

NORTHAMPTON COUNTY

COUNTY PROFILE

Northampton County is the southernmost county on Virginia’s Eastern Shore. It was settled by the English in 1614, named Northampton in 1642, and divided into Accomack County and Northampton County in 1663. The Eastern Shore played an influential role in the history of Colonial America. The present County seat in Eastville was founded in 1680 when a courthouse was erected there. Northampton has the oldest continuous court records in the country and is one of the oldest counties in the entire nation.

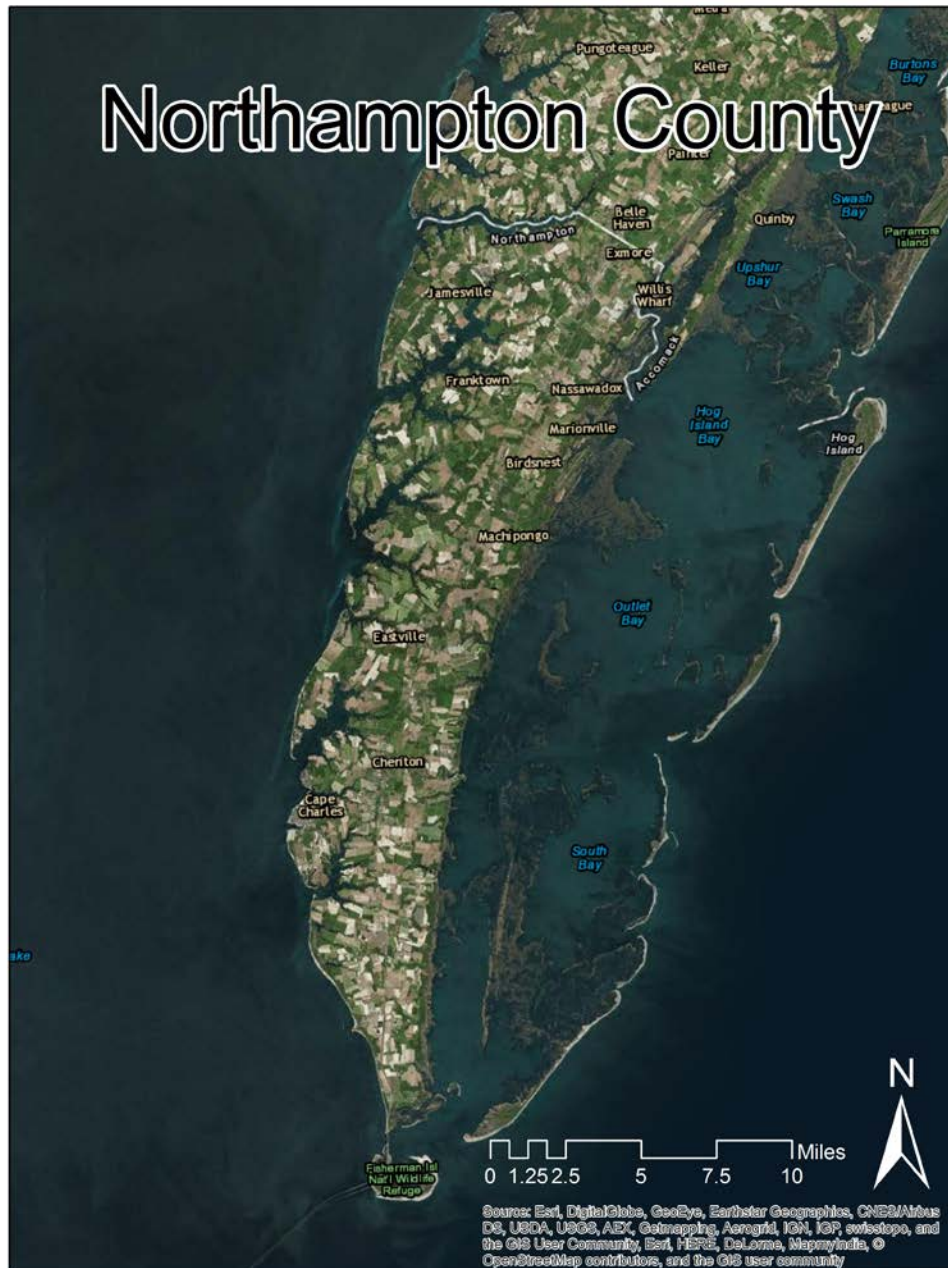


Figure 1: Northampton County Aerial Imagery

Northampton County

There are 6 incorporated towns in the County: Belle Haven (portion located in Accomack County also), Exmore, Nassawadox, Eastville, Cheriton, and Cape Charles.

SOCIO-ECONOMIC

Part of assessing hazards in relation to their risk is understanding the people affected. Not all people are affected equally. Some are affected by the factors relating to their ability to understand risks posed by hazards, and some by their ability to remove themselves from harm's way. Those factors include age, mobility, income and the languages individuals speak and the languages in which individuals are able to access information.

DEMOGRAPHICS

According to the 2014 American Community Survey, the County had a population of 12,121, indicating that the population has been relatively stable and slightly declining since 2000. The median age for residents in Northampton County in 2014 was 48 years, which is about 11 years higher than that of both the state and nation, and is an increase of almost 6 years in age from 2000.

Table 1 : Northampton County Demographic Information

	2014*	2010	2000***
Population	12,121	12,389**	13,093
Median Age (Years)	48.0	47.8**	42.4
Disability	12.9%		
Income			
Median Household Income	34,656	\$35,760*	\$28,013
Poverty Level	17.1%	15.8%*	15.8%
Language			
Only English	10,547	11,117*	11,670
Other	482	403*	703
Spanish	401	379*	340
Ind-Euro	41	0*	18
Asian	34	24*	0

* ACS 2010-2014, ** U.S. Census 2010, *** U.S. Census 2000

WORK FORCE

Employment patterns are important to examine for two reasons. They can help to identify concentrations of people for hazard information dissemination or hazard rescue and evacuation. Secondly, they can identify where disruptions in employment and income might occur in the aftermath of a disaster.

The County's primary economies are affiliated with agricultural, seafood and tourism with some of the largest employers in the County being Riverside Regional Medical Center, Northampton Schools, Bayshore Concrete Products Company, the CBBT, Ballard Fish and Oyster Company, and New Ravenna Mosaics (Virginia Employment Commission, 2016).

Riverside Shore Memorial Hospital has been a major employer in the County for years, but is in the process of relocating in Accomack County and will not be bringing the current staff to the new location, but will be going through an entirely new hiring process. As of 2014, over a quarter of the workforce was estimated to be in educational or health care services, this figure is expected to change with the relocation of the hospital.

Eastern Shore of Virginia Hazard Mitigation Plan

The U.S. Census Bureau’s Center for Economic Studies data indicate that over 1,500 of the employed residents’ place of employment is greater than 50 miles from their home. This is important to consider for the community’s ability to rebound following a severe event, as there are many variables that could prevent them from reaching their place of employment; damages to vehicle, damage to roadways or bridge systems, etc.

