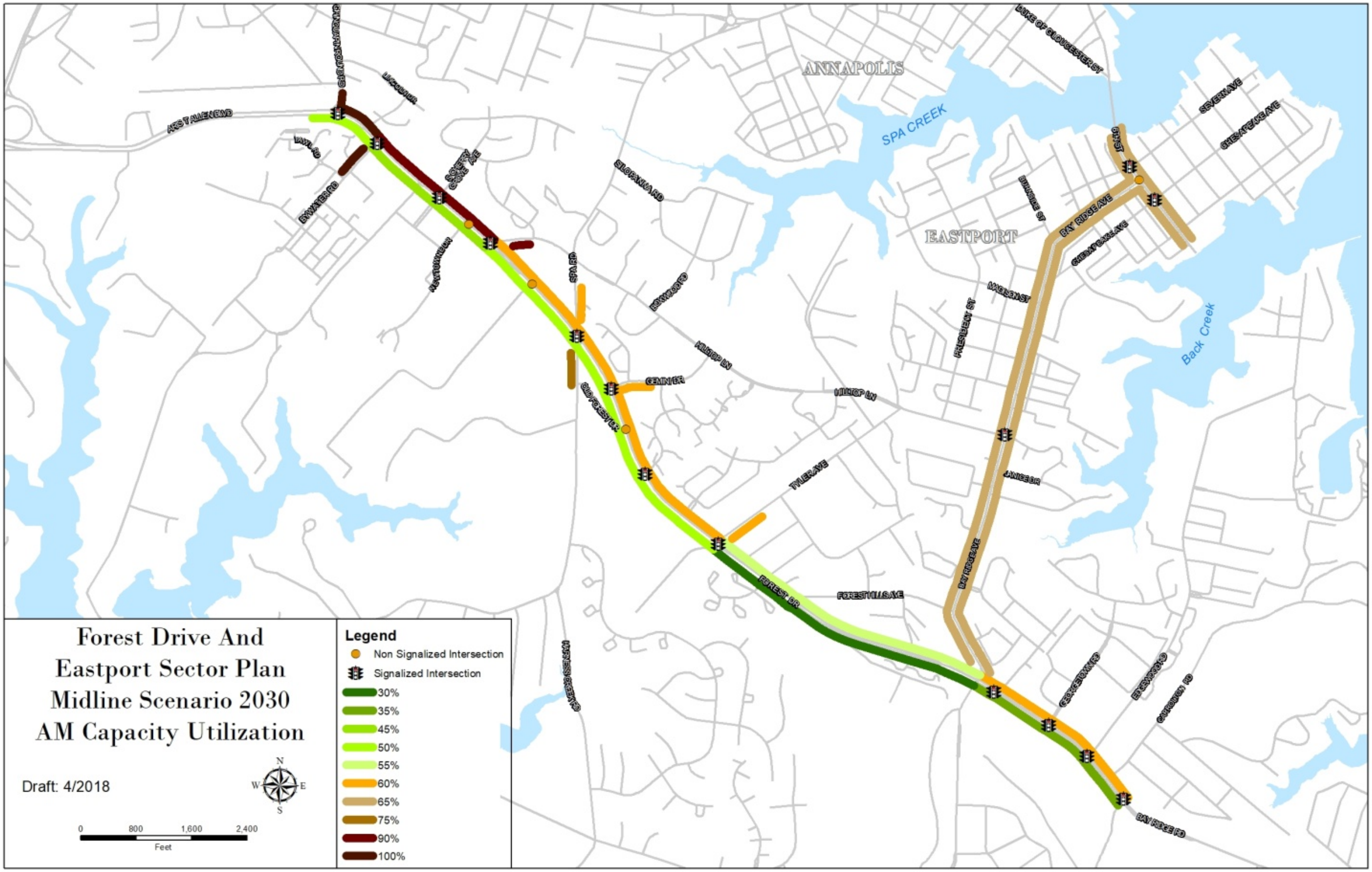
Forest Drive And
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Midline Scenario 2030
AM Capacity Utilization
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PRESIDENT ST
SEVERN AVE
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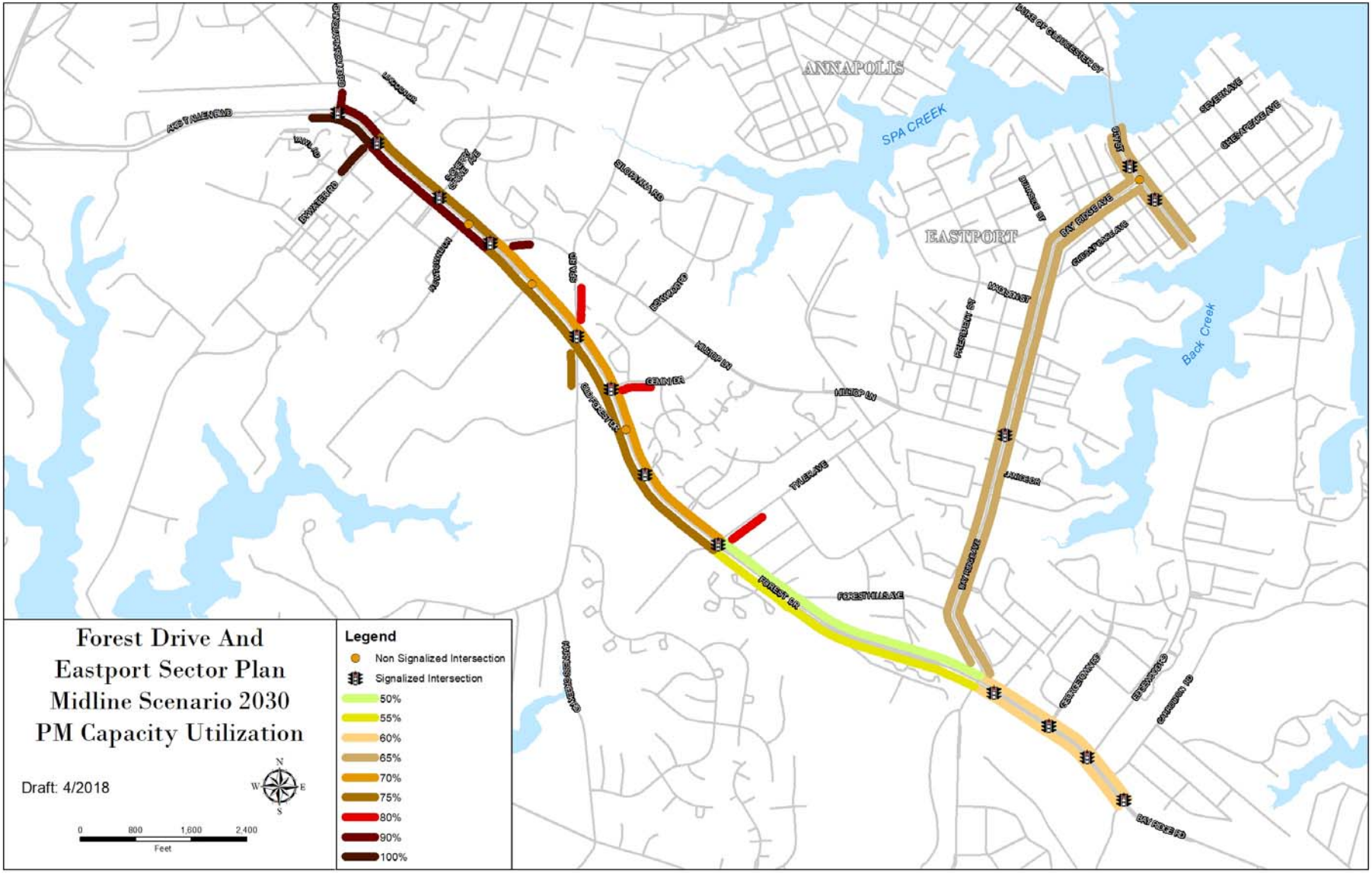
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FOREST VILLAGE
MILLER LN
TYLER AVE
BAY RIDGE AVE
BAY RIDGE RD

High Scenario 2030:
Land use changes under the High Scenario are also expected to result in greater redistribution of trips within the peninsula as compared to the Baseline and Mid scenarios. More rebalancing of the current strong directional flows during commuting hours occurs. Increases are seen in the traffic flows in the off-peak direction of travel along some segments of Forest Drive. The 2030 High Scenario is not expected to significantly affect the number of trips in or out of the peninsula (at the west end of the corridor) during the peak periods as compared to Baseline conditions in 2030. With this scenario, the greatest change in travel demand occurs in Eastport.

The anticipated increases in Eastport will not exceed the current capacity of the road network assuming that the recommended operational enhancements proposed to address current issues have been implemented. Without implementation of remedies, left turns from stop-controlled minor approaches to the mainline routes in Eastport may become more difficult. This change in Eastport is the primary difference between the High scenario and the Mid Scenario. The High Scenario tests the possible travel demand impacts of a larger number of new residences and jobs there.

<u>Changes along the Corridor</u>
AM Peak Period:

- Up to a 7.8% increase in trips along WB Forest Drive between Hilltop Lane and Chinquapin Round Road is anticipated, which may slightly degrade operations along this section. This would result in this segment staying at 100% of current capacity for a longer period of time if no capacity improvements have been made or other measures taken to reduce the percentage of commuters driving alone.
- Up to a 7% increase in trips is anticipated along EB Forest Drive east of the Bay Ridge Avenue/Hillsmere Drive intersection, which may slightly degrade operations along this section.
- Reductions in the off-peak direction of travel (EB) in the middle segment of Forest Drive is anticipated, which will not have a significant effect on traffic operations. The SimTraffic model shows up to a 10% reduction in traffic volumes along EB Forest Drive between Spa Road and Tyler Avenue.

PM Peak Period:

- Up to a 1.5% increase in trips along EB Forest Drive between Chinquapin Round Road and S. Cherry Grove Road, and up to a 3.3% increase east of the Bay Ridge Avenue/Hillsmere Drive intersection.
- Up to a 6.1% increase in trips is anticipated along WB Forest Drive between Edgewood Road and the Bay Ridge Avenue / Hillsmere Drive, which may slightly degrade operations along this section.

<u>Changes on City Approaches to the Corridor:</u>
The anticipated changes are very similar to the Mid Scenario. Notable volume increases (more than double the 2030 Baseline volumes):

- S. Cherry Grove Road, north of Forest Drive, as the current building under renovation becomes occupied;
- Crystal Spring Farm Road approaching Forest Drive, as development is expected to occur on the opportunity site;

- Annapolis Neck Road, to the south of Forest Drive, as approved development is constructed.

Notable volume reductions are anticipated to occur on Old Forest Drive, south of Forest Drive.

Changes in Eastport

- SB Bay Ridge Avenue: Up to a 13% increase in volumes in both the AM and PM peak periods;
- NB Bay Ridge Avenue: Up to an 8% increase in volumes in the AM peak period and up to a 13% increase in the PM peak period.
- Sixth Street will experience up to a 6% increase in volumes in both the AM and PM peak periods.

Based on both the land use and traffic analysis conducted, the land use changes envisioned by the High Scenario best achieve goals of the 2009 Comprehensive Plan and the requests of the sector stakeholders. The analysis indicates that the added traffic generated as a result of this scenario can be accommodated assuming implementation of appropriate remedies occur, as needed, to address current issues and development impacts. The scenario anticipates residential growth rates consistent with recent City trends while increasing the amount of non-residential development in the sector to provide the desired new businesses, jobs and enhanced tax base.

The diagrams on the next pages show the anticipated traffic capacity utilization (AM and PM) on today's existing network based on the High Scenario in the year 2030.

