



## **York 2040 Committee Meeting #14**

Wednesday, March 4, 2020 – 5:00 PM

Public Works Multi-Purpose Room

### Agenda

1. Call to Order
2. Approval of Meeting Notes – February 5, 2020
3. Presentation: Sea Level Rise in York County
  - Claiborn Phillips, GIS Manager, York County Department of Information Technology
  - Kent Henkel, Engineering Specialist II, York County Department of Public Works
4. Presentation: Sea Level Rise in Hampton Roads
  - Benjamin J. McFarlane, AICP, Senior Regional Planner, Hampton Roads Planning District Commission
5. Committee Discussion
6. Other Business
7. Citizen Comment Period
8. Adjournment

### Attachment:

- Draft Meeting Notes, February 5, 2020
- Update Outline/Schedule of Meeting Topics
- Hampton Roads Planning District Commission Study Excerpts

## MEETING NOTES

### York 2040 Committee

Wednesday, February 5, 2020 – 5:00 p.m.  
Public Works Multi-Purpose Room  
105 Service Drive, Yorktown, Virginia

Members Present: Mark Bellamy, Gregory “Skip” Brooks, Chad Green, Leigh Houghland, Montgoussaint “Montee” E. Jons, Vivian McGettigan, R. Anderson Moberg, Richard Myer, Jacob Rizzio, Eugene Seiter, Cowles “Buddy” Spencer

Staff Present: Susan Kassel, Director of Planning and Development Services; Timothy Cross, AICP, Deputy Director of Planning and Development Services; Earl Anderson, AICP, Senior Planner; Amy Parker, Senior Planner; Daria Linsinbigler, Planning Assistant; Justin Atkins, Assistant County Attorney; Paula Hersh, Public Affairs Manager

Members Absent: Michael S. King, Sheila L. Myers

### Call to Order

Vice Chairman Jons called the meeting to order at approximately 5:00 p.m. and welcomed the Committee members and guest speakers. He stated the Chairman King was not able to attend because of illness and he asked everyone to sign a “get well” card that was being passed around.

### Approval of January 6, 2020 Meeting Notes

The January 6, 2020 meeting notes were approved unanimously.

### Public Facilities, Part 3

Kevin W. Smith, Director of Library Services, gave a presentation on library services in York County. He described the evolution of the public library from its humble beginnings in a farmhouse in 1968, later moving to a rented storefront facility, followed by the construction of the Yorktown Library in 1984 and the Tabb Library in 1999. He stated that although the upper County does not have its own library, a close partnership with the Williamsburg Regional Library system provides service to residents in District One. He said that the County employs 32 full-time equivalent library employees, and the library is open seven days a week. He stated that within the last five years, an outreach program has developed to bring services to retirement communities, schools, preschools, and various County functions. He cited a recent Gallup poll showing that more Americans visited libraries than movie theaters in 2019, and he presented the following statistics for FY 2019:

- Checkouts: 557,764 (416,402 physical, 141,362 digital)
- Registered Patrons: 52, 592
- Patron Visits: 432,344
- Programs: 607
- Program Attendance: 17,091

Mr. Spencer asked if this data included the Williamsburg Regional Library and Mr. Smith replied that it does not but that he could provide Williamsburg data.

Mr. Smith explained that the library is both a physical and virtual place with a strong presence anchored to the community. He noted the philosophy behind the library is people, place, and platform. He stated that the libraries are used not only by young students but also by adults who are furthering their education and use the library for a quiet location to study and have Wi-Fi access. He said that the library is also a platform for civil engagement and that local congressmen, senators, and their staff meet citizens there. He stated that after the holidays, a large number of senior citizens visited the library with new smartphones and tablets for lessons on how to use them.

Mr. Smith spoke about the qualities of a modern library, including access to books, study rooms, classrooms, open spaces, Wi-Fi, and computers. Mr. Anderson asked if businesses utilize the library and Mr. Smith responded that a lot of businesses do not have an actual “brick and mortar” office space, so they use the library for meeting people and using the facilities. Mr. Jons asked what prompted businesses to begin using library space to meet clients and Mr. Smith said that having a public facility and resources for businesses to use is more cost-effective than meeting clients in a hotel lobby and being charged user fees.

Mr. Smith stated that a planned addition to the Yorktown Library, slated to begin construction in August 2020, will roughly double the current space to 22,000 square feet. He reported the new library will have thirteen collaborative spaces which will include meeting rooms, classrooms, a children’s classroom, and an auditorium containing a stage and seating for 100 patrons. Mr. Brooks asked if there have been many organizations located outside of the County requesting to use meeting rooms. Mr. Smith responded that there has been so much interest that the meeting room policy had to be changed to limit usage. Ms. McGettigan asked if the requests are mainly for the Tabb Library, and Mr. Smith replied that both branches receive many requests and if one meeting room is booked, the customer is referred to the other branch. Mr. Smith said that while the library expansion is under construction, a storefront facility will be opened in Patriots Square shopping center to house new books and the rest of the library’s inventory will be placed in storage and will be accessible by request. Mr. Green asked if the same number of books will be housed and Mr. Smith responded that other than culling older books, the same number will be kept. He added that computer access will still be available in the new storefront facility. Mr. Spencer asked if food is allowed in libraries and Mr. Smith responded that the policy has been changed to allow food and drinks.

Mr. Smith reported that a recent library patron survey yielded the following suggestions:

- Better advertising and marketing of library programs and resources
- Expansion of teen programs
- Offer more adult programs
- Have book groups for different age ranges
- Offer streaming of digital movies

He noted that by expanding the library and implementing changes, York County should be able to obtain an “EEE” exemplary rating from the Library of Virginia – the highest attainable mark. He distributed copies of the Library Strategic Plan, which he said addresses core values that incorporates priorities from the Board of Supervisors: access, quality material, community engagement, lifelong learning, and professional development. Mr. Seiter asked if staff receives

local training and Mr. Smith replied staff receives in-house training and that they also attend conferences, seminars, and university classes. Mr. Seiter pointed out that with the large military presence in the area, the library could offer transition programs to help soldiers adjust to the civilian lifestyle.

Mr. Smith said there is a national trend to eliminate fines for overdue materials and that the County is considering making that change. He stated that after looking into which library had more violations (Tabb), he discovered that there are very few patrons from the Lackey area. He said he then realized that access might be a problem for these residents, so a “pop-up” library at Charles Brown Park was initiated with a mobile van providing books and Wi-Fi access. He stated that other future projects include:

- Yorktown Library expansion
- Expansion of outreach services in the Lackey community
- Continuation of the partnership with Williamsburg Regional Library
- Cultural arts programs at the new Yorktown Library
- Partnership with parks and recreation
- Renovation of interior of Tabb Library
- Economic development partnerships
- Exploring the idea of storefront libraries in District 1

Mr. Myer asked if the County partners with the Imagination Library and Mr. Smith responded that there is indeed such a partnership through a local organization called the DeGoode Foundation and that students can register to receive free books. He explained that the DeGoode Foundation brings literacy to impoverished areas in the Hampton Roads region. Mr. Jons stated that citizens in the upper County would like to know what library services are available and often feel isolated from receiving information, and he asked how information is publicized to residents in the Lackey area to tell them about the mobile services available. Mr. Smith responded that he has spoken to ministers to pass out information. Mr. Green suggested that dedicated office space be made available to the Chamber of Commerce and Mr. Smith said that it was a good suggestion for shared space. Mr. Myer noted the synergy between the Tabb Library and the YMCA across the street, which has led to a very successful relationship.