Table 2 : Northampton County Workforce

Civilian Employed Population						
Industry	2014*		2010*		2000**	
	Count	Percent	Count	Percent	Count	Percent
Agriculture, forestry, fishing/hunting, or mining	522	10.5%	627	11.2%	411	7.9%
Construction	379	7.6%	473	8.4%	359	6.9%
Manufacturing	346	7.0%	403	7.2%	634	12.2%
Wholesale trade	340	6.8%	312	5.6%	187	3.6%
Retail trade	513	10.3%	532	9.5%	498	9.6%
Transportation and warehousing, and utilities	119	2.4%	300	5.3%	332	6.4%
Information	22	0.4%	41	0.7%	62	1.2%
Finance, insurance, real estate, and rentals	195	3.9%	318	0.7%	211	4.1%
Professional, scientific, waste management	516	10.4%	256	4.6%	240	4.6%
Educational and health care services	1,272	25.6%	1,270	22.6%	1,242	24%
Arts, entertainment, recreation, food	387	7.8%	537	9.6%	415	8%
Public Admin	122	2.5%	237	4.2%	295	5.7%
Other	233	4.7%	307	5.5%	291	5.6%
TOTAL CIVILIAN EMPLOYED POPULATION	4,966	-	5,613	-	5,177	-

Source: * ACS, 2010 – 2014; ** U.S. Census 2000

BUSINESSES

Business data provides basic information used in projecting potential economic losses from business and employment disruption, along with wage losses to employees. It can also serve as an indicator of community recovery resources. Finally, it can help to prioritize restoration of utility and infrastructure functions following a high-intensity hazard.

According to Table 3, the County has seen a slow, but steady, decline in business presence over the last five years. The total civilian employed population (Table 2) and overall population (Table 1) have also experienced a decline.

Table 3 : Northampton County Business Types

Industry Code Description	Total Establishments		
	2014	2012	2010
Agriculture, Forestry, Fishing, and Hunting	8	8	6
Utilities	1	1	1
Construction	26	28	33
Manufacturing	11	9	9
Wholesale Trade	17	20	17
Retail Trade	61	70	77
Transportation and warehousing	3	2	3
Finance and insurance	18	19	18
Information	6	2	2

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Real Estate and Rental and Leasing	15	12	11
Professional, Scientific, and Technical Services	23	21	19
Management of Companies and Enterprises	1	1	2
Administrative, Support, Waste Management	8	9	9
Education Services	4	5	5
Health Care and Social Assistance	37	40	36
Arts, Entertainment, and Recreation	5	7	6
Accommodation and Food Services	38	41	43
Other Services (except Public Administration)	39	37	40
Industries not classified	4	-	-
Total, All Establishments	325	332	337

Source: Census Zip Code Business Patterns, 2014

BUILT INFRASTRUCTURE

Housing units, community facilities, and transportation are all important factors when considering hazard resiliency. They provide the social services necessary during hazardous scenarios, safe cover for those wanting to stay, and a way to evacuate safely.

HOUSING UNITS

Knowledge of a community’s housing base contributes to hazard and vulnerability analysis by identifying how many homes are at risk.

As Table 4 reveals, there has been very little change in the number of housing units in the County in the last decade. Over a quarter of the total housing units in the County are vacant, which is an increase in about 7% since 2000. Often unoccupied houses are not properly maintained and can cause additional debris hazards during high wind events. County representatives indicated that often families own multiple homes, but that due to the decreasing population, one or more may be unused. County representatives also indicated that this high percentage could, in large part, be due to second homes, especially in the incorporated areas of the County, such as Cape Charles. The U.S. Census definition of a vacant housing unit includes those units entirely occupied by persons who have a usual residence elsewhere.

The *2009 Northampton County Comprehensive Plan* indicates that 13% of the housing in the County are single-wide mobile homes, and emphasizes their vulnerability and inability to maintain value. Manufactured homes are typically more susceptible to storm damages incurred from winds and flooding than other types of homes. The 2014 ACS estimates only 10% of housing units to be mobile homes, which should indicate an improvement in the resiliency of the housing infrastructure for the County.

In addition, the ACS estimates for 2014 reveal there are 36 occupied housing units without phone service available. These residents are a high risk, as they may not be able to reach out for aid in the event of an emergency.

Table 4: Northampton County Housing

	2014*	2010**	2000***
Total Housing Units	7,322	7,301	6,547
Occupied	5,237	5,323	5,321
Vacant	2,085	1,978	1,226
Owner-Occupied	3,662	3,553	3,649

Eastern Shore of Virginia Hazard Mitigation Plan

Renter-Occupied	1,575	1,770	1,672
Median Housing Value	\$162,500 (owner-occupied)	-	-

Source: * American Community Survey, 2010 – 2014, ** U.S. Census 2010, *** U.S. Census 2000

TRANSPORTATION

The measure of vehicles available to households is one indicator of a household’s ability to evacuate when necessary. As of 2014, it is estimated 11% of the County’s occupied residences are without even a single vehicle. Although a slight decrease since 2000, a significant number of people remain at high risk of not being able to remove themselves from harm’s way in the event of a disaster. This, coupled with the 36 residences without phone service available, should be considered during the event of an approaching storm and potential mandatory evacuation. It is important to note that during times of heavy rain, particularly coupled with high tides and storm surge, many roads become inundated quickly. This situation will only worsen in the coming years with anticipated [sea level rise](#).

The Chesapeake Bay Bridge Tunnel (CBBT) provides residents access to Virginia Beach and the greater Hampton Roads metropolitan area. Although the official evacuation route is north on Route 13, many residents of the County still use the CBBT. During the summer of 2016, proposals for the Parallel Thimble Shoal Tunnel project were received. Ideally this will ensure continued safe continuity between the Eastern Shore and the rest of the Commonwealth for safe travel, tourism, and to serve the over 1,000 residents who commute to work via the CBBT.

Table 5: Northampton County Vehicles Available per Households

Vehicles Available	2014*	2010**	2000***
None	598	563	672
One	1,731	1,911	1,988
Two	2,054	1,710	1,898
Three or more	854	904	763

* American Community Survey, 2010-2014, ** American Community Survey, 2006-2010, *** U.S. Census 2000

Star Transit provides substantial, daily services up and down the Eastern Shore. The Greyhound bus line offers travel times from the Eastern Shore across the Chesapeake Bay Bridge Tunnel, but only provides one stop in the region. The cost is moderate (about \$20 each way to either Norfolk or Salisbury); however, this service would probably not run during an emergency, and does not have the capacity to evacuate all residents without a vehicle.

Although the region’s airport is located in Accomack County to the north, the County does have a few private fields, such as Campbell and Belote, and the Steelman heliport.

Prior to the construction of the railroad in 1884, water-based transportation dominated the region and is still vital in the County. Used both commercially and recreationally for enjoyment and fishing activities, the waterways are essential to the economy of the County. Maintenance of the channels of the waterway in the County is of concern, particularly after large storm events where wind, wave, and flooding can greatly change the location of channels and increase the amount of erosion and thus the sedimentation of channels and harbors.

Although the train tracks are still active, they have not offered passenger services on the Eastern Shore of Virginia in over 50 years. They do, however, transport goods from Cape Charles to the south by rail barge, and although very vulnerable, the floating barge was just restored.

COMMUNITY SERVICES AND FACILITIES

Northampton County

Community facilities support the services and functions provided by the County government or in coordination with other public and private entities. These facilities enhance the overall quality of life for the County and its citizens. It is important to note what facilities are available in case of a hazard, and it is important to make an inventory of facilities that could be affected by a hazard.

