

ACCOMACK COUNTY

COUNTY PROFILE

Accomack County is the northern county on Virginia's Eastern Shore. It was formed from Northampton County in 1662. The original settlement of the County was scattered seaside and creek side plantations and farms. In the late 1600s, towns and villages gradually grew around the courthouse, ports and wharfs that the residents used to ship their goods to Europe. In the mid-1800s, the economy boomed as the coming of the railroad opened up the northern markets to seafood products. Trains carried seafood products north and brought tourists south and created many new towns along the spine of the County. (*Hazard Mitigation Plan, 2011*)

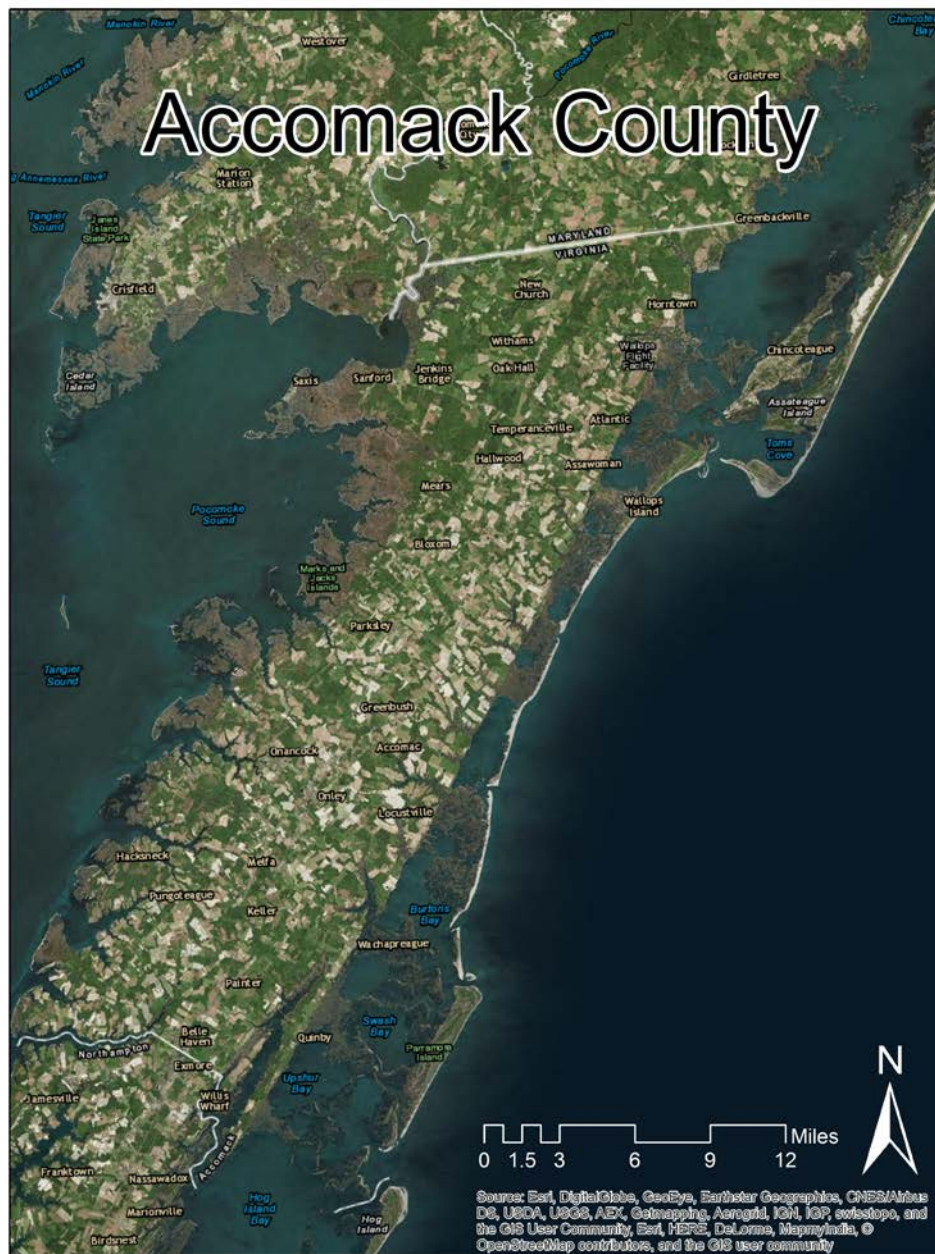


Figure 1: Accomack County Aerial Imagery

Accomack County

There are 14 incorporated towns in the County: Accomac, Belle Haven (portion located in Northampton County also), Bloxom, Chincoteague (most populated town), Hallwood, Keller, Melfa, Onancock, Onley, Painter, Parksley, Saxis, Tangier, and Wachapreague. The following information is for the unincorporated areas of Accomack and the incorporated Towns of Accomac, Belle Haven, and Painter. Information for the other incorporated towns in Accomack are located in later chapters. These Towns include Bloxom, Chincoteague, Hallwood, Keller, Onancock, Onley, Parksley, Saxis, Tangier, and Wachapreague

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 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

The 2014 American Community Survey estimate indicated the County had a population of 33,165, which would indicate that the population is remaining more or less steady and has not declined much since 2000. The median age for residents in Accomack County in 2014 was indicated to be 44.9, which is about 8 years higher than that of both the state and nation, and is an increase from 2000. Often individuals in a higher age bracket require additional assistance, particularly in the case of an emergency. County representatives indicated that there has been an increase in the non-English speaking population, particularly Creole and Spanish speaking residents. These residents often require specific attention when reaching out to educate the public about preparations prior to and instruction during and following an emergency.