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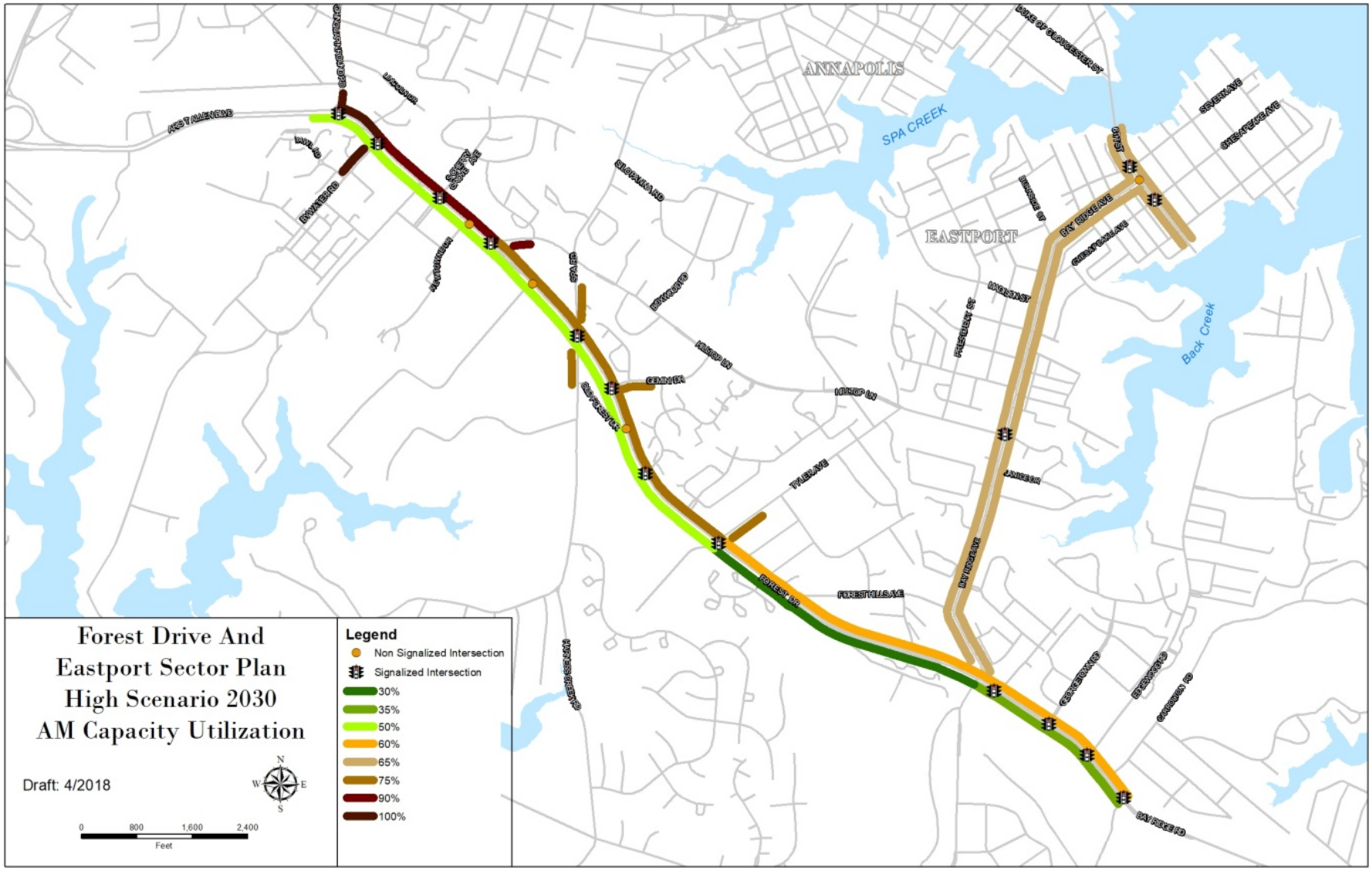
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CONDUIT RD
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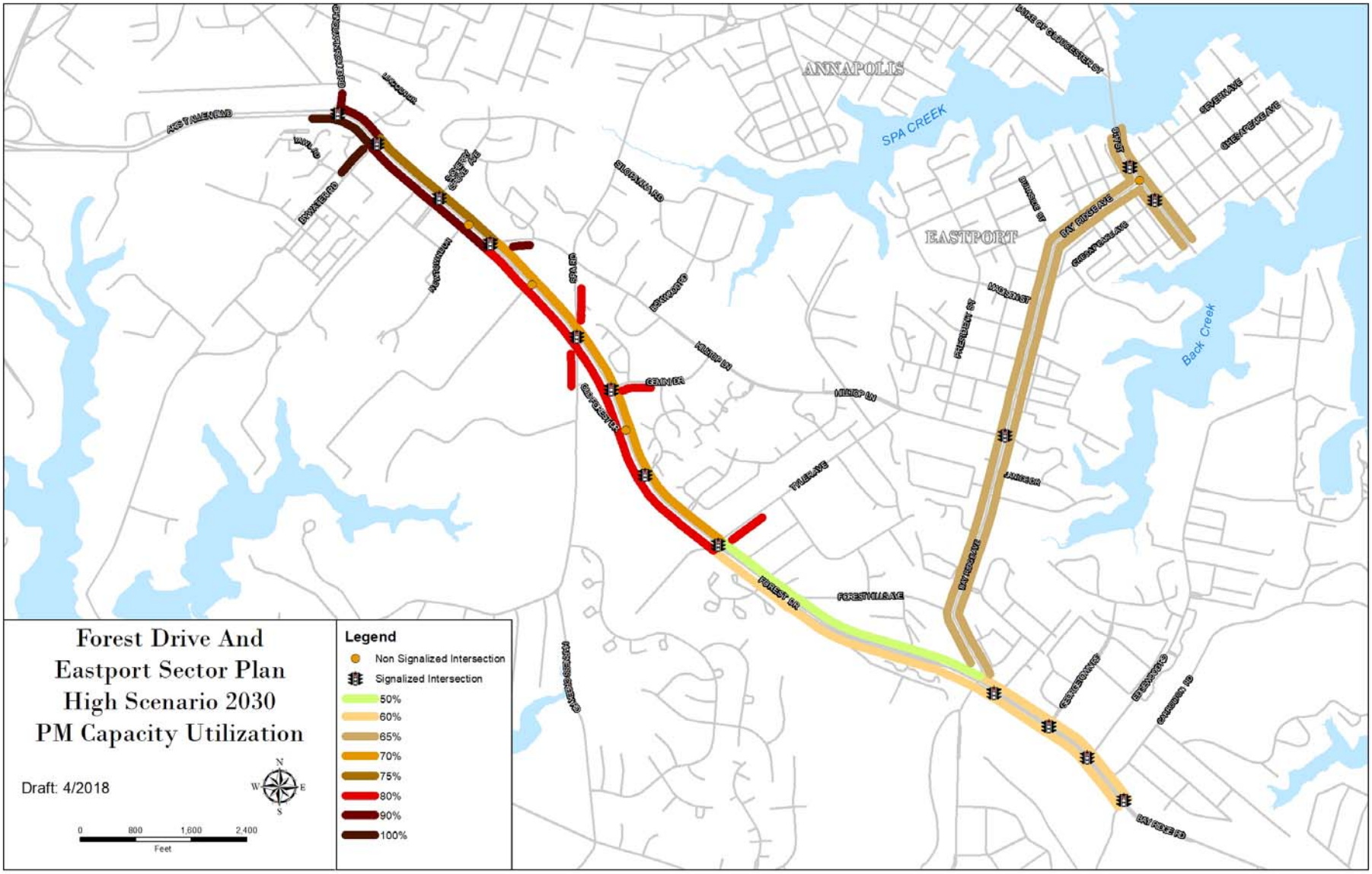
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A summary comparison of the capacity utilizations shown on the diagrams for all three land use scenarios is as follows:

CAPACITY UTILIZATION ANALYSIS	**Existing 2017 Condtions**				**2030 Conditions**											
Key Network Road Segments					**Baseline Scenario**				**Mid Scenario**				**High Scenario**			
	AM		**PM**		AM		PM		AM		PM		AM		PM	
CORRIDOR SEGMENTS	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Chinquapin Round Rd to Bywater Rd.	55%	100%	100%	88%	50%	100%	90%	90%	55%	100%	**100%**	90%	50%	100%	90%	100%
Bywater Rd to Hill Top Lane	50%	85%	90%	75%	55%	90%	75%	75%	50%	90%	90%	75%	50%	90%	75%	90%
Hill Top to Tyler Ave.	45%	75%	80%	70%	50%	75%	70%	70%	55%	60%	75%	70%	50%	75%	70%	80%
Tyler Ave to Bay Ridge/Hillsmere Dr	30%	55%	55%	50%	30%	55%	50%	55%	30%	50%	55%	50%	30%	60%	50%	60%
Bay Ridge Rd./Hillsmere Dr. to Arundle -on-the Bay Rd.	35%	60%	60%	60%	45%	60%	60%	60%	35%	60%	60%	60%	35%	60%	60%	60%
EASTPORT SEGMENTS																
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Bay Ridge Ave.	60%	60%	60%	60%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	75%	75%
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Sixth Street	60%	60%	60%	60%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	75%	75%
CITY APPROACHES TO CORRIDOR																
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Chinquapin Round Rd																
North of Forest		100%		88%				90%		100%		90%		100%		90%
Bywater Rd																
South of Forest			100%				100%		100%		100%			100%		
Hilltop Lane																
North of Forest		85%		90%				90%	90%		90%			90%		90%
Spa Rd																
South of Forest		75%	80%				80%		70%		75%		75%		80%	
North of Forest	75%			80%				80%		60%	80%			75%		80%
Gemini Dr																
North of Forest		75%		80%						60%	80%			75%		80%
Tyler Ave																
North of Forest		75%					80%			60%	80%			75%		80%

Note: The above results are based on planning-level analyses. More detailed analysis and study are required to fully evaluate the future conditions of detailed traffic operations.

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Sub Section C: Travel Mode Choices

A comparison of data from the years 2000 and 2015 regarding the modes of transportation used by City workers commuting to work is provided below. It shows that between 2000 and 2015 there have been declines in walking, carpooling and transit use and increases in driving alone, biking to work and working from home.

Looking forward a review of possible future shifts in mode choices was prepared based on national trends, City goals, and both Plan and Sector Study recommended actions. The chart below provides a scenario for a reduction in the percent of commuters driving alone based on increased use of ridesharing, regional and local transit, biking and walking as well as continued increases in working from home.

MODE OF COMMUTING BY CITY WORKERS	**2000**		**2015****		**2030**	**% of Change**
Workers 16 years and over	19,174	%	20,408	%		
Car, truck, or van -- drove alone (personal vehicle)	13,200	68.8%	14,773	72%	**52%**	-20%
Car, truck, or van -- carpooled	2,202	11.5%	1,782	9%	**10%**	1%
Worked at home	812	4.2%	1,211	6%	**9%**	3%
Public Transit - local & regional, (excluding taxi)*	1388	7.2%	1,274	6%	**7%**	1%
Walked	1318	6.9%	755	4%	**9%**	5%
Ride sharing /hailing services					**6%**	6%
Other modes: bike, taxi*, boat, motor bike	254	1.3%	613	3%	**7%**	4%

** the 2000 data included taxi service*

**** 2015 ACS data

Stakeholder responses to survey questions indicate a desire for change. For example, Survey #2 asks, "What options would allow you to reduce your travel time and your need to drive in the study area?"

1	Local market/small grocery store located nearby	19.4%
2	Commuter bus line on Forest Drive to other parts of the region	14.6%
3	More healthy food options/fast casual restaurants	14.1%
4	Better retail options available	12.2%
5	Better options/programs for telecommuting	8.2%
6	More community services nearby	7.7%
7	Flexible operating hours of businesses in the area	7.4%
8	Spaces for living and working	6.4%
9	Incentives/programs for starting a business	5.0%
10	Satellite offices for regional establishments	4.2%
11	Training for the types of careers nearby	0.8%

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Sub Section D: Technology Trends Review

A review of the rapidly changing projections offered by vehicle manufacturers, traffic futurists, and various policy makers was performed to assess the possible impacts of these changes. The review suggests a scenario of change that has already begun and extends over the next twenty-five years as more people will have increased access to mobility than ever before. There may be more vehicles on roadways but the roads will become significantly safer, delays during peak hour and incident congestion will be reduced and more people will travel by other means than alone in a vehicle. As of the writing of this document, no guidance is available from the State of Maryland, Anne Arundel County or the City of Annapolis. A possible timeline of changes for consideration is as follows:

- Ongoing mode shift to ride hailing/ride sharing services is happening now. It will add more trips on the road, not less, as more people become more mobile without a car or driver's license. Ride hailing will serve as a transit substitute for wealthier residents, younger commuters, and the elderly.
    - This change will decrease the need for parking in close proximity to jobs, retail, and high demand destinations in Annapolis.
    - In larger US cities, off-duty cars are reported to be circulating and adding to congestion.
- Increased use of home delivery services with online purchasing is starting now and is not yet reducing traffic volumes or trips generated by households; this may help congestion by shifting trips out of the peak-congestion periods.
- Increased prevalence of driver assisted, semi-autonomous and connected vehicles is starting now and will improve rapidly. This will not necessarily reduce traffic volumes but will reduce congestion during incidents and peak hours. It will reduce traffic accidents and will direct more cars into the city grid. Due to greater comfort it may promote more long-distance commuting.
- Carpooling (currently on the increase again) will continue to grow with new technological support for more responsive services, therefore reducing the average number of vehicles owned by households.
- Use of local public transit by transit dependent groups may continue to go down if the service does not adapt. Advancing technologies will be able to assist in altering this outcome.
- Regional transit services will need to become more responsive to the needs of commuter groups. Again, advancing technologies will be able to assist in altering this outcome.
- Fully autonomous (driverless) vehicles might be permitted on certain highways within 10 years. Vans, buses, trucks and cars will all be using this option.
- Fully autonomous (driverless) vehicles might be permitted on streets within 20 years.
- Autonomous/driverless vehicles might become the dominant vehicle type in 30 years and the use of unassisted vehicles will be restricted.
- Alternative fuel vehicles will gradually become the dominate form and air pollution from vehicles will go down significantly.

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Current research also advises that, to reduce the future travel demand, cities must make land use and community design changes in order to:

- Locate suitable jobs in closer proximity to workers
- Foster more dense/compact development patterns that can minimize vehicle miles traveled through walkable and bike-friendly neighborhoods,
- Promote greater full- and part-time work from home options.
- Continue to invest in mass transit,
- Facilitate shared rides in shared vehicles through pricing or incentives and employer promotion

Sub-Section E: Commuter Destination Review

A review of current work destinations for the workers living in the sector area was performed to identify those destinations with trip volumes that may be large enough to support added local transit or regional transit services and/or enhanced carpool services.

The sector's work destinations were found to differ for those of the City as a whole. Based on the 2015 American Community Survey Data that was used in the refined BMC model, over 87% of the sector's commuting trips are destined to four areas:

- 38% Anne Arundel County (outside of the City)
- 23% City of Annapolis
- 14% Washington, D.C. of which the largest group, 7%, goes to NE D.C.
- 13% Prince George's County.