Mr. Smith said that in the distant future, there is potential for a regional library partnership among the York County, Williamsburg, James City, and Poquoson public libraries since customers are shared. He added that such a merger would add more state funding.

James E. Carroll, Ed. D., Chief Operations Officer for the York County School Division (YCSD), gave a presentation on the six-year master plan for school facilities. Dr. Carroll said the average age of the County’s school buildings is fifty years. He stated that there are three things to be balanced when considering future plans: maintenance, renovations, and educational changes. He said that at full build-out, approved residential developments could collectively add as many as 427 elementary students. He said that schools in the upper County currently have more space available than in the lower County. Mr. Jons asked if the plan to build a school at The Marquis has been dropped, and Dr. Carroll responded that for the time being, a school is not needed there. He said that 22.5 students on average per room is the preferred classroom size and that when schools are over capacity, something has to be done to absorb growth or they are forced

to contend with larger classroom sizes. He noted that Bethel Manor was found to be over capacity therefore two portable buildings containing four classrooms were brought in. He said that the lower County elementary schools are full and the effects are starting to be felt, with five schools using portable classrooms. He said the School Division's enrollment projections for fiscal year 2026 indicate that elementary school enrollment will exceed capacity by 658 students in the lower County.

Mr. Houghland asked how long it takes to plan and construct a new school. Dr. Carroll replied that it typically takes one year to plan and one year to construct. Mr. Seiter asked how many schools the County has and Dr. Carroll responded that there are ten elementary schools, four middle schools, four high schools, and the York River Academy. Mr. Spencer asked how future growth is determined. Dr. Carroll said that the Planning Division provides enrollment projections and deferred to Mr. Cross for further explanation. Mr. Cross gave a brief overview of the methodology used to project Average Daily school Membership (ADM), which takes into account new development, birth rates, and historical patterns of year-to-year growth and decline in the different grade levels. Dr. Carroll said he also uses a straight line projection and that past trends are a factor. He noted that it is important to not get too aggressive by building underutilized schools.

Dr. Carroll stated that the strategies for addressing school crowding include portable classrooms, adjusting attendance zones, building additional classrooms, and building new schools. He stated that he and staff are currently discussing the best options to alleviate the overcrowding in the lower County. He said that ideas include establishing a centralized pre-school to free up classroom space in elementary schools, possible expansions, and maximizing temporary classrooms. He noted that a problem with building additional classrooms is the lack of available land. Mr. Seiter commented that many people move to York County because of the schools, and he asked what steps are being taken to maintain the quality of the schools. Dr. Carroll responded that the YCSD focuses on hiring good people to run the schools and utilizes a stringent hiring process that emphasizes hiring experienced teachers from other school divisions. He added that a high-quality professional development program is also important for continuing staff education.

Mr. Rizzio expressed concern about school start times, noting that many schools in the area have changed their start times in accordance with the recommendations of a report published by the Centers for Disease Control and Prevention (CDC). He said that teenagers require 8 to 10 hours of sleep per night and that the biological rhythms show they become sleepy later at night and need to sleep later in the morning. He said that having a later start time for classes would greatly benefit student health and ability to learn. He added that several years ago, a report was conducted for the York County School Board that spoke of the benefits of a later start time but that no action was ever taken. Dr. Carroll replied that a medical study and parent input study yielded positive results but that transportation would be problematic. He said after the School Board received all of the data, it decided to table the idea. Mr. Green asked Mr. Rizzio what time his school begins. Mr. Rizzio replied that first block begins at 7:20 am and buses begin picking up students as early as 6:15 am. He added first lunch is at 10 am and the last class ends at 2:05 pm. Mr. Brooks agreed that a later start time would benefit high school students but would adversely affect elementary school students since bus transportation is shared.

Dr. Carroll spoke about the Superintendent's proposed Capital Improvement Program projects for FY21 through FY26, which fall into the following categories:

- New construction
- Renovations/Additions
- HVAC Replacement and energy conservation
- Roof repair and replacement
- Other projects
  - Temporary modular classrooms
  - Replacement of division wide communication system/equipment
  - Construction of stand-alone hubs

Mr. Spencer asked if any senior citizen programs are provided by the school system, and Mr. Anderson replied that the Senior Center covers those types of programs. Mr. Green asked if the Grafton High/Middle School complex is back in operation after the electrical fire on February 3<sup>rd</sup>, and Dr. Carroll responded that damages have been assessed but an estimate for power restoration is uncertain.

#### Committee Discussion of Public Facilities

Mr. Brooks stated that he is concerned about continually renovating school buildings that have an average age of fifty years, which he characterized as a "Band-Aid" approach. He said that long-term maintenance should be weighed with a value analysis for a perpetual plan. Mr. Cross responded that a space study will be conducted to evaluate schools as well as the School Board Office, and the bus facility. Mr. Moberg stated schools do not change very much over time and that classrooms are very durable. He said the real changes are integration of gathering spaces and technological innovations. Mr. Myer said that through the Capital Improvement Program, plans are made well in advance for renovations and the budget is used in the most cost-effective way. An example, he stated, is replacing the roof top HVAC unit and roof at the same time. Mr. Moberg noted that an issue challenging schools today is energy efficiency requirements. He said that in the past, the energy code caused buildings to be airtight which caused mold to develop but modern air units have fresh air intake to keep buildings healthier.

Ms. McGettigan said she recently toured the new "Learning Commons" at York High School and was pleased to see it evolve from a concept idea to an actual collaborative space with students working on group projects together behind glass with sound-absorbing chairs. She noted the adaptability of libraries to repurpose space. Mr. Rizzio said that repurposing schools to make more functional for this century, while sustaining the facilities that currently exists allows for adapting as education needs change. Mr. Bellamy stressed the importance of ensuring that the school-age population and enrollment projections in the Comprehensive Plan are consistent. Mr. Cross stated that the school-age population is projected to grow fairly steadily in number but not as a proportion of the total population, and Mr. Anderson added that Dr. Carroll's projections extend only to 2026 while the demographic projections extend through 2040. Mr. Green expressed a preference for keeping the final document general, allowing for fluctuations in the data.