According to FEMA estimates using Hazus, none of the fire stations, police stations, or schools would be damaged during either a 1-percent-annual-chance flood or wind event.

PUBLIC SAFETY

Emergency services are delivered from three independent volunteer fire companies (Exmore, Cheriton, and Eastville) and two combination fire and EMS stations (Cape Charles and Nassawadox). There are 21 full-time and 16 part-time EMS positions. The move of the hospital is anticipated to increase costs for EMS for Northampton County and increase the transit times to the hospital Emergency Department. The Regional chapter and the respective town chapters have details on the capabilities of each response facility.

The Northampton County Sheriff's Department and County Jail are located in the Town of Eastville. In addition to the Sheriff and Major, there are 20 law enforcement deputies, 40 jail deputies, and six communications officers. In addition, the jail also employs eight people for medical and kitchen staff (Northampton County Sheriff's Office).

In addition to emergency response, the Department of Public Safety personnel provide disaster preparedness presentations, Emergency Response Training (CERT), community CPR training, and serve on regional committees to advance emergency services within the County and region. In 2012, the County established an Emergency Alert Program that provides critical information related to severe weather, road closures, missing persons, and evacuations ([Northampton County Emergency Services](#) web site, July, 2016).

MEDICAL SERVICES

Although Riverside Shore Memorial Hospital in Nassawadox has been providing medical services to the region for years, it is in the process of moving to Accomack County, where construction of a new facility is nearing completion. Please see the [Public Safety](#) section above for information about emergency medical and ambulance services.

Of the five Eastern Shore Rural Health System Medical Centers and four Dental Offices, there are two location in Northampton County, the Bayview Community Health Center and the Franktown Community Health Center with dental services. A new consolidated facility is planned in Eastville, which will combine the Franktown and Bayview Centers.

PARKS AND RECREATION

The Northampton County Department of Parks and Recreation maintains one park, Indiantown Park in Eastville (52 acres). Indiantown Park is equipped with picnic shelters, lighted softball field, playground, soccer field, recreation center, and 36-hole disc golf course. In addition to park maintenance, Northampton County Parks and Recreation offers programs such as summer camp, basketball, volleyball, softball, disc golf, dances, etc.

The County maintains four water access sites of varying infrastructure, none which incur any fee for use. These facilities include: Oyster Harbor, Willis Wharf Harbor, Morley's Wharf, and Red Bank Boat Ramp (owned by the VA Department of Game and Inland Fisheries, but maintained by the County). The beaches of Cape Charles, Kiptopeke State Park (which also offers a wide variety of educational programs), and the Savage Neck Dunes Natural Area Preserve provide the only sand beaches accessible by land.

Eastern Shore of Virginia Hazard Mitigation Plan

The Eastern Shore of Virginia National Wildlife Refuge (NWR) and Fisherman Island National Wildlife Refuge (NWR) are located on the very southern part of the County. Although there is no public access to Fisherman Island NWR, there are a natural kayak/canoe and paved motor boat ramp available, as well as walking trails, Refuge Visitor Center, and many public programs.

The Nature Conservancy owns the majority of barrier islands on the Seaside of the County and all of their beaches are available for day use activities unless otherwise noted.

WATER SUPPLY AND WASTEWATER

Most residents rely on private wells and septic systems for their water supply and wastewater disposal. However, about a quarter of the County's population relies on the municipal water systems of Cape Charles, Eastville, Exmore, Bayview, Riverside and the County Complex. There are three waste water treatment plants (WWTP) in the County for residential sewage treatment, located in Cape Charles, Exmore, and Bayview. These facilities serve an estimated 15% of the year-round housing units in the County. The remaining residents rely on septic tank and drainfield systems, cesspools or pit privies. In the past, poor soils limited development on some vacant parcels of land in the County, but above-ground septic technologies have made some previously undevelopable parcels available for development. However, these systems are much more expensive to build and to maintain than traditional systems.

Discharge from WWTP and proper maintenance of private systems is important to maintain the health of both the surface and ground water. Although surface water in the County is not used for human consumption, it is important for recreation and shellfish harvesting, and thus water quality must be protected, in accordance with the State Water Control Law. According to the 2014 Virginia Department Environmental Quality (VDEQ) *Water Quality Assessment Integrated Report*, all of the bayside creeks and most of the seaside creeks in the County are considered impaired (see Figure 2) due to various causes such as pH, Enterococcus, Fecal Coliform, benthic-macroinvertebrate bioassessment, E. Coli, dissolved oxygen, etc.

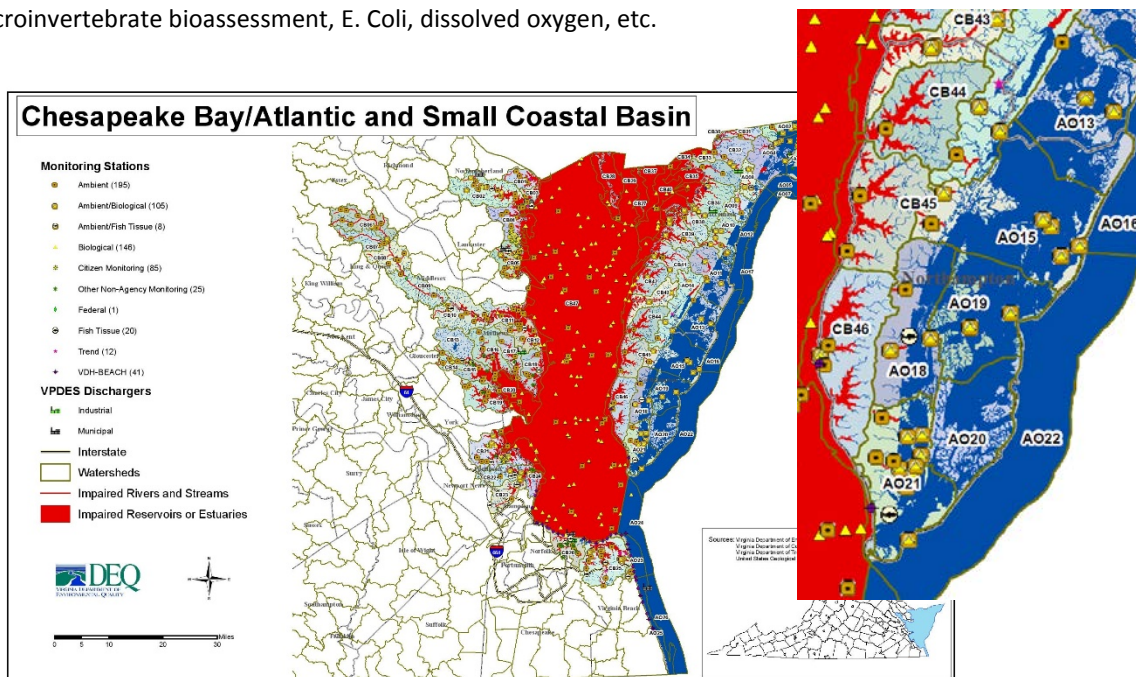


Figure 2 : Impaired Waters of the Chesapeake Bay/Atlantic and Small Coastal Basin area of Eastern Virginia

Northampton County

The Eastern Shore's designation as a sole source aquifer is discussed in the *2009 Northampton County Comprehensive Plan*, and strategies for preventing additional salt water intrusion can be found in the *Eastern Shore Ground Water Supply Protection and Management Plan*. The areas of the County near shorelines are expected to be most vulnerable to salt water intrusion and some intrusion has been experienced in specific areas such as the Town of Cape Charles where steps have been taken to treat their water for iron and salinity. The Eastern Shore of Virginia Ground Water Committee has historically and will continue to assist the County in monitoring the quantity and quality of ground water in the County.