Only 3% of the trips are destined for Baltimore County and Baltimore City, another 3% commute to Howard County. For the commuter trips with a destination located on the Annapolis Neck peninsula, the results are as follows:

- 36% have destinations in the Upper West Street/West Annapolis cluster
- 36% have destinations in the Downtown Annapolis cluster
- 6% have destinations in the Eastport cluster
- 10% have destinations in the Outer Neck Cluster(to the east)
- 12% have destinations in the Forest Drive Sector (excluding Eastport and Parole)

This data reveals some interesting trip results:

- A significant amount of the trips (72%) that begin in the Forest Drive Sector and remain on the Annapolis Neck end in the northern two clusters: Upper West Street/West Annapolis and Downtown Annapolis. The Rowe Blvd/West Annapolis area (TAZ #536) and the Downtown Annapolis/State Buildings (TAZ #542) generate the most trips at 22% and 13% respectively.
- Only 6% of the trips end in the Eastport cluster (TAZ #546A, 545B, 546C, 546D, and 546E), and most of those trips (4%) are generated by the eastern end of Eastport (TAZ #546C).
- 10% of the trips are destined for the Outer Neck Cluster (TAZ #548, #555C, #557, #558C, #558D, #558E, #559B, & #559C)

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Further analysis of the trip destination data shows the following:

- Only 28% of the commuter trips originating in the Forest Drive Sector stay within the Annapolis Neck area.
- Less than 5% of the commuter trips in the Forest Drive Sector end in the sector.

A more detailed breakout of these findings are shown in the charts and diagrams that follow:

49,848	Total Trips Originating in the Sector Area Traffic Shed	
13,876	**28%**	**Local Destinations (City)**
35,971	**72%**	**Other Destinations**
1,128	2.26%	City of Baltimore
16,217	32.53%	Anne Arundel County
652	1.31%	Baltimore County
236	0.47%	Carroll County
26	0.05%	Harford County
1,597	3.20%	Howard County
7,110	14.26%	Washington, D.C.
2,180	4.37%	Montgomery County
6,322	12.68%	Prince George's County
500	1.00%	Frederick County
2	0.00%	Kent Island

	Washington, D.C. Breakdown	
1,474	3%	NW
3,438	7%	NE
83	0%	SW
2,115	4%	SE

Source: BMC regional model Compiled from 2015 American Communities Survey Data

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A comparison of this data with older corridor commuter destinations reported in the 2009 Comprehensive Plan Appendix shows that significant changes have occurred in commuter destinations. The Appendix reported that in the year 2000, 37% to 45% of the workers who are residents of the City (in various parts of the Sector) worked in the City. About 24% of the Outer Neck workers did as well.

A comparison of the City-wide commuter destinations in the year 2000 versus 2015 shows significant changes in commuter destinations. Overall, there has been a 26.6% decline in the percentage of workers who are residents of the City and who work in the City. As of 2015, almost 80% commuted elsewhere. Many are driving further away as the array of destinations listed below illustrates.

2000 CITY COMMUTER TRIP DESTINATIONS		2015 CITY COMMUTER TRIP DESTINATIONS		CHANGE
46.8%	**Local Destinations**	20.2%	**Local Destinations (in the City)**	-26.6%
53%	**Other Destinations**	**79.8%**	**Other Destinations**	26.6%
3.6%	City of Baltimore	4.5%	City of Baltimore	0.9%
22.7%	Anne Arundel County	28.9%	Anne Arundel County	6.2%
3.6%	Baltimore County	3.6%	Baltimore County	0.0%
0.0%	Carroll County	0.0%	Carroll County	0.0%
0.0%	Harford County	0.0%	Harford County	0.0%
1.8%	Howard County	3.3%	Howard County	1.5%
5.5%	Washington, D.C.	6.5%	Washington, D.C.	1.0%
0.0%	Montgomery County	3.3%	Montgomery County	3.3%
5.2%	Prince George's County	2.3%	Prince George's County	-2.9%
0.0%	Frederick County	0.3%	Frederick County	0.3%
0.0%	Kent Island	0.3%	Kent Island	0.3%
		1.0%	Virginia (Alexandria and Arlington)	1.0%
		0.4%	Charles County (Waldorf)	0.4%
		0.3%	Talbot County	0.3%
5.6%	All Other Destinations	25.1%	All Other Destinations	19.5%

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Destinations within the County have also changed as the following charts illustrate:

	Anne Arundel County Breakdown in 2000
13.5%	Parole and Broadneck
7.0%	Glen Burnie /E of I-97
2.2%	West AA Co./south of US 50

Source: 2009 Comprehensive Plan Appendix

Compiled from 2000 US census

	Anne Arundel County Breakdown in 2015
14.4%	Parole/ Crownsville
1.6%	Arnold/Broadneck
2.1%	Glen Burnie
2.0%	Severna Park
1.3%	Annapolis Neck
1.0%	Edgewater
0.7%	Naval Academy
5.8%	Other County destinations

Compiled from 2015 American Community Survey Data

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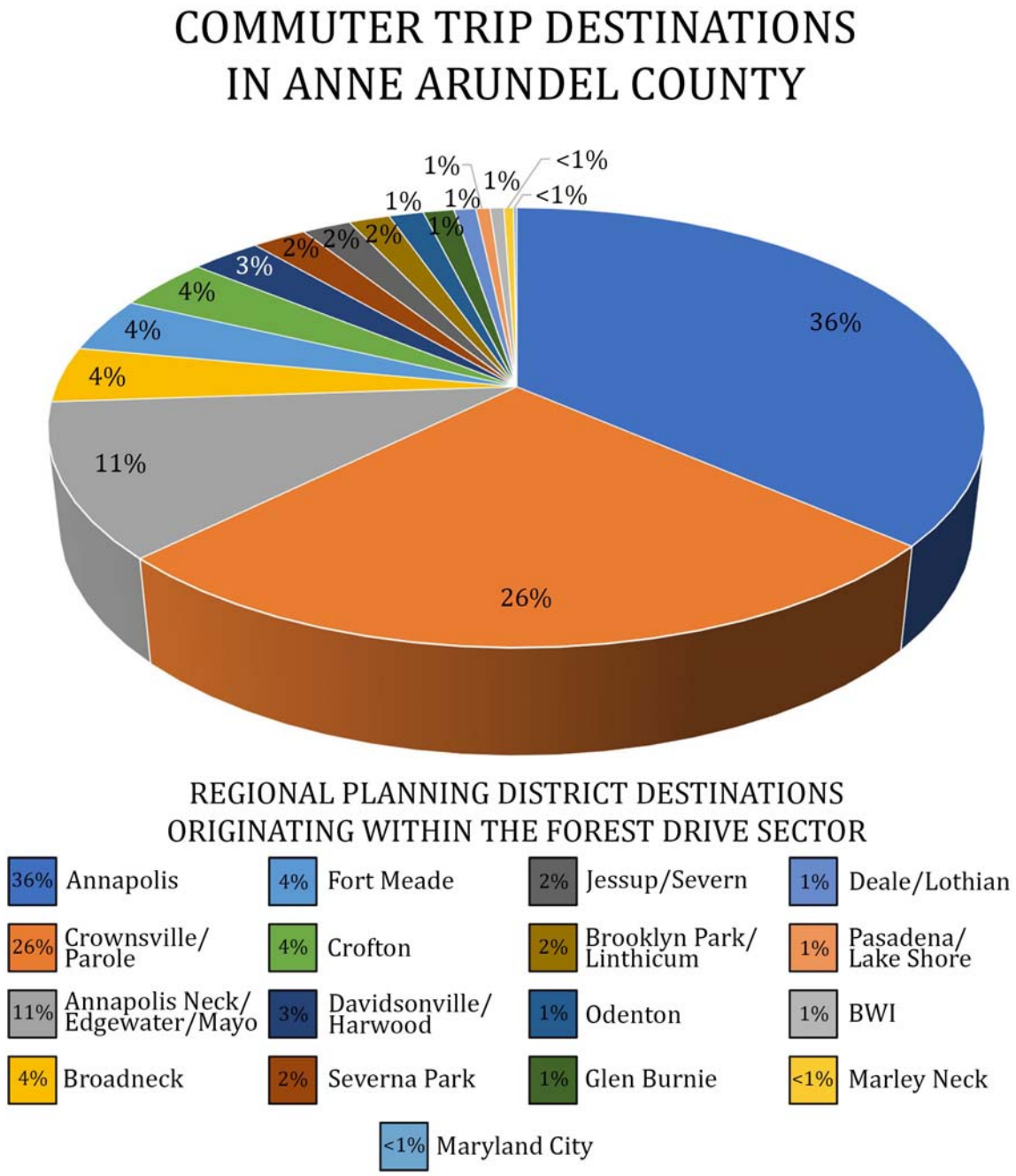
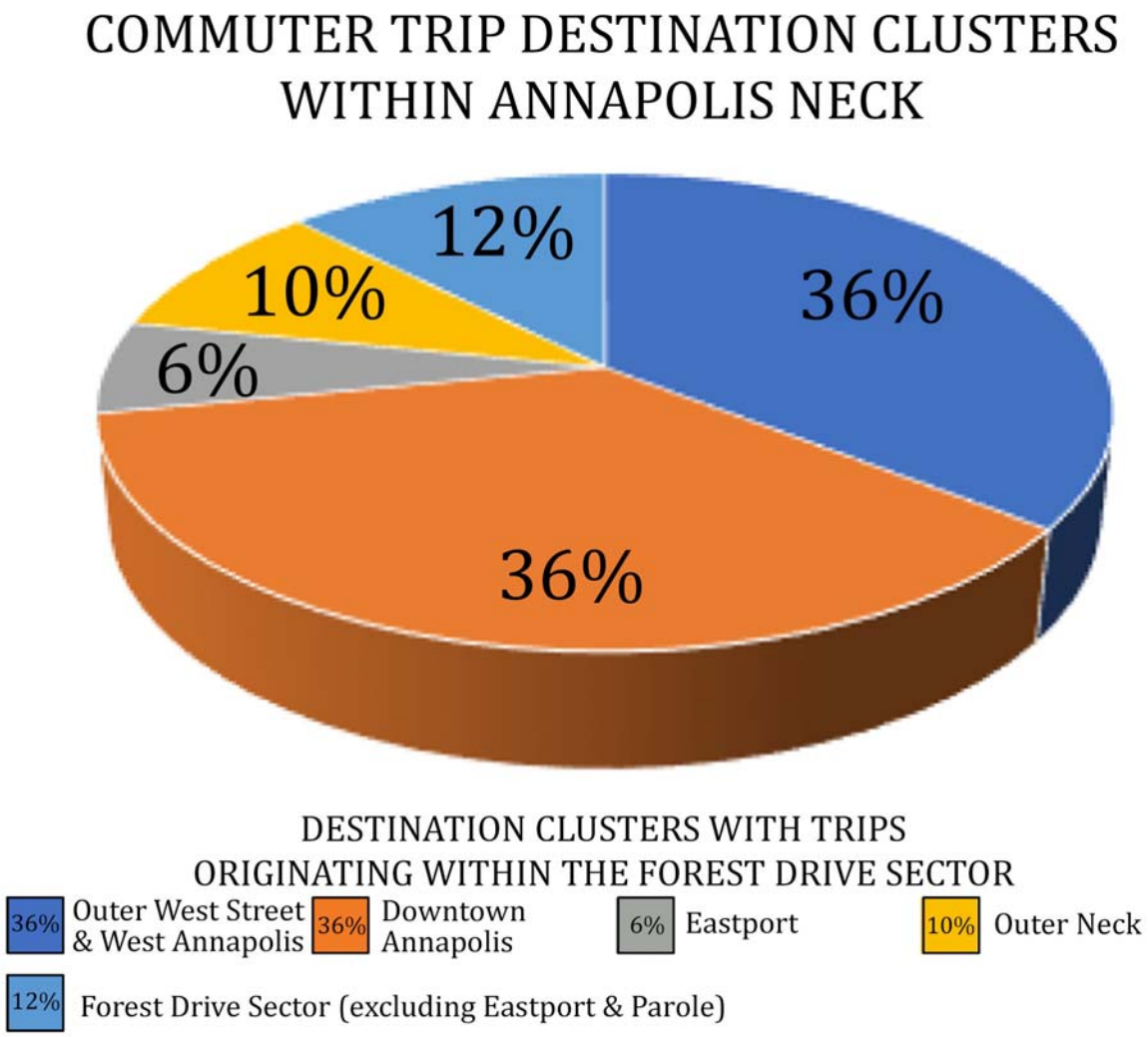
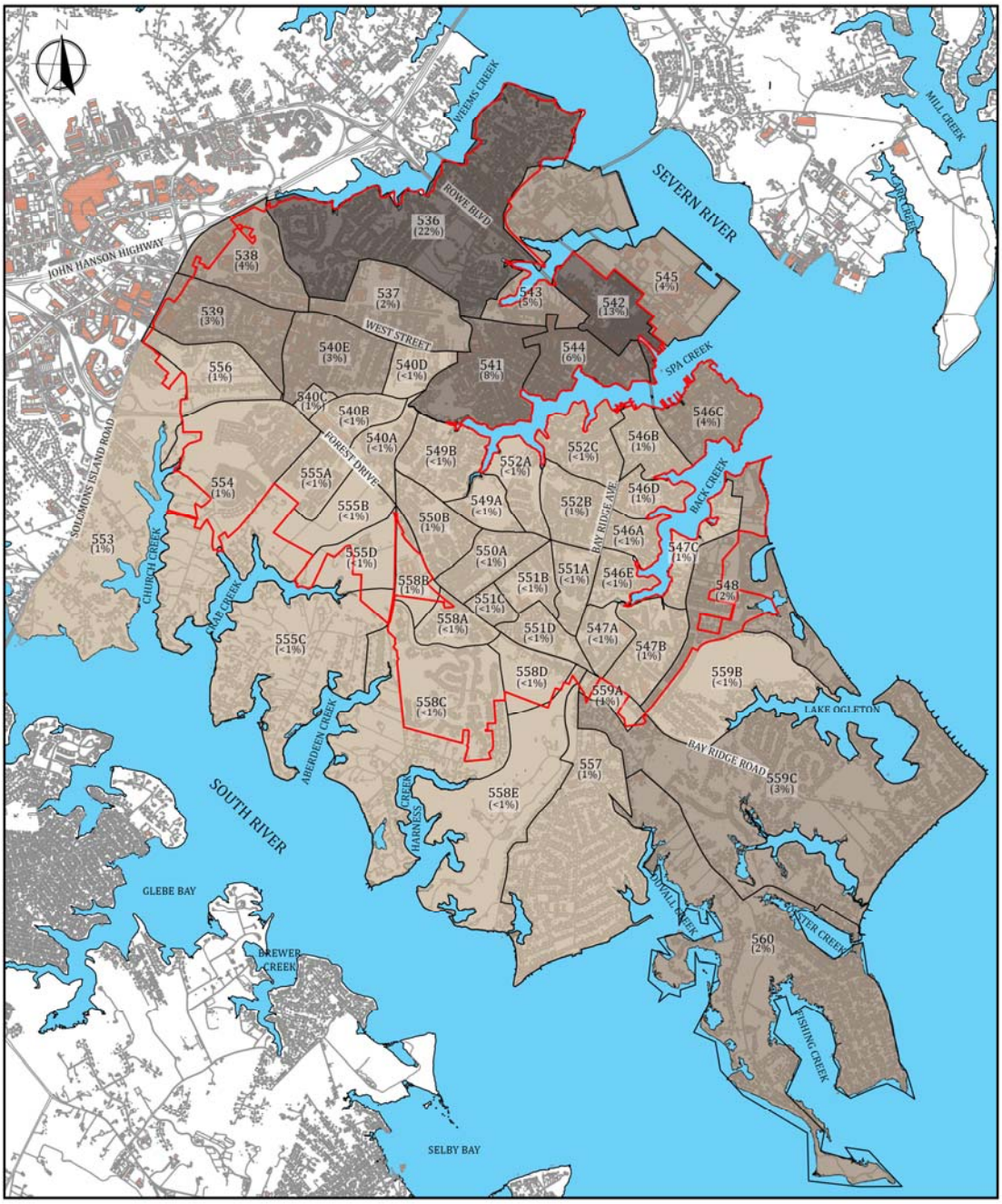
Existing destinations within the City and the sector TAZ areas are shown below:





The map on the following page indentifies the commuter trip destinations by TAZ to illustrate areas where local jobs generate the most trips from the sector.



ANNAPOLIS NECK - TRIP GENERATION

VERY HEAVY GENERATOR - >10% of trip generated (1123+ trips)

HEAVY GENERATOR - 6-10% of trips generated (562-1122 trips)

MODERATE GENERATOR - 2-5% of trips generated (113-561 trips)

LIGHT GENERATOR - 0-1% of trips generated (0-112 trips)

Sub-Section F: Preliminary Ultimate Complete Street Section Concepts for Discussion

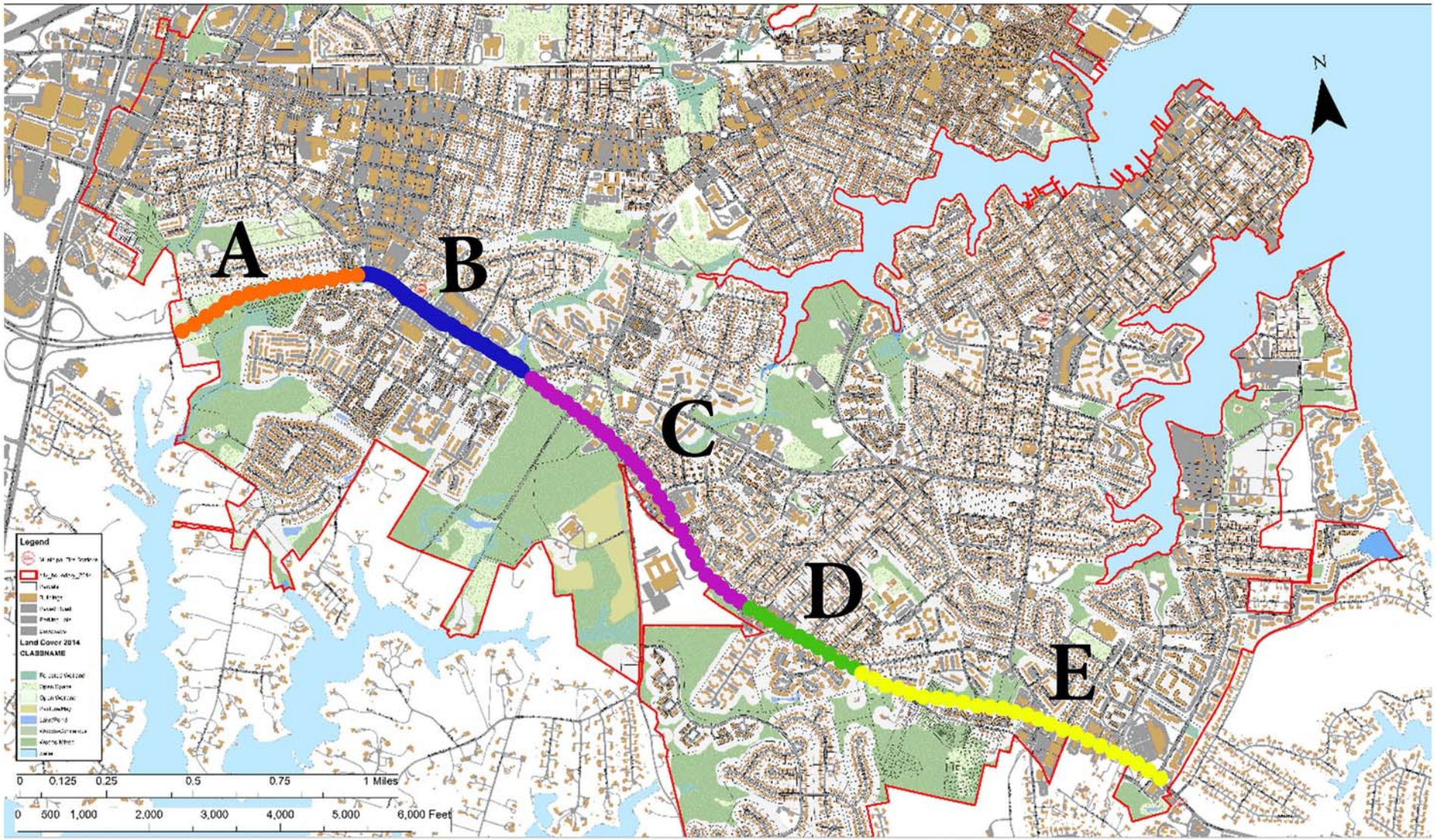
The purpose of the following cross-sections is to describe the existing conditions of Forest Drive. These cross-sections also offer modifications to address specific issues related to the implementation of Complete Streets. Right of Way widths vary with the space available. The Complete Streets concept partners with the street frontage character designations. In the end, streets can be reconfigured to better suit multimodal transportation, and have a distinct character of their own.

Modifications include:

- Reduction of travel lane widths from twelve feet to eleven feet.
- Reduction of turning lane widths from eleven to ten feet.
- Continuing the pedestrian/bicycle path established by the County at the west end of the corridor. Introducing a ten foot pedestrian/bicycle path separated from vehicular travel lanes within the county and state ROW, where space permits.
- Establishing a ten foot landscape easement that abuts the county ROW. This landscape easement is intended to provide additional space necessary for quality planting and pedestrian amenities. This easement may include the ten foot pedestrian/bicycle path where ROW is insufficient to accommodate needed lane improvements. This easement may include decorative lighting or banners. Where the landscape easement is imposed on private property the development rights are transferred to the remainder of the property. This easement should allow the inclusion of stormwater bioretention treatments that benefit either the ROW or the adjoining property. Plantings in this easement should count towards satisfying code landscape or forest conservation and tree canopy requirements of the City.
- Continuing the use of center islands to separate travel lanes and provide pedestrian refuge at busy intersections. The application of a raised island is not recommended where single family residential or small business driveways currently exist. Where pedestrian crosswalks exist or are being proposed the center island should have a minimum width of four feet and at that location the overall width of a turning lane and island combined should be a minimum of fifteen feet.

DRAFT

Map of Ultimate Complete Street Sections



Identity						Right of Way	Curb to Curb						Back of Curb to Right of Way						Beyond Right of Way		
							Travel Lanes			Median			Bicycle Facilities	Sidewalks		Bustops					
Symbol	Street	Segment	Classification	Character	Status		# of Lanes	Width	Left Turn	Width	Trees	Shrubs	Bike Lane	Pavement type	Width	10 on Forest	Lighting	Banners	Set backs	Max. Height	Landscape Easement
A	ARIS T. ALLEN	Md 2 / Chinnquapin	Principal Arterial	Freeway / Auto Oriented	Not in Study Area	110'	4	12	Yes - limited	10' - 20'	No	Yes	No	none	0	No	Highway Interchange	No	No	N/A	No
A	ARIS T. ALLEN	Md 2 / Chinnquapin	Principal Arterial	Boulevard / Auto Oriented, Bicycle / Pedestrian Friendly	Not in Study Area	140'	6	11	Yes - limited	10' - 20'	No	Yes	No	Concrete / Asphalt	4' - 8'	No	L.E.D. with Cutoff Sheilds	No	N/A	N/A	10' Both Sides
B	FOREST Drive	Chinnquapin / Hilltop	Principal Arterial	Suburban Medium Density / Auto Oriented	Existing	110'	6	12	Yes 11'	6' to 16'	No	Yes	No	Concrete / Asphalt	3' - 8'	Yes	Decorative at Safeway	No	20'	By Zoning District	No
B	FOREST Drive	Chinnquapin / Hilltop	Principal Arterial	Suburban Medium Density / Auto Oriented, Bicycle / Pedestrian Friendly	Proposed	120'	7; 8	11	Yes 10'	6'	Small	Yes	No	Concrete / Asphalt	4' - 8'	Yes	L.E.D. with Cutoff Sheilds	Yes	20'	65' to 4 Stories	10' Both Sides
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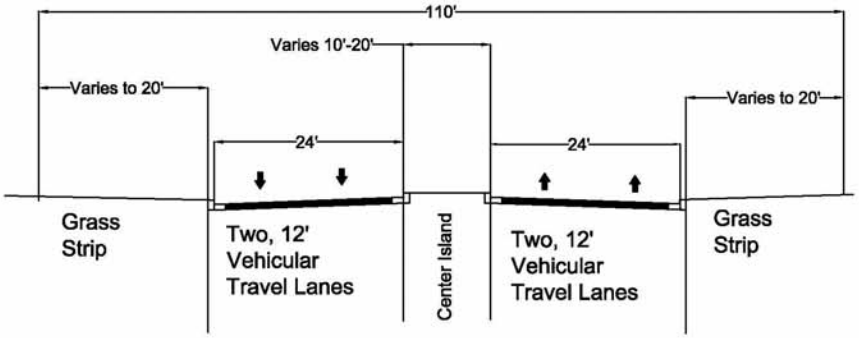
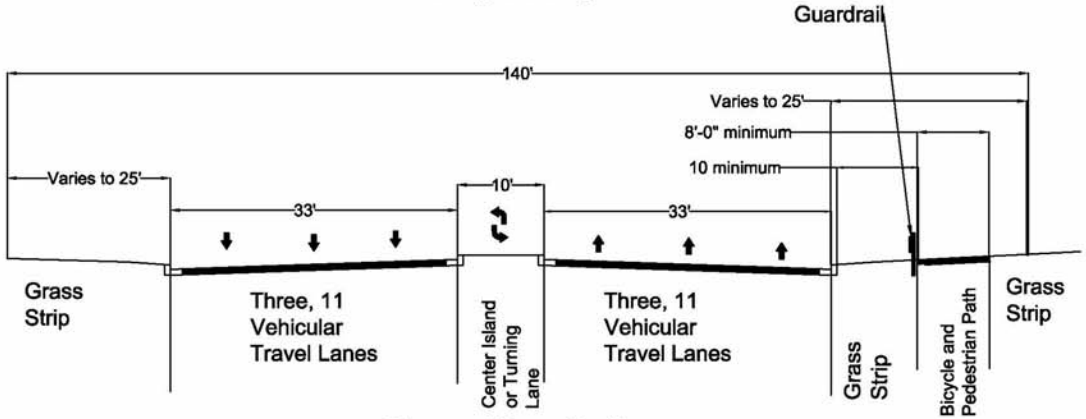