#### Committee Discussion of Draft Demographic Profile and Projections

Following a five-minute recess, Mr. Cross reported that Vice Chairman Jons was not feeling well and had to leave. He then asked for comments on the draft Demographic Profile and Projections chapter of the Comprehensive Plan, which was distributed to the committee members. Mr. Bellamy suggested that the population ranking of the Virginia Beach-Norfolk-Newport News Metropolitan Statistical Area (MSA) among MSAs in the United States be included and that the actual number of Peninsula residents who serve in the military be added. Mr. Rizzio suggested noting the percentage of workers who commute into York County in addition to those who commute from the County. Mr. Cross said it would be included in the Economic Development and Transportation elements but that it was not included in the Demographic Profile because it represents a profile of County residents, which does not include those who commute into the County. Mr. Spencer asked about projected growth of the senior population and Mr. Cross responded that the senior population (65 and older) is projected to increase from 12.1% of the total population in 2010 to 16.8% by 2020 and 20.8% by 2030 and then drop to 19.6% in 2040.

### Other Business

Mr. Green reported on both the previous evening's joint work session between the Board of Supervisors and the School Board and the annual Board of Supervisors retreat that was held recently. He spoke about the improved spirit of cooperation and open communication between the two boards that has grown over the past few years. He stated that the Board of Supervisors reviewed and made some minor adjustments to its six strategic priorities, which are:

- Exemplary public safety,
- Excellent education opportunities,
- Value-driven economic development,
- Maximize outstanding communications and customer service,
- Environmental stewardship with a focus on resiliency, and
- Quality technology investments.

Mr. Green stated that another topic of its retreat was sea level rise, and he noted the impacts of rising tides and land subsidence. He stated that the HRSD's SWIFT Program to pump highly treated waste water back into the aquifer is expected to slow the effects of subsidence. Ms. McGettigan suggested that the Board be informed of the upcoming committee meeting on sea level rise.

Mr. Cross stated that the next committee meeting will be on March 4<sup>th</sup> at 5 p.m. He stated that the topic of the meeting will be sea level rise.

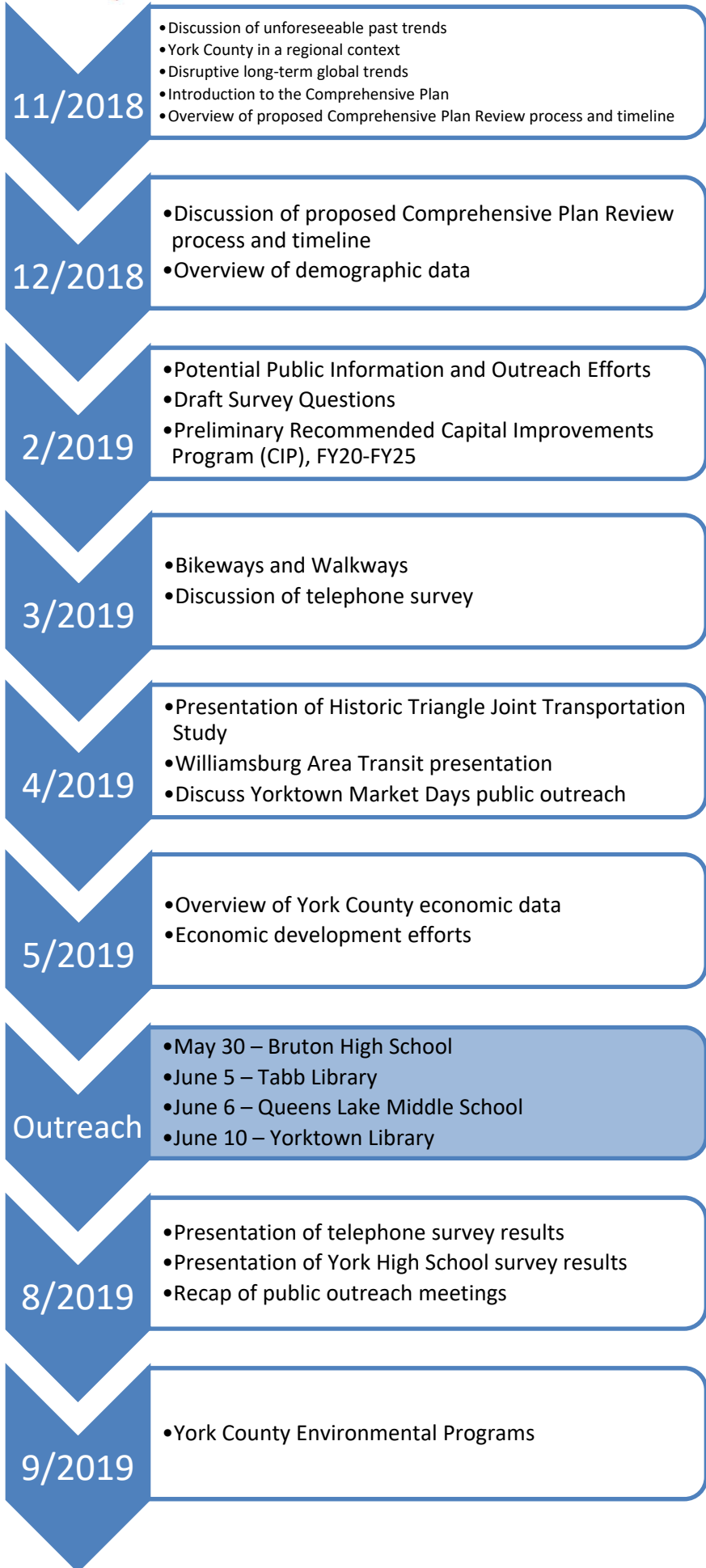
### Citizen Comment Period

There were no citizen comments.