SOLID WASTE

The County operates six waste collection sites, all of which offer recycling, some offer disposal of tires, and used oil, and scrap metal including appliances, but none accept commercial waste. The only landfill in the County closed in 2012, and the County now operates a single transfer station, located near the community of Oyster. The waste is regularly transferred to Bethel landfill by large tractor trailers. This meets the disposal needs for commercial operations, construction companies, and households.

POWER AND COMMUNICATIONS INFRASTRUCTURE

The main Accomack & Northampton Electric Cooperative (ANEC) power line was recently replaced between Tasley and Exmore. Maintaining and advancing our infrastructure is key to increasing our resiliency in the occasion of a hazard. In the last year there have been two 80-megawatt solar projects proposed in Accomack County and one 20-megawatt project in Northampton County. This is a new land use, and has required rezoning and additional permits.

The Eastern Shore of Virginia Broadband Authority (ESVBA) network of fiber cable stretches from Virginia Beach to the Maryland border and serves as the electronics 'backbone', by providing high-speed internet to both Counties. The majority of service is provided along Route 13 and there is a high percentage of underserved households in the County. Wide-spread high speed internet provides residents the capability to take advantage of educational opportunities, work from home, etc.

DRAINAGE DITCHES

The County relies on VDOT for the maintenance of ditches along state maintained roadways, but is responsible for maintenance of all ditches along county roads and between properties that drain state ditches. Often the process of securing property owner signatures to service ditches that run through multiple properties proves challenging and delays maintenance. See the Hazards - Stormwater section for additional information.

SCHOOLS

Schools are important to consider for disaster readiness and during an actual emergency. Schools offer an opportunity to teach children and adults how to effectively and efficiently respond to many emergency situations. However, they are also areas of concentrated high risk individuals, particularly primary schools with the youngest students. The Northampton County Public School Division has a Crisis Management Team that is responsible for emergency planning.

There are four schools in the Northampton County school system, two elementary schools, one 6-12 grade alternative school, and one comprehensive high school. In addition, there are four private schools in the County, including Broadwater Academy, Montessori School, Shore Christian Academy, and Cape Charles Christian School (all of which also have prekindergarten programs). According to FEMA estimates using Hazus, during a 1-percent-annual-chance wind event, all eight of the schools would be damaged to some degree. Occohannock Elementary is

anticipated to suffer the most, perhaps creating enough damages to cause a closure of 106 days. There are also an estimated 17 daycare facilities in the County, some are located in Cheriton, Exmore, Machipongo, Nassawadox, Franktown, and Cape Charles. There are no emergency shelters in the County, but the Northampton High School serves as the designated refuge of last resort. According to the Hazus model, this school could incur damages causing a 54 day closure following this type of wind event.

CULTURAL RESOURCES

The only County owned museum is in its Administrative Building, which houses the oldest running court records in the nation. There are several additional cultural and historical entities, resources, and museums, including Cape Charles Historical Society, Eastern Shore's Own, Barrier Island Center, and Arts Council of the Eastern Shore to name a few. The Barrier Island Center offers an interpretive center that comprehensively teaches about the history of the Eastern Shore and its culture.

The County is steeped in history, and would ideally have a designated Virginia Heritage Trail. There have been past efforts to do so, but no progress has been made to date. Only 25 buildings in Northampton County are registered with the Virginia Department of Historic Resources (VDHR) as official Historic Places. The County Courthouse Historical District is part of the Eastville Historical District at the county seat of Eastville. In 2001 the VDHR completed the archaeological survey of the Chesapeake Bay shorelines and in 2003 the Atlantic coast shorelines associated with both Eastern Shore Counties. The latter was updated in April of 2016.

NATURAL ENVIRONMENT

Northampton County, entirely within the Atlantic Coastal Plain, is relatively flat with the elevation ranging from sea level to 40 feet above mean sea level. Flat areas are typically more prone to flooding problems, particularly where the water table is high and the hydric soils dominate.

There are five large creek basins leading to the Chesapeake Bay and six significantly smaller creeks on the east coast leading to a series of seaside marshes and bays and ultimately the Atlantic Ocean.

LAND USE LAND COVER

The total land and water area of the County is approximately 795 square miles, only 207 square miles of which is comprised of land surface area. The majority of land use consists of farms, forests, and marshlands, dotted with towns, villages, and hamlets. According to the 2012 Census of Agriculture, there were 147 farms in 2012. This is a decline of four farms and 7,710 acres since 2007. The *2013 Virginia Outdoor Plan* indicated that there were about 20 square miles of lands under conservation easements and 80 square miles of owned lands providing conservation.

In order to compare land cover percentages, open water was excluded in the analysis, the county wide results are presented in Figure 3. According to the NOAA C-CAP Land Cover Atlas, between 1996 and 2010 there was a net increase of 12.11% and 12.69% in developed area and in impervious surfaces respectively. Still, the County has a total of 4% of its lands classified as developed and the percent of the County that is wetland has remained fairly constant for the past two decades. Forested areas, woody wetlands and estuarine emergent wetlands have all shown slight declines during that time, with increases in developed land cover and open space development. There was also a decrease in barren lands, typically representative of the sandy cover of the barrier islands, this is coupled with an increase in open water (NOAA, C-CAP, accessed July, 2016), which can be attributed to coastal erosion and high rates of relative sea level rise.