EXISTING Cross Section
110' Right of Way



Proposed Cross Section
140' Right of Way

Conceptual Forest Drive Street Section A
Westbound

A

Identity						Right of Way	Curb to Curb						Back of Curb to Right of Way						Beyond Right of Way		
							Travel Lanes			Median			Bicycle Facilities	Sidewalks		Bustops					
Symbol	Street	Segment	Classification	Character	Status		# of Lanes	Width	Left Turn	Width	Trees	Shrubs	Bike Lane	Pavement type	Width	10 on Forest	Lighting	Banners	Set backs	Max. Height	Landscape Easement
A	ARIS T. ALLEN	Md 2 / Chinnquapin	Principal Arterial	Freeway / Auto Oriented	Not in Study Area	110'	4	12	Yes - limited	10' - 20'	No	Yes	No	none	0	No	Highway Interchange	No	No	N/A	No
A	ARIS T. ALLEN	Md 2 / Chinnquapin	Principal Arterial	Boulevard / Auto Oriented, Bicycle / Pedestrian Friendly	Not in Study Area	140'	6	11	Yes - limited	10' - 20'	No	Yes	No	Concrete / Asphalt	4' - 8'	No	L.E.D. with Cutoff Sheilds	No	N/A	N/A	10' Both Sides
B	FOREST Drive	Chinnquapin / Hilltop	Principal Arterial	Suburban Medium Density / Auto Oriented	Existing	110'	6	12	Yes 11'	6' to 16'	No	Yes	No	Concrete / Asphalt	3' - 8'	Yes	Decorative at Safeway	No	20'	By Zoning District	No
B	FOREST Drive	Chinnquapin / Hilltop	Principal Arterial	Suburban Medium Density / Auto Oriented, Bicycle / Pedestrian Friendly	Proposed	120'	7; 8	11	Yes 10'	6'	Small	Yes	No	Concrete / Asphalt	4' - 8'	Yes	L.E.D. with Cutoff Sheilds	Yes	20'	65' to 4 Stories	10' Both Sides
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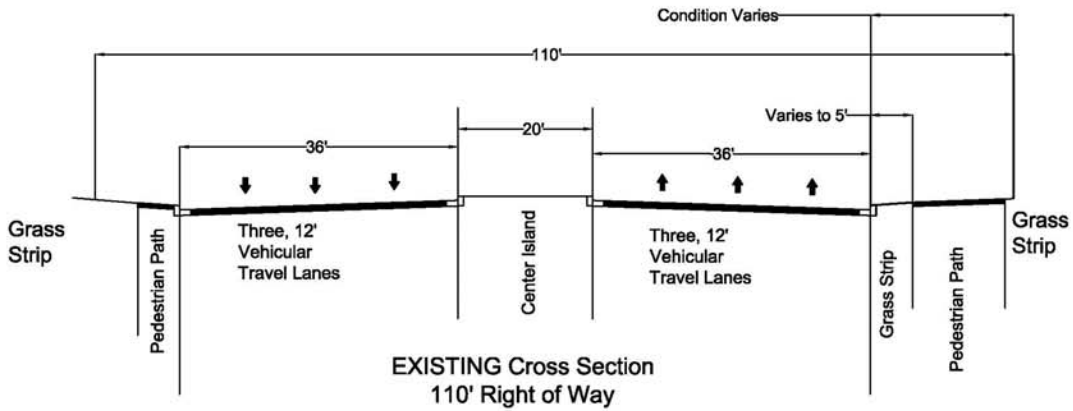

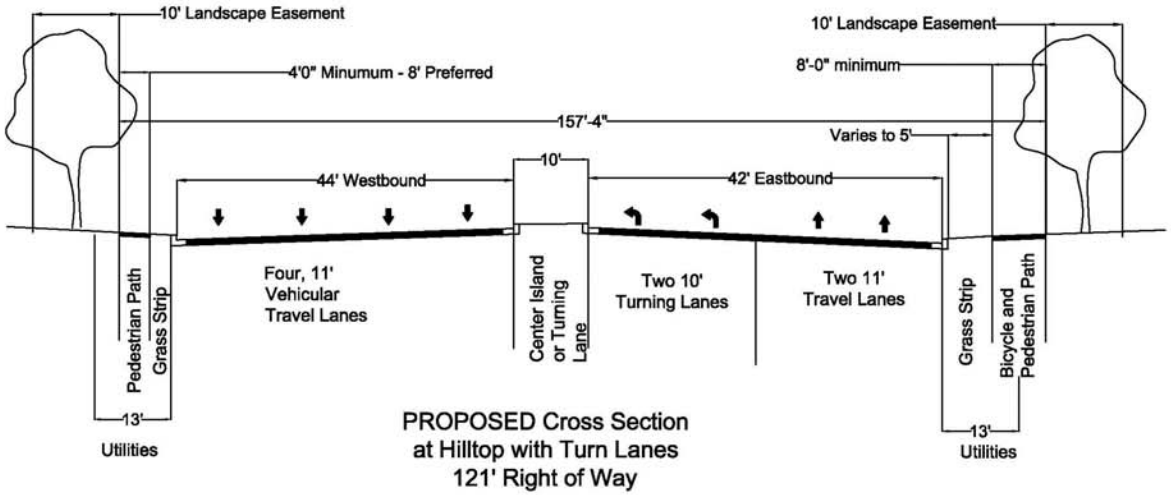

Conceptual Forest Drive Street Section B
Eastbound

B

Identity						Right of Way	Curb to Curb						Back of Curb to Right of Way						Beyond Right of Way		
							Travel Lanes			Median			Bicycle Facilities	Sidewalks		Bustops					
Symbol	Street	Segment	Classification	Character	Status		# of Lanes	Width	Left Turn	Width	Trees	Shrubs	Bike Lane	Pavement type	Width	10 on Forest	Lighting	Banners	Set backs	Max. Height	Landscape Easement
A	ARIS T. ALLEN	Md 2 / Chinnquapin	Principal Arterial	Freeway / Auto Oriented	Not in Study Area	110'	4	12	Yes - limited	10' - 20'	No	Yes	No	none	0	No	Highway Interchange	No	No	N/A	No
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B	FOREST Drive	Chinnquapin / Hilltop	Principal Arterial	Suburban Medium Density / Auto Oriented	Existing	110'	6	12	Yes 11'	6' to 16'	No	Yes	No	Concrete / Asphalt	3' - 8'	Yes	Decorative at Safeway	No	20'	By Zoning District	No
B	FOREST Drive	Chinnquapin / Hilltop	Principal Arterial	Suburban Medium Density / Auto Oriented, Bicycle / Pedestrian Friendly	Proposed	120'	7; 8	11	Yes 10'	6'	Small	Yes	No	Concrete / Asphalt	4' - 8'	Yes	L.E.D. with Cutoff Sheilds	Yes	20'	65' to 4 Stories	10' Both Sides
C	FOREST Drive	Hilltop / Rosecrest Dr.	Minor Arterial	Suburban Low Density / Auto Oriented	Existing	90'	5; 4	12	Yes 11'	0' to 12'	Small	Yes	No	Concrete	4' - 8'	Yes	Corbra at Intersections	No	By Zoning District	By Zoning District	No
C	FOREST Drive	Hilltop / Rosecrest Dr.	Minor Arterial	Suburban Low Density / Auto Oriented, Bicycle / Pedestrian Friendly	Proposed	80'	5; 4	11	Yes 10'	0' to 12'	Small	Yes	No	Concrete	4' - 8'	Yes	L.E.D. with Cutoff Sheilds	Yes	Build to Landscape Easement	65' to 4 Stories	10' Both Sides
D	FOREST Drive	Rosecrest Dr. / Forest Hills Ave	Minor Arterial	Suburban Low Density / Auto Oriented	Existing	80'	4	12	Yes 11'	0' to 12'	Small	Yes	No	Concrete	4' - 8'	Yes	Corbra at Intersections	No	By Zoning District	By Zoning District	No
D	FOREST Drive	Rosecrest Dr. / Forest Hills Ave	Minor Arterial	Suburban Low Density / Auto Oriented, Bicycle / Pedestrian Friendly	Proposed	80'	4	11	Yes 10'	0' to 12'	Small	Yes	No	Concrete	4' - 8'	Yes	L.E.D. with Cutoff Sheilds	Yes	Build to Landscape Easement	65' to 4 Stories	10' Both Sides
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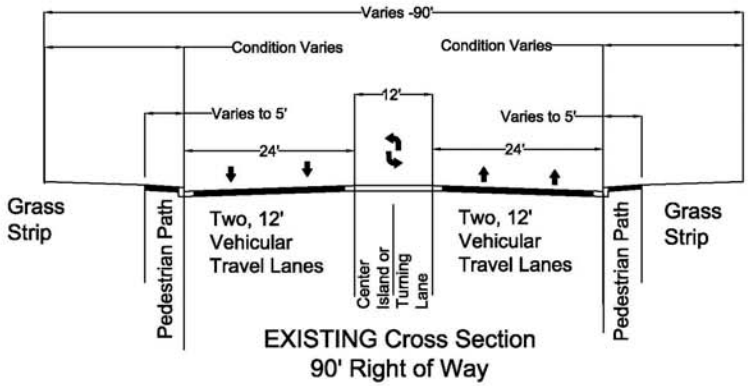
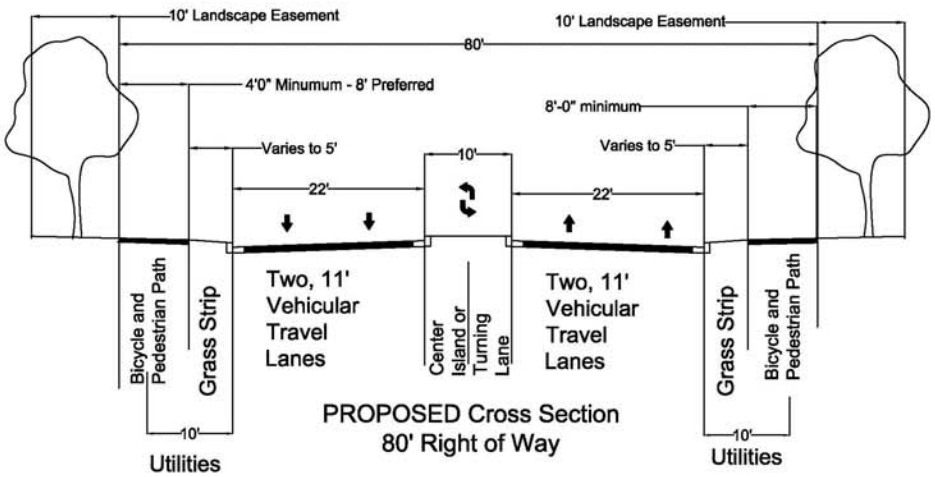


EXISTING Cross Section
90' Right of Way



PROPOSED Cross Section
80' Right of Way

Conceptual Forest Drive Street Section C
Eastbound

C

Identity						Right of Way	Curb to Curb						Back of Curb to Right of Way						Beyond Right of Way		
							Travel Lanes			Median			Bicycle Facilities	Sidewalks		Bustops	Lighting	Banners	Set backs	Max. Height	Landscape Easement
Symbol	Street	Segment	Classification	Character	Status		# of Lanes	Width	Left Turn	Width	Trees	Shrubs	Bike Lane	Pavement type	Width	10 on Forest					
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C	FOREST Drive	Hilltop / Rosecrest Dr.	Minor Arterial	Suburban Low Density / Auto Oriented, Bicycle / Pedestrian Friendly	Proposed	80'	5; 4	11	Yes 10'	0' to 12'	Small	Yes	No	Concrete	4' - 8'	Yes	L.E.D. with Cutoff Sheilds	Yes	Build to Landscape Easement	65' to 4 Stories	10' Both Sides
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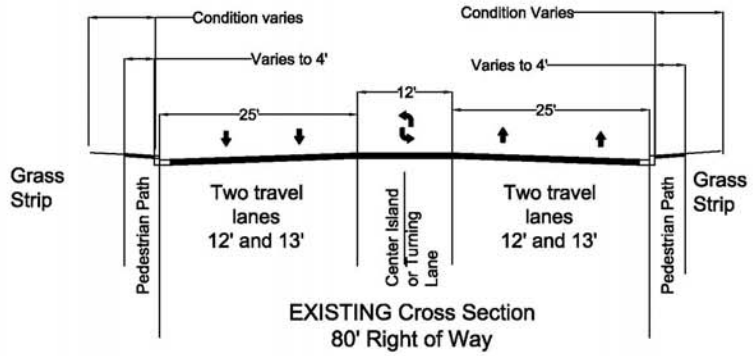