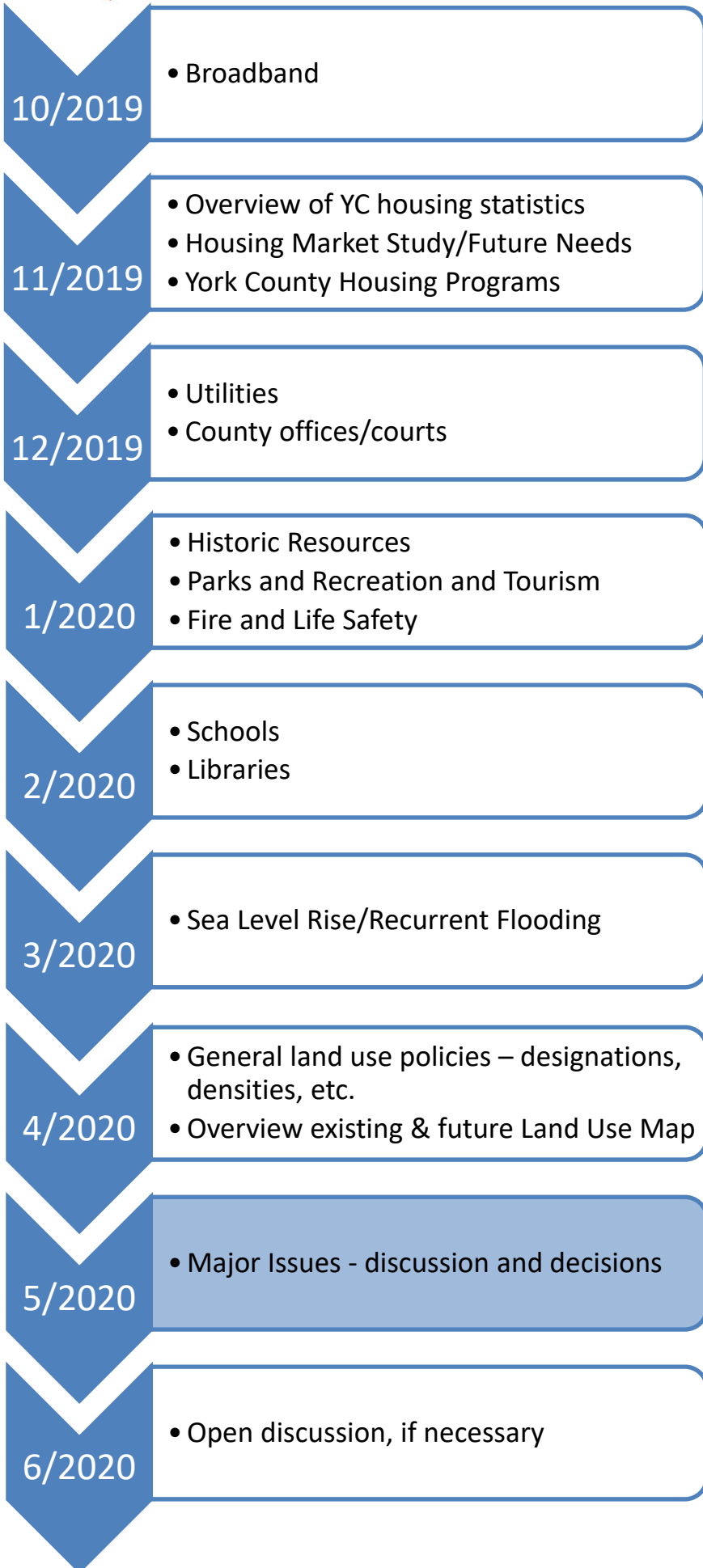
### Adjournment

The meeting was adjourned at 7:23 p.m.

**Milestone Events**







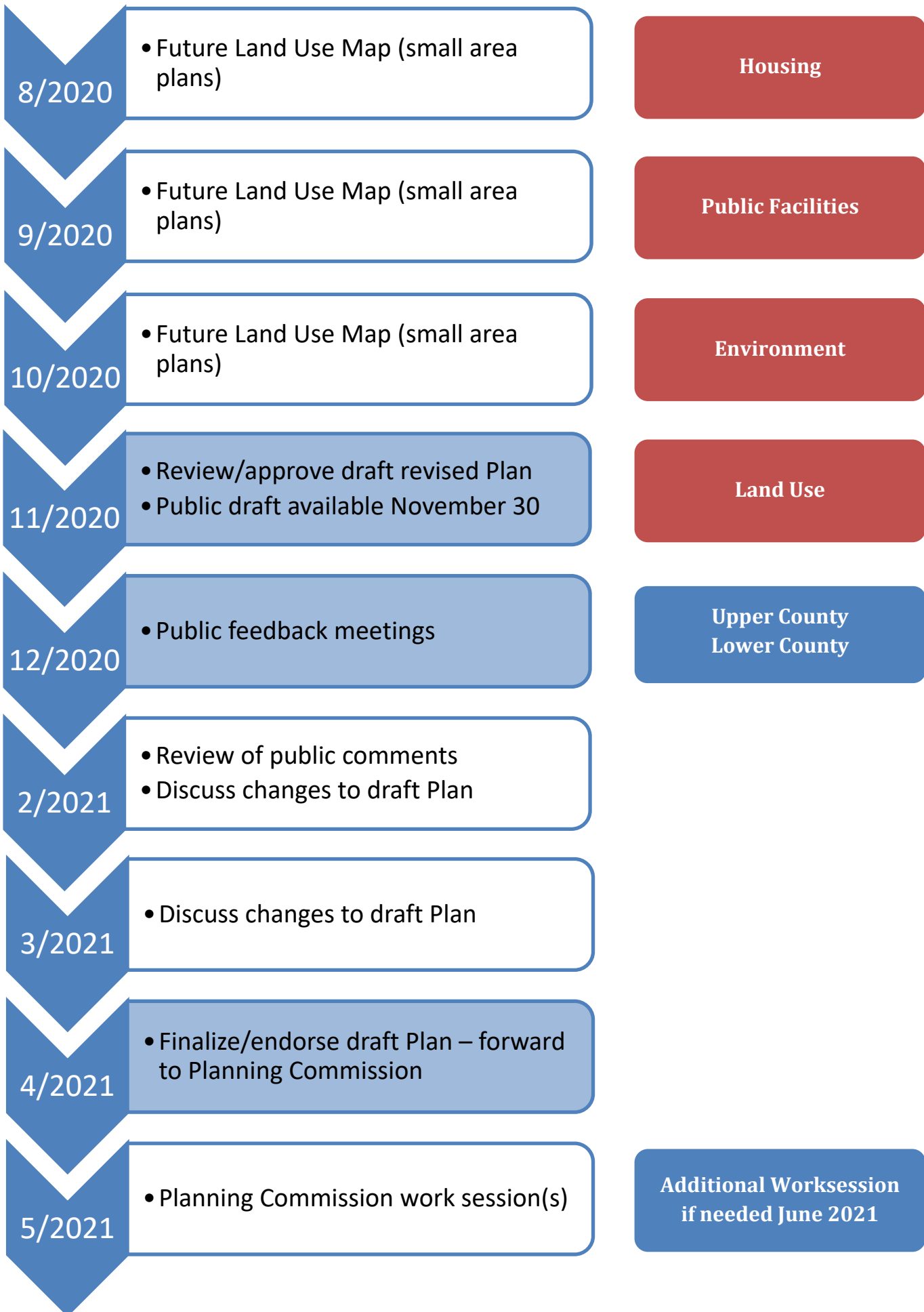
**Draft Elements to be delivered to Committee for review**

**Demographic Profile and Projections**

**Broadband  
Historic Resources**

**Transportation**

**Economic Development**





TENTATIVE OUTLINE/SCHEDULE OF MEETING TOPICS – YORK 2040 COMMITTEE

7/2021

- Planning Commission public hearing and recommendation

8/2021

- Board of Supervisors work session(s)

9/2021

- Board of Supervisors Public Hearing

10/2021

- Final approval

**Additional Worksession  
if needed September 2021**

**EXCERPT**

Hampton Roads Planning District Commission

# Integrating Coastal Resilience Into Local Plans, Policies, and Ordinances



PEP 17-04 | August 2017  
Grant #NA15NOS4190164 | Task 94.01



**Virginia Coastal Zone**  
MANAGEMENT PROGRAM



# Executive Summary

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The Hampton Roads Planning District Commission is a state-enabled, locally-created regional planning organization for southeastern Virginia, representing seventeen member local governments with over 1.7 million residents. Since 2008, the HRPDC staff has worked on a series of studies, projects, and efforts to better inform the region’s local governments on the impacts of climate change, including sea level rise, and possible steps to adapt or mitigate those impacts. The majority of these efforts have been funded in part by the National Oceanic and Atmospheric Administration (NOAA) through grants from the Virginia Coastal Zone Management Program (VCZMP).