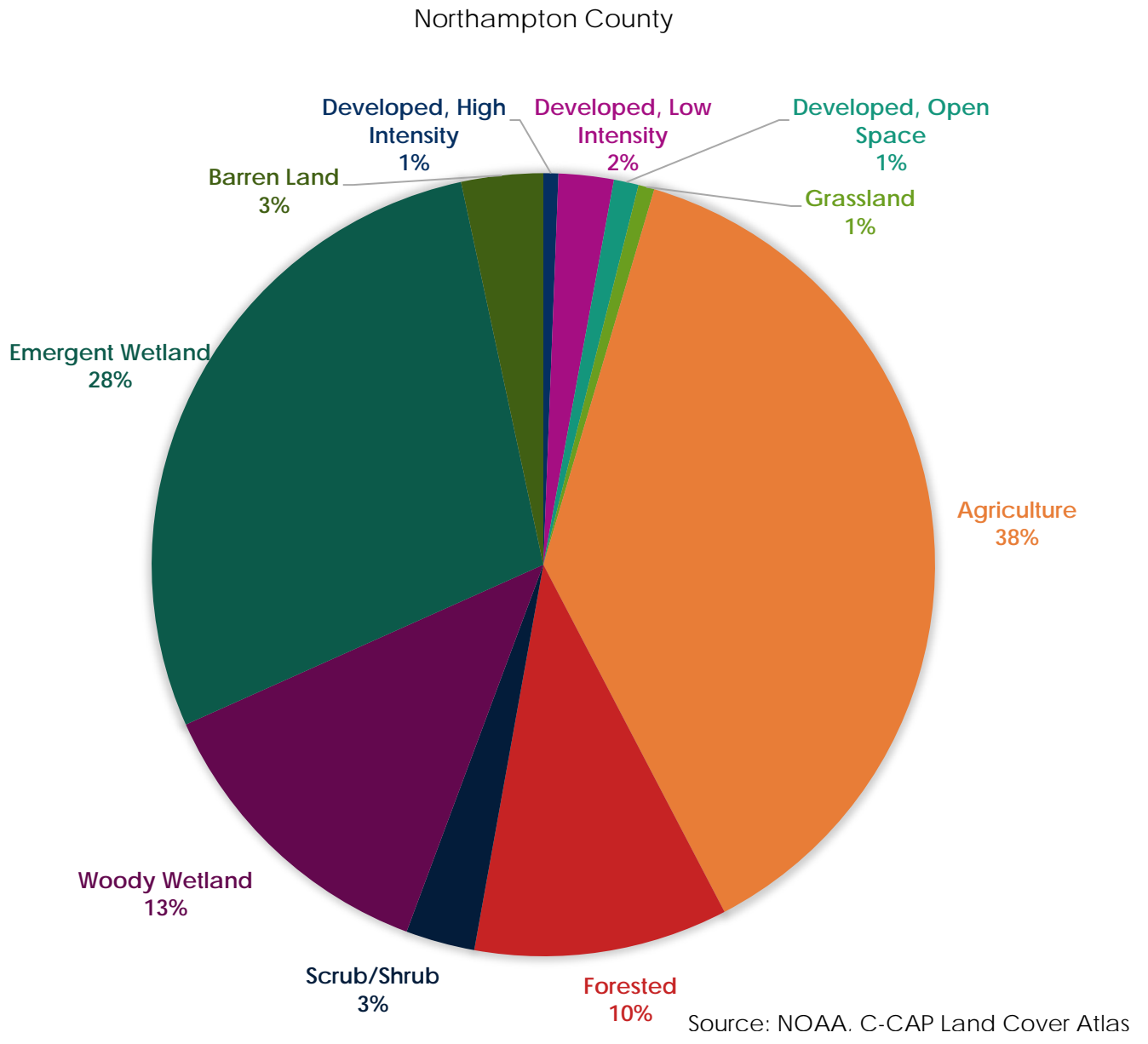


Figure 3: Northampton County Land Cover Percentages

HAZARD PREPAREDNESS & COMMUNITY CAPABILITIES

PREVIOUS HAZARD MITIGATION PLANS

Northampton County has participated in the hazard mitigation planning process since 2006. The County’s Comprehensive Plan was updated in 2009, and is in the process of another update.

Table 6: Northampton County Hazard Mitigation Resources

	Ordinances, Plans, & Publications													Resources, Committees					
Authority	Building Code	Chesapeake Bay Act	SWMP	Hazard Mitigation Plan	Comprehensive Plan	Zoning Ordinance	Storm Water Regulations	Transportation Infrastructure Inundation Vulnerability Report	All Hazards Preparedness	Emergency Operations Plans	Mutual Aid	Neighborhood Emergency Help	Virginia Hurricane Evacuation	Oil & HazMat Response Plan; HazMat Commodity Flow	Ground Water Committee	Navigable Waterways Committee	Climate Adaptation Working Group	ES Disaster Preparedness Coalition	
County	*		*		*	*													
Regional								*	*	*	*	*		*	*	*		*	
State		*					*						*						
Federal	*																		

**NATIONAL FLOOD INSURANCE PROGRAM
& HAZARD MITIGATION GRANT PROGRAM**

NFIP

As of 2015, there have been seven Federal Disaster Declarations for flooding in the County and there are no repetitive loss properties (*FEMA Flood Risk Report, 2015*). Table 7 illustrates that there has been a decrease in the total number of policies since 2011. For 2011, this number is estimated to be lower even by the time this Plan is complete, as more homeowners learn of the changes to the Flood Insurance Rate Map (FIRM). Table 7 also shows the upward trend in the number of claims filed and the average pay per claim. The combination of these two trends could create major problems for the County should a major flooding disaster occur.

With the 2015 updates to the FIRM, there were changes to the associated Special Flood Hazard Area (SFHA) for the unincorporated areas of the County. The total area of the SFHA is now 221.8 square miles, representing a gain of 2.9 square miles and loss of 6.9 square miles for a net decrease of 4.0 square miles including 341 buildings. The area within the V zone is now 181.7 square miles, representing a gain of 2.9 square miles and a loss of 29.3 square miles for a net decrease of 25.7 square miles including 65 buildings. The 406 total buildings removed from the SFHA and V zone are no longer required to have flood insurance when under a mortgage (*FEMA Flood Risk Report Northampton County, 2016*). The number of buildings with policies, as shown in Table 7, decreased significantly from 2011 to 2016, which is extremely important as there are 139 previously insured buildings that no longer carry flood insurance. Without insurance, should a major storm cause flooding, it would take the resident, business, and overall community much longer to rebound following a disaster. Net loss of lands and buildings that are in the FIRM SFHA and V zone may give the residents and communities a misconception about vulnerability.

The County does not participate in the Community Rating System (CRS) program. The only Town in the County that participates in the program is Cape Charles. In 2011 there were 5 repetitive loss properties in the County, but according to the FEMA Flood Risk Report that came out in January of 2016, there are no longer any repetitive loss properties in the County.

Table 7: Summary of Northampton County's Past NFIP participation

	HMP 2006		HMP 2011		HMP 2016	
Date Joined	June 1, 1984		June 1, 1984		June 1, 1984	
	Total	Unincorporated	Total	Unincorporated	Total	Unincorporated
Total Policies	<i>unknown</i>	290	741	421	573 policies: 7 V-zone, 238 A-zone, and other 328	334 policies: 7 V-zone, 154 A-zone, and 173 other
Policy Premium	<i>unknown</i>	<i>unknown</i>	\$651,356	\$307,744	\$420,385	\$259,186
Total Coverage	<i>unknown</i>	<i>unknown</i>	\$181,411,300	\$106,673,300	\$161,017,200	\$93,259,300
Total paid since 1978	\$104,131	\$87,1780	\$771,359	\$740,073	\$1,095,311	\$1,003,415
Claims since 1978	30	24	78	67	102	87
Average Pay per Claim	\$3,471	\$3,633	\$9,889	\$11,046	\$10,738	\$11,533

Eastern Shore of Virginia Hazard Mitigation Plan

HMGP	1999 Floyd 3 homes elevated, 2 in Battle Point and 1 in Oyster	Between 2006 & 2008 with Isabel funds, 7 homes in Oyster (all on Broadwater Circle) were elevated	1 home on Red Bank Road & 2 in Oyster were elevated in 2012. Last application was submitted in 2013, but was not funded. Currently application being prepared.
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FEMA NFIP Report, July 2003, April 2011, and January 2016

HMGP

The County of Northampton has historically participated in the Hazard Mitigation Grant Program. To date 24 homes in the County have been elevated out of the flood plain, but no houses have been relocated or razed under the program. See Table 7 for more details.

HAZARD PROFILE

The County's primary risk is associated with coastal and stormwater flooding.