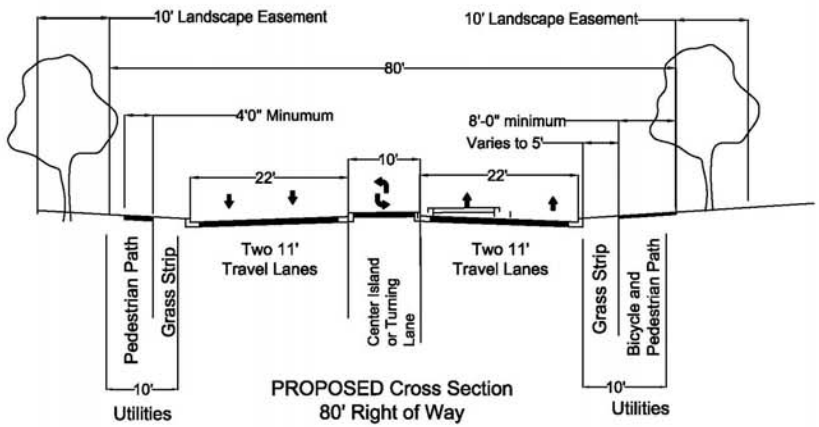

Conceptual Forest Drive Street Section D
Eastbound

D

Identity						Right of Way	Curb to Curb						Back of Curb to Right of Way						Beyond Right of Way		
							Travel Lanes			Median			Bicycle Facilities	Sidewalks		Bustops					
Symbol	Street	Segment	Classification	Character	Status		# of Lanes	Width	Left Turn	Width	Trees	Shrubs	Bike Lane	Pavement type	Width	10 on Forest	Lighting	Banners	Set backs	Max. Height	Landscape Easement
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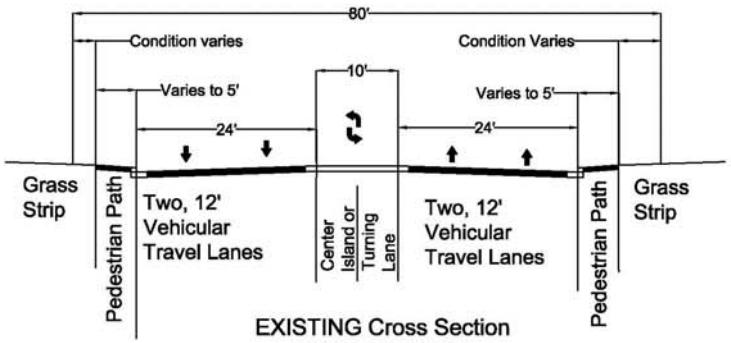
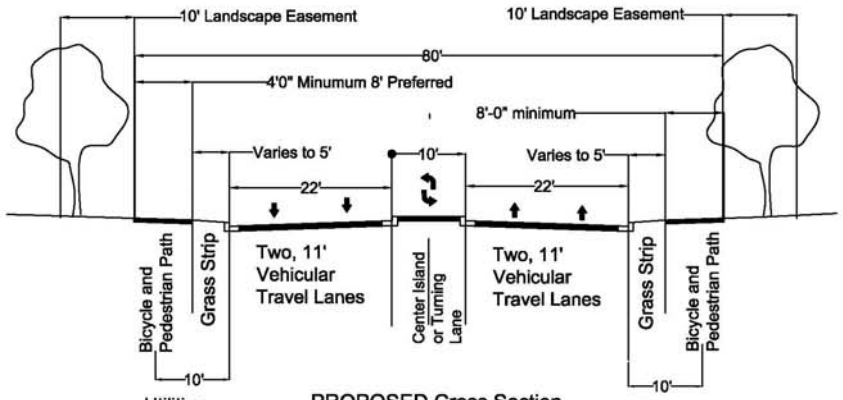


EXISTING Cross Section
80' Right of Way



PROPOSED Cross Section
80' Right of Way

Conceptual Forest Drive Street Section E
Eastbound

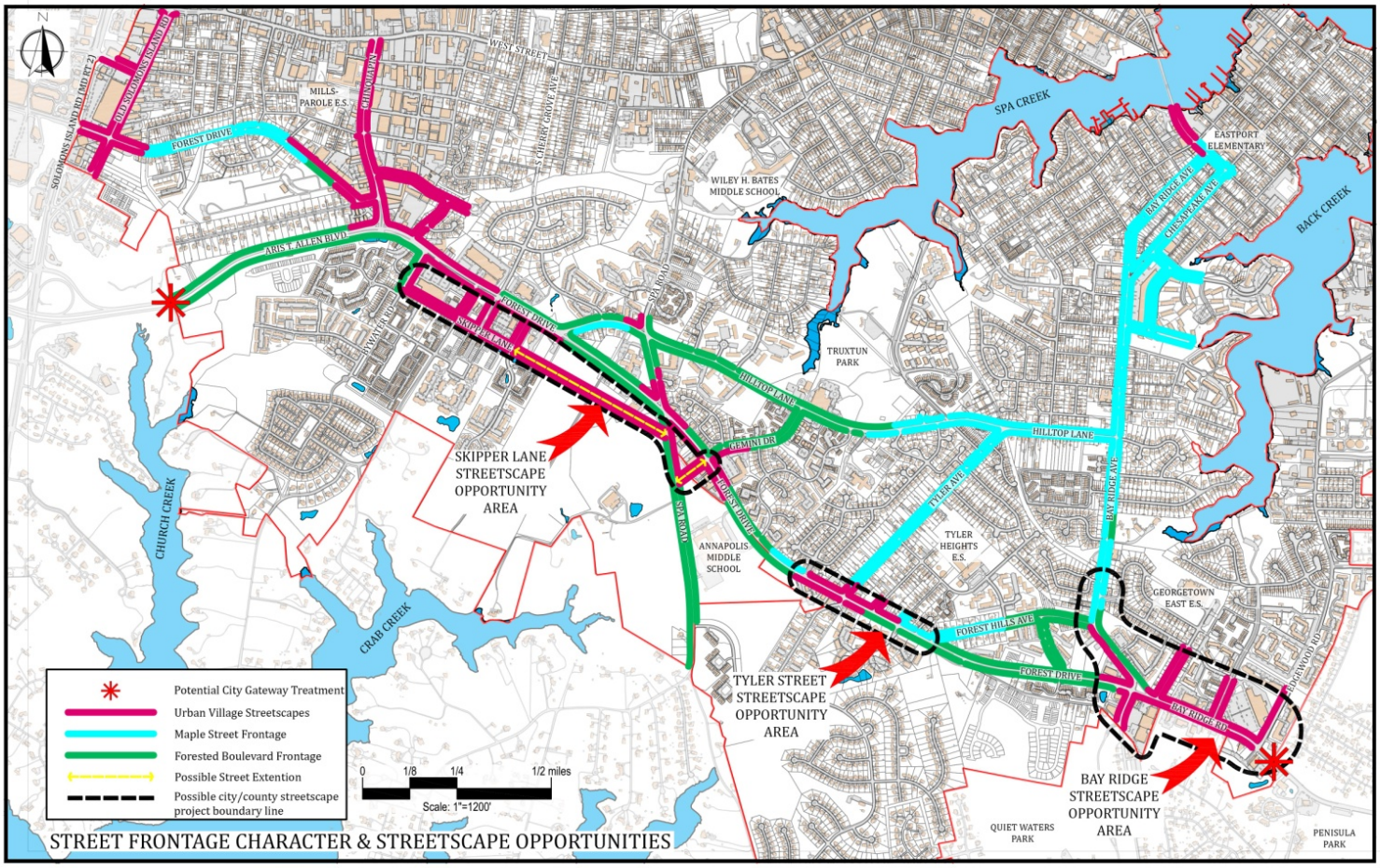
E

Street Frontage Designations

The Street Frontage Character Map illustrates the desired community character specifically along the frontages of the Forest Drive corridor and other key sector streets. It designates three frontage character types that will help guide development, placemaking, and street improvements. These frontage designations are intended to help preserve segments of green, forested character along the corridor and transform the proposed urban village areas. These frontage designations should be reflected in the new zoning designations for these areas and in the recommended new City Complete Street Standards. The three frontage character types are:

- FGB - Forested green boulevards segments with preserved planted buffers hiding built areas behind
- MS – Maple Street segments with residential styles, front yards and buildings setback from but facing the street.
- US – Urban Streetscape Areas

Figure Thirty-One: Street Frontage Character



4.3 Streetscape Project Recommendations

To catalyze needed private investments and redevelopment in key village centers, three specific public-private streetscape projects are recommended. These streetscape projects should follow the street front designations, and for the area in the County ROW, should follow the County Complete Street Standards and

Ultimate Street Sections. These projects may require the use of pedestrian easements to minimize the loss of lot depth in areas where the older frontage parcels are shallow and built up close to the current street edge. The three areas are highlighted on the Street Frontage Character map and include:

- Tyler Heights Streetscape Area. A City/County streetscape project here could help to catalyze redevelopment of home sites with driveways onto the corridor. Promote new village scaled commercial and mixed uses facing the corridor, and allow the creation of a wider ROW along with a series of parallel alley segments that redirect parcel access to side streets.
- Bay Ridge Road Streetscape Area. A City/County streetscape project here is needed to help unify and catalyze redevelopment of this opportunity area and to create the links needed to enable City and County residents to walk and bike to new shops and businesses. Streetscape should include the frontage along Bay Ridge Road and key side streets on the north side.
- Skippers Lane Streetscape Area. The creation of a slow speed, bikeable, walkable City street that parallels Forest Drive would create a pleasant avenue-like destination in this part of the City of equal appeal and economic value as West Annapolis or Inner West Street. Like these areas, the street should form a grid with block connectivity. The street and its streetscape could largely be implemented by the private sector. Extending the current one-and-a-half block segment in Village Green from the current Safeway to Spa Road and possibly to Gemini Drive is already a recommended action in the Comprehensive Plan. The street should include on-street parking to promote street-edge urban village-style development.

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APPENDIX D
Possible Modifications to Traffic Adequate Public Facility Ordinance and Traffic Impact Analysis Guidelines

Several changes to the current traffic adequate public facility ordinance and traffic impact study guidelines have been proposed since the 2009 Comprehensive Plan. The following reiterates some of these changes, and adds new options available to the City. The County is currently considering new multimodal transportation requirements, which should be coordinated with any changes made in the City.

The traffic impact study guidelines for a potential development project should be modified so that:

- The proposal analyzes the total impact/benefit to the City. Consider an evaluation approach based on a grading system that scores the total effort offered by the applicant to mitigate the effects of the proposed development and acknowledge the benefits.
- A mitigation option list is provided. This list would identify projects that are a priority to the affected community. This could serve as a substitute mitigation proposal. However it does not affect the basic requirements of site development mandated by code such as stormwater or tree canopy requirements.
- Mitigation options are categorized into major themes, i.e. transportation, economic development or environment.
- City priorities to be implemented over time are identified
- Alternative improvements that are within the category for mitigation can be provided. (Example: If an initial traffic study reveals congestion near the proposed project is a high priority but the solutions available for improvement will not significantly alter the congestion, the applicant may offer other measures such as improvements to Transit or Pedestrian/Bike facilities). The applicant should be required to meet a “reasonable standard for improvement” within each major category.
- The applicant is allowed to make a payment (fee-in-lieu) to an escrow account that can be applied to a mitigation option as identified by staff. Place a time limit on the escrow account to have money used by a certain date or it gets refunded

Another method to modify the APFO and guidelines is to continue with the current approaches but with smaller revisions that would produce results that are much more realistic/practical for the real world in a multimodal city and consistent with the goals of the 2009 Comprehensive Plan. These changes should be consistent with the Complete Streets approach and ensure that future development projects are evaluated against their contribution to the City’s transportation performance broadly defined to include safety, transit ridership and cost effectiveness, heavy truck congestion, automobile congestion, bicycle and pedestrian circulation, as well as the existing nature and purpose of the surrounding road network. Changes might include the following:

- Require development applications to provide traffic impact studies to address adequacy of transit, biking and walking as well as vehicular traffic. Require a multimodal LOS analysis of intersections at staff discretion. Require that a context map be provided that locates the existing street connectivity, transit services, bike and pedestrian routes and major destinations within the vicinity of the development site and identifies relevant gaps and obstructions. The vicinity should include at a minimum a one-mile radius.

- Require that site vehicular trip generation estimates reflect a Complete Streets mode emphasis as well as a proposed site mode split data. Permit trip generation estimates to quantify estimated pass-by travel changes such as trip capture and commuter trip reversals.
- Require that the traffic impact studies use simulation analyses for all locations; either SimTraffic or Vissim software should be used. Simulation models should be built to scale using ortho-rectified aerial images available from MDSHA, and use current signal timings provided by the City, County, and/or State. Require that the simulation models be calibrated to reflect existing queues along approaches to the intersections.
- Retain the existing requirement that overall intersection LOS/delay metrics shall be used to determine vehicular adequacy at signalized intersections.
- Add a requirement that at the discretion of staff, vehicular adequacy determinations shall also consider operations along individual approaches as follows:
    - Require a review of queuing capacity. Measurements shall be taken along each approach to identify the "critical length," which means the point at which the queue would intersect a vital conflict point in the network. These vital conflict points should be defined by the City during the scoping meeting, and may include adjacent signalized or un-signalized intersections, ramp junctions, or driveways where extension of the queue to this point would be expected to have a significantly adverse effect on traffic flow through the system. Any queues extending beyond this point, either under existing or proposed conditions, will require mitigation. Retain the existing requirement that mitigation needs to be sought for any signalized intersection (overall intersection), and additionally, when feasible and depending on the volume at the intersection, for the individual approach to an un-signalized intersection and/or ramp junction, that is proposed to operate at LOS E or F as a result of the addition of the development's trips. This means that any overall signalized intersection, or approach to an un-signalized intersection or ramp junction, currently operating at LOS D or better that is going to drop to LOS E or F shall to be mitigated back to LOS D (when possible), and will not be permitted to experience any degradation in average delay.
- Provide that what measure gets selected for mitigation, how, when or "if" it gets implemented, is at the discretion of the City or the agency that manages the facility. The City may require alternate mitigation in cases in which the only effective improvement to an identified inadequacy is one that is considered by the City to be not viable due to unacceptable anticipated impacts. Those impacts include stormwater runoff, damage to environmental features, etc.
- Expand the list of acceptable mitigation options that may be required or considered by staff and the Planning Commission to include an option to substitute improvements to existing and proposed transit stops, bike and pedestrian routes, and crossings for vehicular circulation improvements.
- An option to allow the applicant to make a payment (fee-in-lieu) to an escrow account that can be applied to a mitigation option as identified by staff. Place a time limit on the escrow account to have money used by a certain date or it gets refunded
- An option to provide access management improvements—such as closure of access points that are determined to be too close to other intersections.
- An option to shift improvements to alternate routes, to encourage shifting travel patterns to route with available capacity.