This report is the sixth in a series of projects completed by the HRPDC staff in consultation with local government staff, principally members of the HRPDC’s Regional Environmental and Coastal Resiliency advisory committees.<sup>1</sup> It documents the findings and results of four deliverables completed as part of a grant funded by the Virginia Coastal Zone Management Program. The first is a review of existing plans, policies, and ordinances for counties and cities in Virginia’s coastal zone (“Tidewater”). The second is a series of case studies from communities – cities, counties, and regions – that have demonstrated resilience planning in some form. The third is a description of some best practices for localities wishing to incorporate coastal resilience into their plans, policies, and ordinances, which is based on the assessment and ordinances in the first two sections. The fourth is a description of the outreach and educational efforts the HRPDC staff undertook to communicate the project’s findings to locality staff in Hampton Roads. The overall goal of the report is to inform local resilience planning efforts in Hampton Roads and coastal Virginia.

## Assessment of Coastal Resilience in Current Local Plans and Policies

Many communities in Virginia address coastal hazards or otherwise incorporate coastal resilience into their local plans, and policies, and ordinances, but the extent and substance varies significantly across the coastal zone. This study examined forty-seven localities in the coastal zone – seventeen cities, twenty-nine counties, and one town – to determine how each of these communities currently address resilience in its local policies. The documents examined as part of this assessment included comprehensive plans, hazard mitigation plans, floodplain management plans, and floodplain management ordinances. Overall, flooding and floodplain

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<sup>1</sup> The Regional Environmental Committee and Coastal Resiliency Committee are official advisory committees of the Hampton Roads Planning District Commission.

management are commonly addressed through local policies, but sea level rise is not. Several localities also participate in the National Flood Insurance Program's Community Rating System.

## Coastal Resilience Case Studies

Six government entities from around the country were looked at to identify potential options for Hampton Roads. Four of these case studies were local governments: Charleston County, South Carolina; Charleston, South Carolina; Hampton, Virginia; and Miami-Dade County, Florida. Two case studies were regional entities: the Middle Peninsula Planning District Commission in Virginia and the Southeast Florida Regional Climate Change Compact. Each of these case studies was selected because they offer a specific example of how a local government may integrate coastal resilience into their own policies. Each case study includes specific language that localities in Hampton Roads and other parts of coastal Virginia could use to begin or continue promoting coastal resilience.

## Best Practices for Integrating Coastal Resilience into Local Policies

One of the goals of this project is to identify some best practices for integrating resilience into local policies. The research for this report has identified several specific examples of best practices in six categories: outreach and communication, coordination, planning, public facilities, local ordinances, and national and state programs. This section summarizes the practices identified through the assessment and case study analysis.

## Education and Training

As part of this project the HRPDC staff regularly informed its Regional Environmental and Coastal Resiliency Committees of the status of the project and new findings throughout the process. HRPDC staff also presented on the project at the 2017 Environment Virginia Symposium held at the Virginia Military Institute in Lexington, Virginia. The main focus of this component of the project was the development of a curriculum for and the delivery of a workshop for local government staff. The workshop was held on May 9, 2017. Thirty-one (31) individuals, including local staff, state agencies, and interested non-governmental parties, attended the workshop.

## Conclusions and Next Steps

The research completed for this report has increased the level of familiarity that the HRPDC staff has for the existing state of resilience practice in Virginia and some of the work conducted by entities outside Virginia. The HRPDC staff intends to use this study to initiate discussions with the HRPDC's Coastal Resiliency Committee and local governments about potential local and regional policies to develop or pursue. By providing an assessment of what actions

communities in Virginia have already taken and some examples of best practices, this study can serve as a road map for communities wishing to undertake additional resilience strategies. The HRPDC staff will also examine how it can maintain up-to-date information on local efforts in Virginia to better provide technical assistance and learning opportunities for local governments in Hampton Roads. The HRPDC staff will also provide this study to local governments throughout coastal Virginia through the network of coastal Planning District Commissions supported by the Virginia Coastal Zone Management Program.

# 1. Introduction

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The Hampton Roads region is located in southeastern Virginia and includes sixteen county-equivalent localities, including ten independent cities and six counties. Localities in Hampton Roads range in size from about 6,700 in Surry County to over 450,000 in Virginia Beach, the largest city in Virginia by population. The region's water access and temperature climate have contributed significantly to its growth as a tourist hub and commercial and military port. However, the region's relatively flat and low-lying topography and location on the coast make it vulnerable to coastal hazards such as tropical and subtropical storms, tides, and sea level rise. Rising sea levels and land subsidence make Hampton Roads one of the most vulnerable regions in the country to flooding and storm surge. Addressing these hazards through local plans, policies, and ordinances will be important to ensuring the region's long-term sustainability.

Coastal Virginia communities have made significant progress in assessing vulnerability to coastal hazards. The region's vulnerability to flooding is increasing due to sea level rise and the level of development in coastal and other flood-prone areas. Though state and federal leaders are aware of the significance of these challenges, in many cases the resources needed to undertake projects are lacking. However, local governments are making progress by developing new policies to change development patterns, increasing awareness of the impacts of coastal hazards to their communities, and promoting mitigation strategies.

While many Hampton Roads localities have incorporated efforts to mitigate coastal hazards such as storms, tidal flooding, and sea level rise into their local policies, room for improvement exists, particularly in better integrating local hazard mitigation plans and related policies, including the Community Rating System programs, with local comprehensive and other land use plans. This project is an attempt to identify best practices for integrating those often disparate actions. The first part of this project was a review of the current status of locality plans, policies, and ordinances in Coastal Virginia that relate to coastal hazards. The second part was a case study review of coastal communities to identify examples and best practices. The third part of the project was to develop recommendations for Hampton Roads communities based on these examples. The last part of the project was the completion of a workshop intended to educate and train local staff in Hampton Roads on the findings to help them begin implementing the identified practices in their communities.

The Hampton Roads Planning District Commission is a state-enabled, locally-created regional planning organization for southeastern Virginia, representing seventeen member local governments with over 1.7 million residents. Since 2008, the HRPDC's staff has worked on a



series of studies, projects, and efforts to better inform the region's local governments on the impacts of climate change, including sea level rise, and possible steps to adapt or mitigate those impacts. The majority of these efforts have been funded in part by the National Oceanic and Atmospheric Administration (NOAA) through grants from the Virginia Coastal Zone Management Program (VCZMP). Through these efforts several reports have been published by the HRPDC that have provided baseline vulnerability assessments to local governments and made recommendations for response strategies. In addition, the HRPDC has worked with other partners in the region and the Commonwealth, including Old Dominion University, the University of Virginia, and the Virginia Institute of Marine Science on related efforts to promote public awareness.