WIND

The peak wind gusts predicted by Hazus during a 1-percent-annual-chance wind event are between 90 and 93 mph for the County. Hazus damage estimates are flawed, as the input data is flawed. Because the data used to run the Hazus simulation for the County did not include the number of stories of the buildings, the Hazus estimate can be assumed to be a gross underestimate of damages that the County would incur. An estimated 127 buildings, just over 1% of the total number of buildings in the County, would be at least moderately damaged with winds of these speeds and an additional 740 buildings would incur minor damages (FEMA Hazus, 2016). An estimated seven buildings would be completely destroyed during such an event. Hazus estimates that residents from eight households would be expected to be displaced from their homes, and that 2 people would thus seek temporary shelter in a public shelter. The majority of all damages, about 43%, are to residential buildings. The total property damage losses predicted (again, recall that this is most likely an underestimate) is approximately \$19.2 million, of which about 89% is from damages to buildings, contents, and inventory and the remainder results from economic loss from income loss, relocation costs, loss rental income and wages.

In addition, the Hazus model predicts 109,512 tons of debris will be generated. About 12,043 tons (69 truckloads at 25 tons/truck) of this is construction debris, the rest is tree debris and the tonnage varies depending upon the method by which the debris is collected and processed.

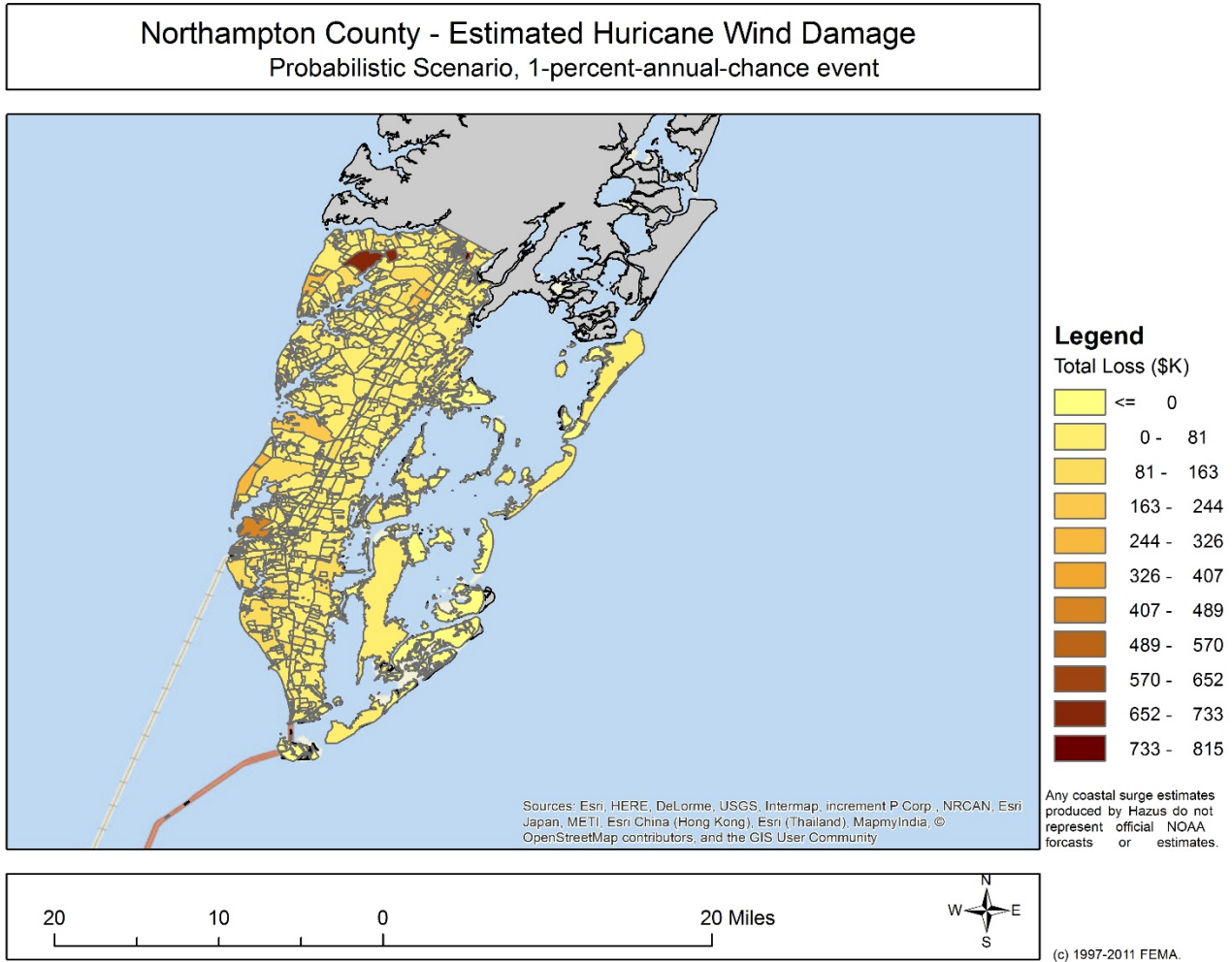


Figure 4: Northampton County Wind Damages by Census Block *Based on all single story buildings.

The Chesapeake Bay Bridge Tunnel (CBBT), the County’s connection to the rest of the Commonwealth, does not allow campers, vehicles towing, or vehicles with external cargo when wind speeds exceed 40mph. When winds exceed 65 mph the CBBT can close to all traffic.

COASTAL EROSION

Northampton County is experiencing erosion along the bayside shoreline and the barrier island shorelines on the seaside. The inland seaside shoreline is relatively protected from erosion by the barrier islands, marshes, and bays to the east. That said, the shifting and erosion of the barrier islands and loss of marshes to habitat migration and rising seas, may leave the inland seaside shoreline in a more exposed position in the future.

The erosion rates on the barrier islands range from 7 to 17 feet per year on average, but a single high intensity northeaster or hurricane could erode more than that in just a few days. The Northampton County Comprehensive Plan Environment & Natural Resources Plan seeks to ensure that existing shorelines are preserved to the maximum

Eastern Shore of Virginia Hazard Mitigation Plan

extent possible, however, indicates that Barrier Islands remain in a natural state, without further defining this description. Considering the Barrier Islands protect the peninsular shorelines, it could be important to work further to target high erosion areas and have a Countywide plan to address this concern.

Table 8 illustrates the areas in the County identified by the 2002 VIMS *Shoreline Situation Report* and updated with 2016 information from local County representatives.

Table 8 : Northampton County areas Experiencing Coastal Erosion

Area	Location Description	Erosion Rate (feet/year)	Mitigation Strategy	Other
Critically Eroding Areas				
Tankards	Savage Neck, southwest of Eastville	20		
Moderately Eroding Areas				
Smith	Savage Neck, north of Tankards	with maintained groins & bulkheads, ~0	Groins, bulkheads	
Silver Beach	Occohannock Neck	with maintained groins, bulkheads, rip-rap, ~1	Groins, bulkheads, rip-rap (since the 1940's)	
Pickett's Harbor Beach	Between William b. Trower Bayshore NAP & Butler's Bluff	>1	None	
Butler's Bluff	Between Kiptopeke State Park & Arlington, bayside	with maintained groins, bulkheads, and breakwaters, ~ 0	Groins, bulkheads, and breakwaters	

COASTAL FLOODING

According to the 2016 FEMA Flood Risk Report, 222.2 square miles of the County are in the SFHA and 181.8 square miles are in the V zone. There are an estimated 8,529 buildings in the County with a total building replacement value (excluding contents) of \$1.575 billion dollars. Approximately 72.5% of the building exposure are associated with residential housing (FEMA Hazus, 2016).