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- Commitments by an employer to help reduce peak hour commuter trips through telecommuting, flexible work hours, and compressed work schedules etc.
- Add a provision that exceptions to Complete Street design standards conformance may be granted by staff and the Planning Commission based on mobility/traffic analysis that demonstrates that one on more modes should not be planned for in that location for reasons of safety. (Example: existing curb to curb street width is insufficient to allow for a bike lane.)
- Consider supplementing the current letter grade terminology used to "grade" user satisfaction and define LOS with the following industry standard terms:
    - Free flow – A
    - Reasonably free flow – B
    - Stable flow – C
    - Approaching unstable flow – D
    - Unstable flow operating at capacity - E
    - Forced or breakdown flow with more demand than capacity - F

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APPENDIX E: Phased Implementation Action Plan with Principal and Supporting Solutions

The following tables summarizes the specific actions recommended by this study and prioritizes them into near-; mid-, and long-term actions. The first set of tables sorts the actions by theme, the final sections are sorted by time frame.

Goal: Transform and enhance character by balancing the small changes such as adding streetscape elements with the larger changes in community character and development patterns.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.1.1	Implement the community character recommendations described in detail in the following section with less emphasis on use and more emphasis on form.	1	Develop Community Character. Continue to refine community character designations and update the zoning code as needed.	Planning & Zoning	Near-Term
		8	HACA Coordination. Coordinate with HACA on redevelopment plans for their sites in the Sector Study area to ensure their new site designs follow and contribute to the sector vision.	Mayor's Office	Near-Term
3.1.2	Establish new city street design standards that incorporate complete street design standards, multimodal use, and contextual design.	2	New City Street Design Standards/Typologies. Develop and adopt new Complete City street design standards with a set of Annapolis-specific street typologies and a street connectivity requirement. Work with the County to develop complete street standards .	Public Works	Near-Term
#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.1.3	Add unique streetscape elements to help the corridor look and feel like a special part of Annapolis. Consider adding special banner poles in appropriate areas along the corridor.	3	Corridor Beautification Initiatives. Partner with Greenscape, SOFO, the ECA, the EBA, other HOAs, corridor schools, and centers of worship to beautify the corridor and properties along it.	City and Anne Arundel County	Near-Term
3.1.4	Work with local cultural heritage and arts organizations and community groups to bring public art, local cultural activities, and events to this sector of the City. Consider holding a competition for special banner art (with poles) in the corridor– like the "Chickens."				
3.1.5	Work with the Greenscape Annapolis initiative, building owners, Board of Education, and HOAs to coordinate volunteer improvements in this area.				
3.1.6	Consider street-side public pocket park enhancements in several areas with extra ROW along the corridor.	24d	Add Selected Street Edge Pocket Parks to CIP. Possible locations Hilltop Ln./Forest Dr.; Forest Dr./Spa Rd.; and Forest Dr./Annapolis Neck Rd.	Planning & Zoning and Public Works	Mid-Term

ZONING AND APPROVAL PROCESS

Goal: Modernize and simplify zoning regulations in this sector to ensure new development establishes a balance of land use patterns consisting of interconnected neighborhood destinations and pedestrian-scaled design.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.2.1	Change the current land-use and zoning maps, and the current zoning text/design guidelines for the land along the corridor, to enable and incentivize transformation from an aging suburban character to an Annapolis-like low scale urban character. (This should include applying a refined mixed-use zone to the corridor and/or revising the B2 zone as well as correcting split-zoned lots.)	7	Zoning Map Changes. Undertake a comprehensive zoning map change process for the sector to apply the new zoning designations and correct the split-zoned lots—accommodate applications from interested parties based on the sector vision.	Planning & Zoning	Near-Term
3.2.2	Establish a street frontage standard, and map the applicable areas to guide preservation and future development.	2	New City Street Design Standards/Typologies. Develop and adopt new Complete City street design standards with a set of Annapolis-specific street typologies and a street connectivity requirement. Work with the County to develop complete street standards for the Forest Drive corridor for use by both jurisdictions.	Public Works	Near-Term
#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.2.3	Encourage parcel interconnectivity and shared access points for corridor frontage properties.	7	Zoning Map Changes. Undertake a comprehensive zoning map change process for the sector to apply the new zoning designations and correct the split-zoned lots—accommodate applications from interested parties based on the sector vision.	Planning & Zoning	Near-Term
3.2.4	Create different prototype standards for the residential and commercial sections. Plan for ample street tree canopy, greenway elements, water quality improvements, banners and public art, and wide walks like in Upper West Street.	1	Develop Community Character. Continue to refine community character designations and update the zoning code as needed.	Planning & Zoning	Near-Term

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#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.2.5	Incentivize land uses that create neighborhood destinations so that people in the City and peninsula can easily walk and bike, to shorten and reduce trips for dining, shopping and daily services rather than travel off the peninsula and out of the city.	18	Redevelopment Incentive Program. Through zoning changes, develop and adopt administrative processes that can fast-track redevelopment of older existing corridor commercial sites as well as access-constrained residential frontage sites to encourage owners to redevelop or renovate their sites, facades, signage and/or stormwater management.	Planning & Zoning	Mid-Term
3.2.6	Incentivize land uses that provide local jobs within the city to rebalance the current one-directional peak commuter rush hour travel pattern.				
3.2.7	Ensure that the two opportunity areas in this sector help catalyze greater transit service in the City. The 2009 Plan states that they should be developed to promote a high demand for public transit on the corridor to encourage the effective provision of transit city-wide. In other words, the development of the opportunity area and its transit demand should have a positive spillover effect on the quality of City transit service. Development should demand service to such a degree that residents elsewhere in the corridor and City benefit by virtue of their proximity to the bus routes serving these two sites.				
3.2.8	Incentivize access changes to corridor frontage properties that have driveways that back onto the arterial or that lack access to a side or parallel street in order to reduce congestion from cars backing into traffic or waiting to make left hand turns.				
3.2.9	Attract and enhance services and businesses that serve the city and peninsula so that people do not need to travel out to the County as often.				

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MOBILITY: VEHICULAR AND TRANSIT

Goal: Formalize inter-jurisdictional cooperation with the mission of having shared design guidelines, complete streets development, public transit improvements, and investments in new technology that helps improve road capacity.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.3.1	Revise the current City traffic study procedures and traffic adequate public facilities requirements to include assessment of multi-modal trips and non-vehicular mitigation, as well as other items described in Appendix D..	9	Amend Transportation Adequate Facilities Ordinance (APFO) and Traffic Impact Analysis Guidelines. Develop and adopt amendments to the City's transportation APFO and the Traffic Impact Analysis Guidelines to assume a multimodal, complete street approach to traffic analysis. Coordinate with the County's current multimodal transportation legislation.	Planning & Zoning	Near-Term
3.3.2	Establish complete street standards for the City and require all future city street improvements to address all modes of travel in their improvements.				
#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.3.3	Plan for low-scale transit-oriented infill along the corridor and at the two opportunity sites to better support greater transit use.	5	Updated Greater Annapolis Area BMC Model Runs Update. Rerun and view the traffic model with updated City land use data when available.	Planning & Zoning	Near-Term
		4	Land Use Database. Institute a regular process of monitoring and updating land use changes in the City. Include information on the types of jobs and of household size.	Planning & Zoning	Near-Term
3.3.4	Work with the County and the State to further improve the Fairfax Road/Chinquapin Round Road/Bywater Road segment.	6	Coordinated Transportation Planning. Work with County and State to communicate the transportation implications of the City's new database and travel behavior findings as a part of ongoing local and regional transportation planning to ensure that County and regional transportation planning and funding better understands and reflects Sector issues. Offer the Corridor as a demonstration project for new initiatives.	City and Anne Arundel County	Near-Term

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#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.3.5	Support at the City-level use of new technologies and business models that reduce the number of daily trips city households need to make in private vehicles through ridesharing, driverless vehicles, etc.	9	Amend Transportation Adequate Facilities Ordinance (APFO) and Traffic Impact Analysis Guidelines. Develop and adopt amendments to the City's transportation APFO and the Traffic Impact Analysis Guidelines to assume a multimodal, complete street approach to traffic analysis. Coordinate with the County's current multimodal transportation legislation.	Planning & Zoning	Near-Term
3.3.6	Envision the City as a series of Ped-shed-scaled neighborhoods and districts that measure about one mile across.				
3.3.7	Improve City bus service in the Forest Drive Corridor—strive for more frequent, inexpensive and efficient service.	13	CIP Phasing and Near-term CIP Improvement Projects. Plan for phased implementation of priority road improvements with funding for feasibility assessment, engineering design and construction. Implement near-term city road and environmental projects in the sector.	Planning & Zoning	Near-Term
3.3.8	Improve City services with routing and span-of-service info at bus stops and improved bus boarding accessibility.				
3.3.9	Review the location of the well-used Robinwood bus stop pair to address safety issues. Either relocate it to allow pedestrians to cross Forest Drive at the planned traffic signal nearby or add a mid-block pedestrian crossing to improve visibility and warnings.				
3.3.10	Improve other local street grids to create network redundancy and route choices.	11	Skippers Lane. Require development applicants in this area to plan for extension of this street as part of a grid network, as it passes through the various parcels to achieve a full link from Bywater Road to Spa Road. The street should include streetscape treatments and on-street parking.	Planning & Zoning	Near-Term
3.3.11	Evaluate areas of speeding and add traffic calming measures on local streets where cut through traffic moves too fast.	14	Traffic-calming Measures. Develop and install traffic calming measures on local through streets such as Tyler Street, Silopanna Road, and Georgetown Road.	Public Works	Mid-Term
3.3.12	Implement the street network connections planned for in the Comprehensive Plan for the creation of network redundancy and better access management on the main corridor.	10	Road Improvement Escrow Fund. Establish a fund to collect APFO contributions that can be assigned to City CIP projects and joint County-City CIP projects that improve City transportation network capacity in areas impacted by the specific projects.	Planning & Zoning	Near-Term
3.3.10	Improve other local street grids to create network redundancy and route choices.				

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#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.3.13	Expand the new BMC refined model to create a refined city-wide traffic model to better understand and project City traffic at the network level.	21	Greater Annapolis Area BMC Model Update. Review model to include 2020 Census data.	Planning & Zoning	Mid-Term
3.3.14	Install smart traffic signals (intelligent transportation systems) on City streets that are capable of better managing congestion generally as well as during events and emergencies and can coordinate with County and State signals that now provide coordinated management on the corridor.	19	SHA/County/City Joint Project Planning. Work with SHA and the County to plan for future capacity improvements to the Aris T. Allen Boulevard, Chinquapin Round Road, Bywater Road, and the Fairfax Road area.	City, Anne Arundel County, and SHA	Mid-Term
		24	CIP Project Funding. Develop a budget funding program for near-, mid-, and long-term sector improvements projects such as: a. Bike and Pedestrian Improvement Projects including: Eastport to Quiet Waters Park link, trail link from Bay Ridge Road to Hilltop Lane, and local links for east/west bike spine route along reconnected local streets b. Signals. Smart city traffic signal conversions throughout the sector. c. Road Projects such as City street reconnection and extension project planning, including Gemini Road extension and Louis Drive reconnection. d. Selected Street Edge Pocket Parks. Possible locations Hilltop Lane and Forest Drive; Forest Drive and Spa Road; and Forest Drive and Annapolis Neck Road	Planning & Zoning and Public Works	Mid-Term
		26	Gemini Road Extension. Develop a final alignment, engineering plans, and acquisition plans as needed for the extension of Gemini Road to Spa Road. Coordinate with property owners and the County.	Planning & Zoning	Mid-Term
3.3.15	Work with the State and County to establish a commuter transit bus line that can tie to existing and future regional routes. Plan for stops at the two opportunity sites and a supporting park and ride lot and/or kiss and ride at the eastern end of the corridor.	20	Regional Bus Route. Work with MTA to confirm feasibility and institute a regional bus route in the corridor.	MTA	Mid-Term
3.3.16	Improve local public transit in the Eastport area to better serve tourists and event traffic.	22	Intermodal Transit Center. Work with the County and State to develop an Intermodal transit center on or near Old Solomon's Island Road.	City and Anne Arundel County	Mid-Term
3.3.17	Work with the State and County to establish an intermodal transit center near the City line adjacent to Parole that can tie into other regional services.				
3.3.18	Reconnect existing closed streets, gaps and cul-de-sacs where possible to allow for bike and pedestrian travel.	25	County Corridor Project Planning. Work with County to develop a phased plan funding of design and construction of corridor enhancements and capacity improvements as needed by City and County growth.	City and Anne Arundel County	Long-Term

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MOBILITY: BIKE AND PEDESTRIAN

Goal: Promote a shift from auto-oriented development to multimodal development by investing in strategic upgrades to the pedestrian and bicycle networks.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.4.1	The City should make investments in other modes of transportation and make funding for bike and pedestrian infrastructure improvements a higher priority.	24	CIP Project Funding. Develop a budget funding program for near-, mid-, and long-term sector improvements projects such as: a. Bike and Pedestrian Improvement Projects including: Eastport to Quiet Waters Park link, trail link from Bay Ridge Road to Hilltop Lane, and local links for east/west bike spine route along reconnected local streets. b. Signals. Smart city traffic signal conversions throughout the sector. c. Road Projects such as City street reconnection and extension project planning, including Gemini Road extension and Louis Street reconnection. d. Selected Street Edge Pocket Parks. Possible locations Hilltop Lane and Forest Drive; Forest Drive and Spa Road; and Forest Drive and Annapolis Neck Road	Planning & Zoning and Public Works	Mid-Term
3.4.2	Prioritize improvement at the intersections and gaps in the network located within a quarter mile of major destinations such as schools, parks and neighborhood shopping areas, bus stops, the recreation center, and the library.				
3.4.3	Provide safe walking routes to schools and encourage private schools to provide bus services, to reduce the education rush hour (routes should be off Forest Drive where practicable).				
#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.4.4	Fill in missing sidewalk connections and gaps along both sides of Forest Drive where applicable (near Annapolis Middle School and dense retail areas).	15	Interim Sector Bike Spine. Design and implement a continuous bike route along local streets. Fix existing gaps and providing markings and signage.	Planning & Zoning and Public Works	Near-Term
3.4.5	Work with the County to incorporate a continuous East/West bike route along the corridor as a part of the coordinated City/County ultimate complete street planning. At a minimum, plan for a continuous multipurpose path on the corridor. Extend the route from Route 2 to Edgewood Road in the East.	16	Longer term Bike Spine. Work with the County to incorporate a continuous East/West bike route along the corridor as a part of the coordinated City/County ultimate complete street planning. At a minimum, plan for a continuous multipurpose path on the corridor. Extend the route to Edgewood Road in the East and to Route 2 in the West.	City and Anne Arundel County	Near-Term

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#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.4.6	Reconnect existing closed streets and cul-de-sacs to allow for bike and pedestrian travel at a minimum. Where possible, restore full traffic use. Louis Street is one example of a needed reconnection.	27	<u>City and County CIP Projects.</u> Implement long-term project list of improvements in the Sector Study area such as: a. Bike lanes in Eastport. b. Multi-use path along the Forest Drive corridor from Edgewood Road to Route 2/Solomon's Island Road. c. Pedestrian bridge over Route 2/Solomon's Island Rd. at Forest Drive or near Intermodal Center	City and Anne Arundel County	Long-Term
3.4.7	Plan for and make improvements to establish a nearer-term parallel continuous East/West route through the City neighborhoods using signage, on-street lanes or signed shared street sections on city roads and off-street links as well as an on-street link from Eastport to Quiet Waters Park.				