This report is the sixth in a series of projects completed by the HRPDC staff in consultation with local government staff, principally members of the HRPDC's Regional Environmental and Coastal Resiliency advisory committees. It documents the findings and results of four deliverables completed as part of a grant funded by the Virginia Coastal Zone Management Program. The overall goal of the report is to inform local resilience planning efforts in Hampton Roads and coastal Virginia by providing policy guidance and specific examples for local governments to learn from or emulate.

# Appendix A: Detailed Assessment of Coastal Hazards in Current Local Plans and Policies in Virginia

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## York County

<b>When was the Comprehensive Plan adopted? Amended?</b>	2013; not yet	<b>When was the Hazard Mitigation Plan adopted? Amended?</b>	2011; 2017
<b>When was the floodplain ordinance adopted?</b>	2014	<b>Freeboard</b>	3' (4' in LiMWA)
<b>When was the Floodplain Management Plan adopted?</b>	Not a separate plan	<b>Coastal A Zone/LiMWA</b>	Yes
		<b>CRS class</b>	7
<b>How are sea level rise, storm events, and floodplain management addressed in the Comprehensive Plan?</b>	Flood zones are addressed in the Environment chapter of the Comprehensive Plan. Coastal flooding is a potential hazard, affecting approximately 7,000 acres of land close to coastal streams and creeks, especially with the added threat of sea-level rise. The Plan includes a map depicting the flood hazard areas.		
<b>How are sea level rise, storm events, and floodplain management addressed in the Hazards Mitigation Plan?</b>	<p>York County is included in the Hampton Roads Hazards Mitigation Plan. Flooding, sea level rise and land subsidence, coastal storms, and shoreline erosion are considered the most significant hazards that threaten Hampton Roads.</p> <p>The background and causes of local flooding are explained. Regional-scale FEMA rate insurance maps are included, along with the links to each locality's mapping viewers. Some of the notable flood events to impact the area, as far back as 1749, are listed.</p> <p>The consequences of continuing sea level rise are outlined, including increased coastal erosion, inundation of normally dry lands, coastal flooding, and salt water intrusion.</p> <p>A detailed listing of significant storm events to impact the region since 1871 is included.</p> <p>Section 7 of the Plan includes descriptions of mitigation actions by locality. There is a strong emphasis on integrating mitigation measures into community life. The</p>		

	<p>actions listed by York County include: 1) strengthen the County’s Floodplain Management Plan, 2) elevate, acquire, relocate, retrofit or flood proof structures in flood-prone areas, and 3) install high water marks signs and/or gages in flood-prone areas.</p>
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# HRPDC Sea Level Rise Planning Policy and Approach

## Summary of Recommendations

- Localities should plan for sea level rise using 1.5 feet of relative sea level rise above current mean higher high water (MHHW) for near-term planning, 3 feet of relative sea level rise above current MHHW for medium-term planning, and 4.5 feet of relative sea level rise above current MHHW for long-term planning.
- For engineering and design, localities should calculate project-appropriate sea level rise scenarios by using a tool such as the U.S. Army Corps of Engineers Sea Level Change Calculator and conduct a benefit-cost analysis of various adaptation strategies to determine an appropriate amount of sea level rise for a specific project.
- These scenarios should be reevaluated as appropriate based upon new information developed by the National Oceanic and Atmospheric Administration, U.S. Army Corps of Engineers, or Virginia Institute of Marine Science.

## Rationale

- Sea level rise is projected to be significant for Hampton Roads. Factoring it into planning and design decisions will reduce risk and damage from flooding and storm surge.
- Significant advances in climate modeling and analysis of observed trends support development of new sea level rise projections at the local level that are improvements above previously recommended projections.
- A regional consensus on values and approaches for sea level rise planning would provide support for local efforts, assist with regional coordination, and encourage state and federal agencies to adopt similar standards.

## Information Sources

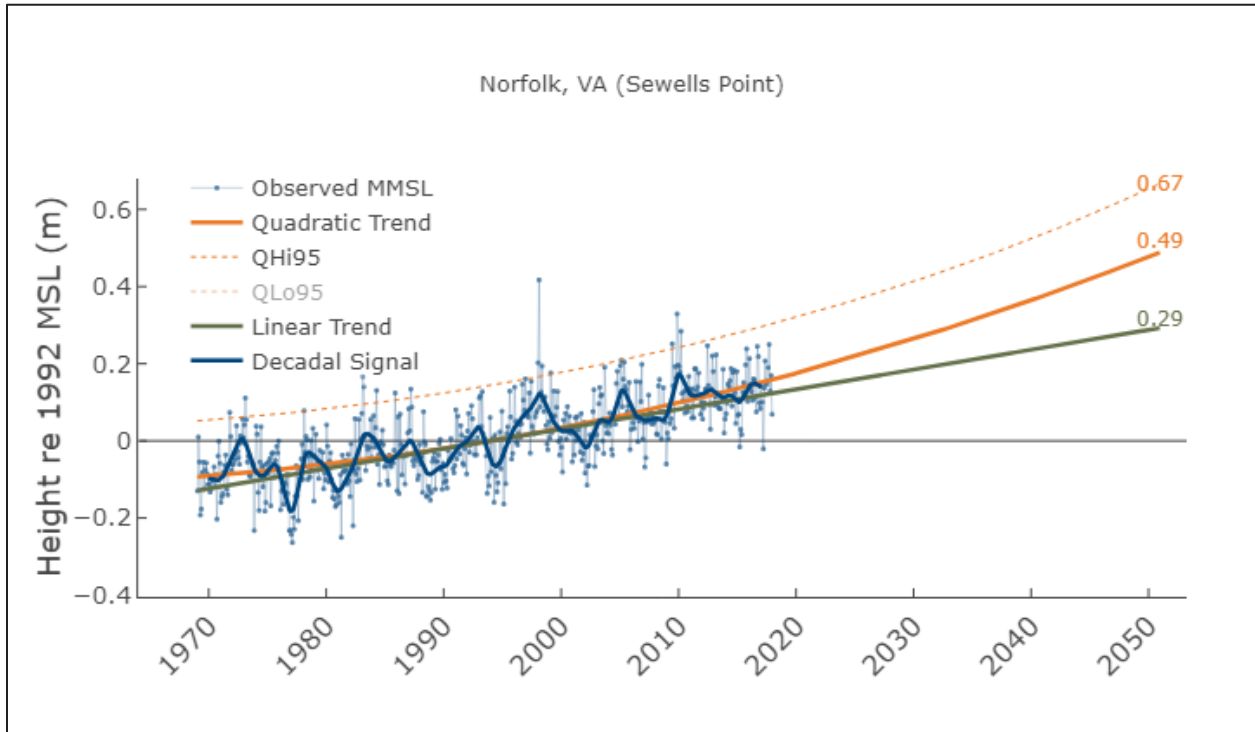
This proposal relies on two sources of information on relative sea level rise in Hampton Roads: regression-based projections from the Virginia Institute of Marine Science (VIMS) based on observational data and regional sea level rise scenarios from NOAA's Center for Operational Oceanographic Products and Services (CO-OPS).