It is estimated that a 1-percent-annual-chance flood event would incur at least moderate damage to 132 buildings in the County. There are an estimated 18 buildings projected to be completely destroyed, all of which are manufactured homes. With this level of damages, Hazus estimates that 220 households will be displaced, of which, 132 people (approximately 1% of the County's population) will seek temporary shelter in public shelters.

The estimated building-related loss totals \$57.77 million for building, content, and inventory. The additional economic loss from income loss, relocation costs, loss rental income and wages totals \$100,000. Residential occupancies make up about 60% of the total losses, with commercial losses constituting about 30%, and industrial

Northampton County

losses constituting about 7%. Figure 3 provides a representation of geographic distribution of these losses by Census block.

Additionally, the Hazus model estimates that a total of 4,778 tons of debris would be generated during such a flooding event. This would require 191 truckloads (at 25 tons/truck) to remove the debris. There is no County landfill, as current waste is shipped to Bethel County, and thus all of this debris, and thus would also have to be trucked inland.

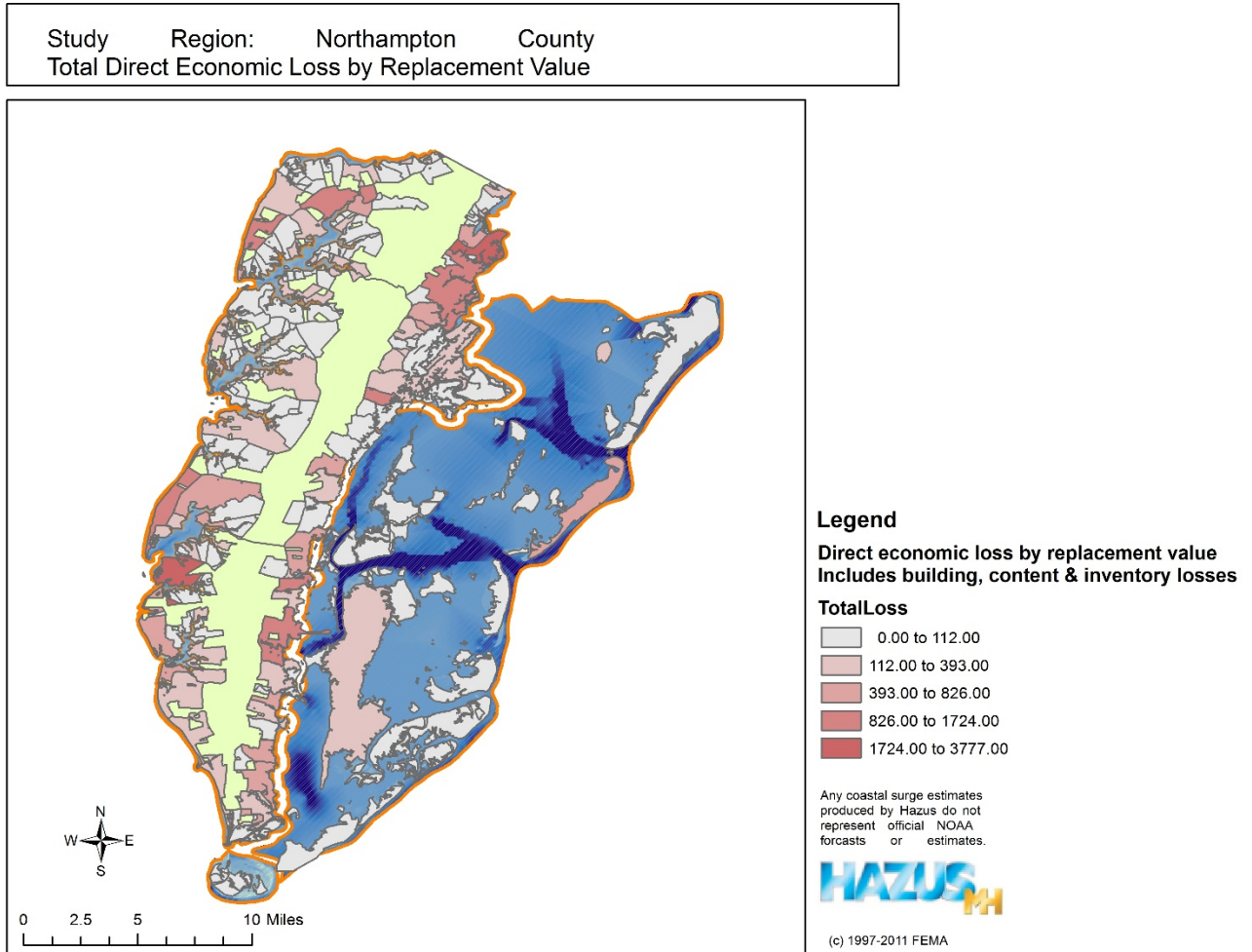


Figure 5: Northampton County Total Economic Losses from a 1% annual chance Flooding Event

SEA-LEVEL RISE

Of the County’s 502 miles of roads, two miles (0.4%) is projected to be inundated with one foot of sea-level rise (SLR) (estimated year 2025-2050), 16 miles (3.2%) with two feet (within 2045-2090), and 26 (5.2%) with three feet (sometime after 2060) (*Eastern Shore of Virginia Transportation Infrastructure Inundation Vulnerability Assessment (TIIVA)*, 2014). Even small amounts of SLR make rare floods more common by adding to tides and storm surge. With three feet of SLR, there are many communities and economically critical facilities (including various working waterfront areas) that would be disconnected, inaccessible, or have the majority of the roads

inundated. Without significant engineering solutions in the coming years, it should be expected that the livelihood and safety of communities and the integrity of these roadways in the County will largely decline. Figure 4 shows a map from the TIIVA assessment of the areas more susceptible to SLR effects in the County.