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GREENING OF ANNAPOLIS / ENVIRONMENT

Goal: Work with new development, private property owners, and conservancy organizations to link existing and new green spaces together, expand stormwater management, and reduce impervious surfaces to improve water quality in the sector.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.5.1	Create a City Greenway Plan that coordinates with the County's Green Infrastructure Plan for the area.	12	City Greenway Concept. Incorporate concepts for a City Greenway into the upcoming Comprehensive Plan update, coordinate with County Green Infrastructure Plans and the Annapolis Conservancy Board.	OEP and Planning and Zoning	Near-Term
3.5.2	Incorporate local streets into the greenway network. Develop and apply green street design standards as part of the new Complete Street Typology. Retrofit existing local streets as part of beautification and traffic calming projects.				
3.5.3	Reduce the development potential of properties identified as "Environmental enhancement area", to protect more forest, provide additional community stormwater management potential, or to provide impervious surface reduction				
#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.5.4	Plan for a park-to-park Greenway connection in this sector if possible, using the old railroad ROW.	12	City Greenway Concept. Incorporate concepts for a City Greenway into the upcoming Comprehensive Plan update, coordinate with County Green Infrastructure Plans and the Annapolis Conservancy Board.	OEP and Planning and Zoning	Near-Term
3.5.5	Require future developments to plan for open spaces and conservation easements to connect into the overall Greenway.				
3.5.6	Use the "developer fund" to plant trees along Forest Drive.	17	Targeted Preservation and Coordination with Annapolis Conservancy Board. Work with the Annapolis Conservancy Board and City property owners to identify parcels for Tree Canopy and Forest Conservation Banks. Bank sites within the City might include property with priority preservation forest areas, key future greenway areas, excess land areas the County ROW, unprotected forests in areas such as HOA common open spaces, church properties,	OEP and Planning and Zoning	Near-Term
3.5.7	Continue implementing the City's 2016 Watershed Improvement Plan. Require developers to assist with this effort.				

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			school sites etc.		

#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.5.8	Work with the County to establish a coordinated City/County street tree plan in County Rights of Way.	23	Forest and Street Tree Bank Option. Supplement the current forest conservation and tree canopy policy to allow the option to create credit banks in the City and Annapolis Neck Peninsula as an incentive both for further preservation and for small site redevelopment. Banks could be located on sites with priority preservation areas, in targeted greenway areas, in the County ROW, etc. Smaller re-development sites in the corridor should be eligible to meet their obligations with off-site mitigation.	OEP and Planning and Zoning	Mid-Term
3.5.9	Adjust regulations to allow and encourage street tree and forested buffers along the corridor to create a continuous greenway.				
3.5.10	Continue and expand programs to plant streets trees on other City streets such as in the Parole neighborhood				
3.5.11	Review City standards to better incentivize or require the renovation/redevelopment of sites developed in the corridor prior to current stormwater management requirements.	18	Redevelopment Incentive Program. Through zoning changes, develop and adopt administrative processes that can fast-track redevelopment of older existing corridor commercial sites as well as access-constrained residential frontage sites, as long as they meet certain conditions, to encourage owners to redevelop or renovate their sites, facades, signage and/or stormwater management. Such conditions to be met for expedition should include a cap on the percent increase in density, and passing a review for adequate public facilities.	Planning & Zoning	Mid-Term
3.5.12	Review and update parking requirements to help reduce the requirements for impervious surface parking areas.				

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3.5.13	Support use of new technologies that can help to reduce the number of daily trips City and peninsula households make each day using fossil fuel powered vehicles, to encourage a reduced carbon footprint.				

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VIBRANT ECONOMY

Goal: Expand the City's tax base while also protecting and enhancing community character by setting and reaching measurable goals.					
#	Principal Solution	#	Action Item	Responsibility	Timeframe
3.6.1	The City should work towards implementing the Economic Development Plan strategy that will help prepare it for the next fifteen years of rapid technological change.	1	Develop Community Character. Continue to refine community character designations and update the zoning code as needed	Planning & Zoning	Near-Term
3.6.2	The City should set measurable goals for increasing the City tax base and should monitor and report on progress towards this goal on a regular basis. The monitoring should include a report on the progress of each of the City's business districts so that this sector study's progress can be tracked.				
3.6.3	The City should make placemaking a part of its economic development strategy in this part of the City.	3	Corridor Beautification Initiatives. Partner with Greenscape, SOFO, the ECA, the EBA, other HOAs, corridor schools, and centers of worship to beautify the corridor and properties along it.	City and Anne Arundel County	Near-Term
#	Supporting Solution	#	Action Item	Responsibility	Timeframe
3.6.4	The City should set measurable goals for improving the amount of neighborhood retail in the City.	18	Redevelopment Incentive Program. Through zoning changes, develop and adopt administrative processes that can fast-track redevelopment of older existing corridor commercial sites as well as access-constrained residential frontage sites to encourage owners to redevelop or renovate their sites, facades, signage and/or stormwater management.	Planning & Zoning	Mid-Term
3.6.5	Procedures for review and approval of development projects should include consideration of the project's ability to contribute to the tax base as one important criterion for approval.				
3.6.6	The City should consider providing incentives to catalyze private reinvestments in the sector that help to achieve the sector vision.				
3.6.7	The City should set measurable goals for preserving a "jobs to worker" balance to ensure that residents can work close to home and so the City does not further slip towards becoming a bedroom community.				
3.6.8	The City should encourage and				

	support the development of emergent business types in the sector area especially those that are clean and green, to both diversify the local economy and meet goals for a “green” Annapolis.				

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The following list sorts the actions by timeframe for implementation.

Near-Term Actions: 0 to 3 years (2018 to 2021)

1. Develop Community Character. Continue to refine community character designations and update the zoning code as needed
2. New City Street Design Standards/Typologies. Develop and adopt new Complete City street design standards with a set of Annapolis-specific street typologies and a street connectivity requirement. Work with the County to develop complete street standards for Forest Drive.
3. Corridor Beautification Initiatives. Partner with Greenscape, SOFO, the ECA, the EBA, other HOAs, corridor schools, and centers of worship to beautify the corridor and properties along it.
4. Land Use Database. Institute a regular process of monitoring and updating land use changes in the City. Include information on the types of jobs and of household size.
5. Updated Greater Annapolis Area BMC Model Runs Update. Rerun and view the traffic model with updated City land use data when available.
6. Coordinated Transportation Planning. Work with County and State to communicate the transportation implications of the City's new database and travel behavior findings as a part of ongoing local and regional transportation planning to ensure that County and regional transportation planning and funding better understands and reflects Sector issues. Offer the Corridor as a demonstration project for new initiatives.
7. Zoning Map Changes. Undertake a comprehensive zoning map change process for the sector to apply the new zoning designations and correct the split-zoned lots—accommodate applications from interested parties based on the sector vision.
8. HACA Coordination. Coordinate with HACA on redevelopment plans for their sites in the Sector Study area to ensure their new site designs follow and contribute to the sector vision.
9. Amend Transportation Adequate Public Facilities Ordinance (APFO) and Traffic Impact Analysis Guidelines. Develop and adopt amendments to the City's transportation APFO and the Traffic Impact Analysis Guidelines to assume a multimodal, complete street approach to traffic analysis. Coordinate with the County's current multimodal transportation legislation.
10. Road Improvement Escrow Fund. Establish a fund to collect APFO contributions that can be assigned to City CIP projects and joint County-City CIP projects that improve City transportation network capacity in areas impacted by the specific projects.
11. Skippers Lane. Require development applicants in this area to plan for extension of this street as part of a grid network, as it passes through the various parcels to achieve a full link from Bywater Road to Spa Road. The street should include streetscape treatments and on-street parking.
12. City Greenway Concept. Incorporate concepts for a City Greenway into the upcoming Comprehensive Plan update, coordinate with County Green Infrastructure Plans and the Annapolis Conservancy Board.
13. CIP Phasing and Near-term CIP Improvement Projects. Plan for phased implementation of priority road improvements with funding for feasibility assessment, engineering design and construction. Implement near-term city road and environmental projects in the sector.
14. Traffic-calming Measures. Develop and install traffic calming measures on local through streets such as Tyler Street, Silopanna Road, and Georgetown Road.

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15. Interim Sector Bike Spine. Design and implement a continuous bike route along local streets. Fix existing gaps and providing markings and signage.
16. Longer term Bike Spine. Work with the County to incorporate a continuous East/West bike route along the corridor as a part of the coordinated City/County ultimate complete street planning. At a minimum, plan for a continuous multipurpose path on the corridor. Extend the route to Edgewood Road in the East and to Route 2 in the West.
17. Targeted Preservation and Coordination with Annapolis Conservancy Board. Work with the Annapolis Conservancy Board and City property owners to identify parcels for Tree Canopy and Forest Conservation Banks. Bank sites within the City might include property with priority preservation forest areas, key future greenway areas, excess land areas the County ROW, unprotected forests in areas such as HOA common open spaces, church properties, school sites etc.

Mid-Term Actions: 3 to 6 Years (2021 to 2024)

18. Redevelopment Incentive Program. Through zoning changes, develop and adopt administrative processes that can fast-track redevelopment of older existing corridor commercial sites as well as access-constrained residential frontage sites to encourage owners to redevelop or renovate their sites, facades, signage and/or stormwater management.
19. SHA/County/City Joint Project Planning. Work with SHA and the County to plan for future capacity improvements to the Aris T. Allen Boulevard, Chinquapin Round Road, Bywater Road, and the Fairfax Road area.
20. Regional Bus Route. Work with MTA to confirm feasibility and institute a regional bus route in the corridor.
21. Greater Annapolis Area BMC Model Update. Review model to include 2020 Census data.
22. Intermodal Transit Center. Work with the County and State to develop an Intermodal transit center on or near Old Solomon's Island Road.
23. Forest and Street Tree Bank Option. Supplement the current forest conservation and tree canopy policy to allow the option to create credit banks in the City and Annapolis Neck Peninsula as an incentive both for further preservation and for small site redevelopment. Banks could be located on sites with priority preservation areas, in targeted greenway areas, in the County ROW, etc. Smaller re-development sites in the corridor should be eligible to meet their obligations with off-site mitigation.
24. CIP Project Funding. Develop a budget funding program for near-, mid-, and long-term sector improvements projects such as:
    a. Bike and Pedestrian Improvement Projects
        - Eastport to Quiet Waters Park link
        - Trail link from Bay Ridge Road to Hilltop Lane
        - Local links for east/west bike spine route along reconnected local streets.
    b. Signals. Smart city traffic signal conversions throughout the sector.
    c. Road projects.
        - City street reconnection and extension project planning, including Gemini Road extension and Louis Street reconnection.
    d. Selected Street Edge Pocket Parks. Possible locations Hilltop Lane and Forest Drive; Forest Drive and Spa Road; and Forest Drive and Annapolis Neck Road

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Long-Term Actions: Beyond 6 Years (Beyond 2024)

25. County Corridor Project Planning. Work with County to develop a phased plan funding of design and construction of corridor enhancements and capacity improvements as needed by City and County growth.
26. Gemini Road Extension. Develop a final alignment, engineering plans, and acquisition plans as needed for the extension of Gemini Road to Spa Road. Coordinate with property owners and the County.
27. City and County CIP Projects. Implement long-term project list of improvements in the Sector Study area such as:
    a. Bike lanes in Eastport
    b. Multi-use path along the Forest Drive corridor from Edgewood Road to Route 2/Solomon's Island Road.
    c. Pedestrian bridge over Route 2/Solomon's Island Road at Forest Drive or near Intermodal Center

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