### VIMS

Earlier this year, VIMS released Sea Level Rise Report Cards for a number of coastal communities in the United States, including Norfolk. These report cards are based on the statistical analysis of observed sea level trends based on established tide gauges. In the case of Norfolk, this analysis has found that there is significant evidence of sea level rise accelerating over the last fifty years. Based on this analysis, VIMS is predicting that sea level will rise at Norfolk by 0.49 meters (1.61 feet) between 1992 and 2050, with a

95% chance that mean sea level in 2050 will be between 0.29 and 0.67 meters (0.95 to 2.20 feet) above 1992 mean sea level. This confidence interval accounts for interannual and decadal variations in mean sea level.

Figure 1: VIMS Sea Level Rise 2050 Projection for Norfolk<sup>1</sup>



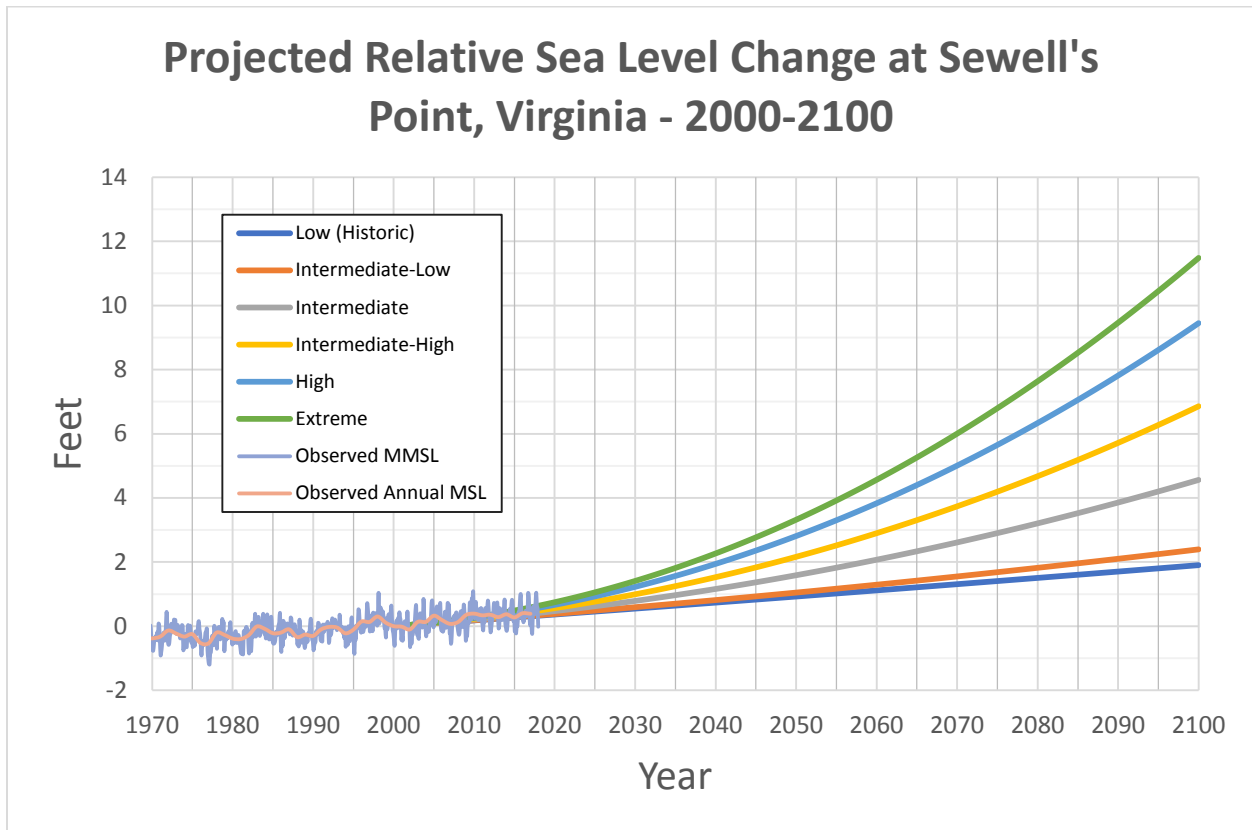
**NOAA**

In January 2017, NOAA, in partnership with the U.S. Geological Survey, the U.S. Environmental Protection Agency, and Rutgers University, published a report updating global and regional sea level rise scenarios for the United States.<sup>2</sup> This report takes advantage of additional observations of sea level change and ongoing research into global and regional drivers of sea level rise, including rapid ice melt, ice sheet instability, shifts in ocean circulation patterns, changes in the Earth’s gravitational field, and vertical land movement. The overall result is that the upper bound of plausible global sea level rise is higher than considered in the previous 2012 NOAA report. In addition, regional drivers such as vertical land movement, ocean circulation, and shifts in the gravitational field account for a significant amount of projected sea level rise in Hampton Roads. Overall, the report projects between 1.9 feet of sea level rise in Hampton Roads between 2000 and 2100 at the low end and 11.5 feet of sea level rise under the most extreme case. According to the report’s probabilistic assessment, the most likely scenario is approximately 4.5 feet of sea level rise by 2100.

<sup>1</sup> <http://www.vims.edu/research/products/slrc/localities/norfolkva/index.php>

<sup>2</sup> [https://tidesandcurrents.noaa.gov/publications/techrpt83 Global and Regional SLR Scenarios for the US final.pdf](https://tidesandcurrents.noaa.gov/publications/techrpt83%20Global%20and%20Regional%20SLR%20Scenarios%20for%20the%20US%20final.pdf)

Figure 2: Updated NOAA Sea Level Rise Scenarios for Norfolk, VA



### Planning Recommendations

Planning for sea level rise, in the form of land use and other policy decision-making, should use estimates of sea level rise that are based on observational data and a range of scenarios for future conditions. Such values can be used to help implement zoning overlay districts or new building requirements. Another potential use for these scenarios is as a set of screening values, which can be used to identify vulnerable areas and facilities for further study. Based on the observational data and predictions from VIMS and the scenarios from the most recent NOAA technical report, the HRPDC recommends using the following scenarios for planning for sea level rise at the local and regional level:

- For near-term decisions (2018-2050): 1.5 feet of sea level rise above current MHHW
- For medium-term decisions (2050-2080): 3 feet of sea level rise above current MHHW
- For long-term decisions (2080-2100 and longer): 4.5 feet of sea level rise above current MHHW

### Engineering and Design Recommendations

Selecting a value for sea level rise to include in the design of a structure or project requires more precision than planning. In addition, while a single value may work for planning decisions, engineering

involves a more in-depth assessment of the costs and benefits of various measures to mitigate the impacts of sea level rise. Many factors must be accounted for to determine how much sea level rise should be accounted for in a design, including:

- 1) When will construction start?
- 2) What is the projected lifespan of the project?
- 3) How sensitive is the project to impacts from flooding or sea level rise?
- 4) How critical is the project to public health, safety, and welfare (or other significant concerns)?