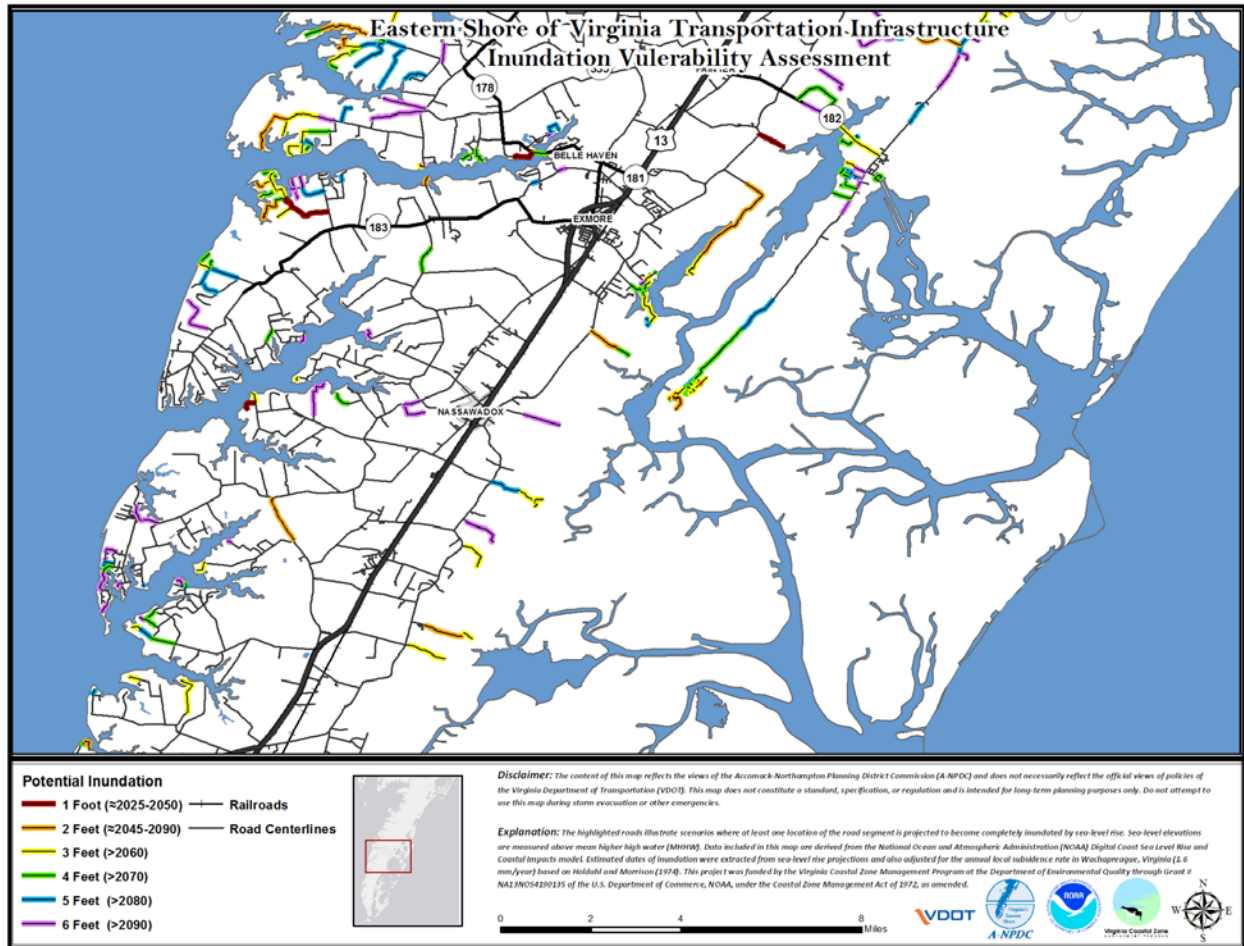


Figure 6: Northern Northampton County Transportation Infrastructure Inundation Vulnerability

STORMWATER FLOODING

Educating residents about the risks associated with stormwater flooding and standing water, such as septic contaminants and mosquito-borne illnesses, is an important step in mitigating potential negative impacts to the population.

Local officials identified various areas in the unincorporated portions of the County that have stormwater flooding problems. These areas include, but are not limited to:

- Village of Hare Valley
- Village of Weirwood
- Village of Cheapside - Between Arlington and Rt 13, septic systems and private wells
- Village of Townsend
- Village of Johnstontown

HAZARDS OF LOCAL SIGNIFICANCE

Additional hazards to those included below can be found in the Regional Level chapter.

WATER QUALITY

Since many people in the County rely on the fisheries and aquaculture industries, fish kills and the declining health of the Chesapeake Bay impact the residents and the economics of the region. In addition, bacterial impairments can discourage tourism and recreational use of our beaches and waters.

MOSQUITOS

Mosquito-borne illnesses such as West Nile and Zika virus pose a potential risk, especially with standing water from intense rain events and subsequent stormwater flooding.

SNOW AND ICE STORMS

With snow and ice storms there are often school closures, power outages, CBBT closures, and economic issues from damages to agriculture.

FIRE AND SMOKE

According to ACS estimates, in 2014 1,308 (25%) of Northampton County houses are heated with fuel oil, kerosene, etc. another 891 (17%) with bottled, tank, or LP gas, and also 159 (3%) wood as house heating source. In times of low humidity and high winds, the County is susceptible to field and forest fires as well.

CRITICAL FACILITIES

The following table lists the critical facilities and their relative importance to the County.

Table 9 : Critical Facilities in Northampton County

Facility	Hazards	No of People Affected	Loss potential	Relocation Potential	Retrofit Potential
<u>County-Owned</u>					
County Courthouse Complex	Wind	Entire County	Devastating	No	Yes
Sheriff's Department/Emergency Operations Center	Wind	Entire County	Devastating	No	Yes
Fire/EMS	Wind	Entire County	Devastating	Yes	Yes
Regional Jail	Wind	Entire County	Devastating	No	Yes
<u>Not County-Owned</u>					
Chesapeake Bay Bridge	Wind, Flooding, Ice Tunnel	Entire Eastern Shore	Devastating	No	Yes

Eastern Shore of Virginia Hazard Mitigation Plan

Riverside Shore Memorial Hospital	Wind	Entire Eastern Shore	Devastating	Yes	Yes
Cape Charles VORTAC Beacon	Wind, Flooding, Ice Coastal Erosion	Transcontinental air traffic	Inconvenience		
Schools	Wind	Entire County	Major Disruption	Yes	Yes
County Courthouse Complex Water Tower	Wind, Ice	500	Devastating	No	No
County Courthouse Complex Waste Water Treatment Plant	Wind	500	Disruption	No	Yes
Oyster, Willis Wharf Harbors	Flood, Wind, Ice		Disruption	No	Yes
Cell Phone/Communication Towers	Wind, Ice	Entire County	Devastating	No	Yes
Broadband Network	Flooding, Wind	Entire County	Disruption	No	No
Bayview Waste Water Treatment Plant	Wind	81 Residential Connections	Disruption	No	Yes

FINDINGS

1. The greatest threats to Northampton County are coastal flooding (~\$58 mil) and high wind events (>\$19 mil). Erosion, stormwater flooding, winter storm events, and water quality issues also pose significant threats to the County.
2. Established neighborhoods in the County are at great risk to damage in a wind event, not solely from wind, but from wind-damaged trees and other airborne debris. Damages reflected by Hazus are inaccurate, as they only assume single story buildings (based on County data).
3. Private flood insurance policies for homes within Special Flood Hazard Areas are becoming increasingly difficult to attain within the County. The new FIRM includes 406 fewer buildings in the SFHA and V zones. A combination of these factors has resulted in 139 fewer buildings being insured in 2016 than in 2011. This creates a vulnerability in the County and lessens the ability to rebound following a flood event.
4. The new FIRM shows a reduction in area within the SFHA and the V zone, which does not take in to account erosion rates, relative sea level rise, and may instill a false sense of security in the County about risk to flooding.
5. Isabel in 2003 proved to be an extremely damaging event for Northampton County despite being a Tropical Storm that did not make direct landfall within the County. The storm caused approximately \$10 million and \$3 million to the County's agricultural and aquaculture industries, respectively; widespread damage to trees; extensive coastal flooding; and destroyed the Ocean Cove Seafood building in Magotha that had withstood the great hurricane of 1933. Storms of similar or greater magnitude are likely to occur in the future and Isabel should serve as a great lesson for the County.
6. The Chesapeake Bay Bridge Tunnel is a critical facility that affects the local economy, communications, and emergency response capabilities.
7. It is expected that a bayside-focused disaster would be worse than a similar seaside disaster considering current pattern of development in the County and the greater exposure to storm-related hazards on the bayside.