Answering the first two questions helps a designer to calculate the amount of sea level rise that is projected to occur between the present and the start of construction and between construction and possible replacement. Answering the last two questions helps to determine how to address the inherent uncertainty present in any sea level rise projection. For projects of low importance, addressing a higher amount of sea level rise may be cost prohibitive. However, for projects of high importance, reducing the chance of failure by accounting for higher levels of sea level rise may be more prudent. The desired level of protection can be determined through a benefit-cost analysis of different adaptation measures.

For engineering purposes, the HRPDC recommends

- Using the U.S. Army Corps of Engineers Sea Level Change Curve Calculator with the 2017 NOAA sea level rise scenarios<sup>3</sup>
- Performing a benefit-cost analysis of adaptation strategies under various sea level rise scenarios to determine the appropriate level of sea level rise to design for given the accepted level of risk of the project

## **Future Policy Recommendations**

Sea level trends are continuously being monitored and updated by both federal (NOAA, USGS) and state (VIMS) entities. In addition, research and analysis into the dynamics of sea level and how it responds to changing climatic conditions are also ongoing. The HRPDC recommends that the HRPDC staff and localities reevaluate and consider updating these scenarios as appropriate based upon new information developed by the National Oceanic and Atmospheric Administration, U.S. Army Corps of Engineers, or Virginia Institute of Marine Science.

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<sup>3</sup> <http://www.corpsclimate.us/ccaceslcurves.cfm>



## Comprehensive Coastal Resource Management for Tidewater Virginia Localities

### **Issue Statement**

Coastal ecosystems reside at the interface between the land and the water, and are naturally very complex. They perform a vast array of functions that encompass biological, chemical and physical processes. Humans derive benefits from coastal ecosystems such as habitat, water quality, and shoreline stabilization.

For example, coastal wetlands absorb nutrients that drain off the upland. This is an important filtering process that improves water quality in the adjacent receiving waters. Humans benefit from having good water quality; therefore, the wetland is providing a service in that capacity.

Beaches and dunes are another component of the coastal ecosystem valued by humans. Although typically regarded for their recreational value, beaches and dunes also provide a number of other important direct and indirect services. Beaches and dunes provide habitat, foraging and nesting areas for shore birds, turtles, and crustaceans, among other organisms. They also act as the first line of defense to incoming high energy storm waves and therefore provide an important function protecting uplands from erosion and structural loss.

The science behind coastal ecosystem resource management has revealed that traditional resource management practices limit the ability of the coastal ecosystem to perform many of these essential functions. The loss of these services has already been noted throughout coastal communities in Virginia as a result of development in coastal zone areas, coupled with common erosion control practices. Beaches and dunes are diminishing due to a reduction in a natural sediment supply. Wetlands are drowning in place as sea level rises and barriers to inland migration have been created by construction of bulkheads and revetments. There is great concern by scientists at the Virginia Institute of Marine Science and on the part of the Commonwealth of Virginia that the continued armoring of shorelines and construction within the coastal areas will threaten the long-term sustainability of coastal ecosystems under current and projected sea level rise.

In the 1980s, interest arose in the use of planted wetlands to provide natural shoreline erosion control. Today, a full spectrum of living shoreline design options is available to address the various energy settings and erosion problems found. Depending on the site characteristics, they range from marsh plantings to the use of rock sills in combination with beach nourishment. Studies have found that these approaches minimize impacts to the natural coastal ecosystems while successfully combating shoreline erosion.

Research continues to reinforce the principle that an integrated approach for managing tidal shorelines enhances coastal resources. Therefore, adoption of new guidance and shoreline best management practices for coastal communities is now necessary to insure that functions

performed by coastal ecosystems will be preserved and the benefits derived by humans from coastal ecosystems will be maintained into the future.

## **Policy Statement**

In 2011, the Virginia Assembly passed legislation to amend §28.2-1100 and §28.2-104.1 of the Code of Virginia and added section §15.2-2223.2, to codify a new directive for shoreline management in Tidewater Virginia. In accordance with section §15.2-2223.2, all local governments shall include in the next revision of their comprehensive plan beginning in 2013, guidance prepared by the Virginia Institute of Marine Science (VIMS) regarding coastal resource management and, more specifically, guidance for the appropriate selection of living shoreline management practices. The legislation establishes the policy that living shorelines are the preferred alternative for stabilizing eroding shorelines. Adoption of the VIMS shoreline guidance will help communicate to stakeholders, including private and public property owners, contractors, and developers the Commonwealth's preference for a living shorelines approach wherever possible.

This guidance, known as Comprehensive Coastal Resource Management Guidance, is being prepared by VIMS for localities within the Tidewater region of Virginia and shared through their Comprehensive Coastal Resource Management Portal (CCRMP). It explicitly outlines where and what new shoreline best management practices should be considered where coastal modifications are necessary to reduce shoreline erosion and protect our fragile coastal ecosystems. This guidance will include a full spectrum of appropriate management options which can be used by local governments for site-specific application and consideration of cumulative shoreline impacts. The guidance applies a decision-tree method using a based resource mapping database that will be updated from time to time, and a digital geographic information system model created by VIMS.

## **Recommendations**

- Refer to the guidance presented in the locality's Comprehensive Coastal Resource Management Portal (CCRMP) prepared by VIMS to guide regulation and policy decisions regarding shoreline erosion control.
- Utilize VIMS Decision Trees for onsite review and subsequent selection of appropriate erosion control/shoreline best management practices:  
<http://ccrm.vims.edu/decisiontree/index.html>.
- Utilize VIMS' CCRMP Shoreline Best Management Practices for management recommendation for all tidal shorelines in the jurisdiction.
- Consider a policy where the above Shoreline Best Management Practices become the recommended adaptation strategy for erosion control, and where a departure from these recommendations by an applicant wishing to alter the shoreline must be justified at a hearing of the board(s).
- Encourage staff training on decision making tools developed by the Center for Coastal Resources Management at VIMS.

- Follow the development of the state-wide General Permit being developed by VMRC. Ensure that local policies are consistent with the provisions of the permit.
- Evaluate and consider a locality-wide permit to expedite shoreline applications that request actions consistent with the VIMS recommendation.
- Seek public outreach opportunities to educate citizens and stakeholders on new shoreline management strategies including Living Shorelines.
- Follow the development of integrated shoreline guidance under development by VMRC.
- Evaluate and consider a locality-wide regulatory structure that encourages a more integrated approach to shoreline management.
- Consider preserving available open spaces adjacent to marsh lands to allow for inland retreat of the marshes under rising sea level.
- Evaluate and consider cost share opportunities for construction of living shorelines.