Table 1 : Accomack County Demographic Information

	2014*	2010**	2000***
Population	33,165	33,164**	38,305 Figured disputed by County and determined to be 34,488****
Median Age (Years)	44.9	44.7**	39.4
Disability	3.8%	3.2%**	19.9%
Income			
Median Household Income	\$39,389	\$41,372*	\$30,130
Poverty Level	20.5%	34.7%*	18.0%
Language			
Only English	89.6%	91.3%*	93.3%
Other	10.4%	8.7%*	6.7%
Spanish	8.3%	6.9%*	5.7%
Ind-Euro	1.9%	1.4%*	0.7%
Asian	0.2%	0.3%*	0.2%

* ACS 2009-2014, ** U.S. Census 2010, *** U.S. Census 2000, **** 2014 Accomack County Comprehensive Plan

As illustrated in Table 1, there was a significant increase in the poverty level from 2000 to 2010. Hopefully the ACS estimates for 2014, which reveal a decrease in the percentage of the population within the poverty level, is accurate. Values from Table 1 also indicate that the non-English speaking population is increasing. Populations living in poverty, and populations that do not speak English often are at a disadvantage in their ability to receive imperative information for preparing for and recovering from hazards.

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. Additionally, they can identify where disruptions in employment and income might occur in the aftermath of a disaster.

The County is primarily an agricultural community with the largest two employers in the County being The Tyson Farms and Perdue Products poultry processing facilities, these two employ approximately one quarter of the jobs in Accomack County. Other large employers include The County of Accomack, the School Board, NASA, Eastern Shore Community Services, Shore Memorial Hospital, Byrd Food, and more. Although agriculture can take some time to recover following a hazard, the United States Department of Agriculture (USDA) Farm Service Agency provides assistance for natural disaster losses, which enables farmers to rebound more easily following severe weather events. Both Tyson Farms and Perdue have disaster plans, however, a long-term closure of either facility would create a problematic scenario for the County and prevent many of the residents from being able to rebound following the cause of the closure.

Although a respectively smaller group of the employed population work in fishing and aquaculture, it is a culturally invaluable trade. In the year 2000 there were 599 commercial licenses and zero aquaculture permits issued by the Virginia Marine Resources Commission (VMRC). In 2010 VMRC issued 475 commercial licenses, but also 153 oyster aquaculture permits and 116 clam aquaculture permits, revealing an increase in the number of individuals who make their living working on the waterways of the Eastern Shore. There is an observation that many of the individuals who were previously employed as migrant workers are staying on the Eastern Shore year-round and working in the aquaculture industry. Because clam and oyster aquaculture is a long-term investment, with oysters typically taking about three years to reach suitable size for market, and because the equipment can be costly, this important industry could take years to rebound following a damaging storm event.

Table 2 : Accomack County Workforce

Civilian Employed Population						
Industry	2014*		2010*		2000**	
	Count	Percent	Count	Percent	Count	Percent
Agriculture, forestry, fishing/hunting, or mining	669	4.6%	740	4.9%	1,050	5.8%
Construction	873	6.0%	1,283	8.6%	1,357	7.5%
Manufacturing	2,276	15.8%	1,960	13.1%	2,945	16.4%
Wholesale trade	785	5.4%	860	5.7%	697	3.9%
Retail trade	1,619	11.2%	1,770	11.8%	2,963	16.5%
Transportation and warehousing, and utilities	310	2.1%	470	3.1%	581	3.2%
Information	137	0.9%	259	1.7%	19	0.1%
Finance, insurance, real estate, and rentals	299	2.1%	729	4.9%	702	3.9%
Professional, scientific, waste management	1,339	9.3%	1,067	7.1%	940	5.2%
Educational and health care services	2,922	20.2%	2,879	19.2%	2,696	15.0%
Arts, entertainment, recreation, food	1,575	10.9%	1,183	7.9%	1,567	8.7%
Public Admin	1,105	7.7%	1,257	8.4%	1,181	6.6%
Other	524	3.6%	512	3.4%	740	4.1%
TOTAL CIVILIAN EMPLOYED POPULATION	14,433	-	14,972	-	17,983	-

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

BUSINESSES

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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 steadily declining business presence over the last five years, and the total civilian employed population has also declined respectively.

Table 3 : Accomack County Business Types

Industry Code Description	Total Establishments		
	2014	2012	2010
Agriculture, Forestry, Fishing, and Hunting	4	4	3
Utilities	4	4	2
Construction	78	81	96
Manufacturing	19	17	21
Wholesale Trade	24	28	31
Retail Trade	168	173	168
Transportation and warehousing	17	23	22
Finance and insurance	31	15	16
Information	13	32	35
Real Estate and Rental and Leasing	37	38	39
Professional, Scientific, and Technical Services	59	64	71
Management of Companies and Enterprises	3	3	3
Administrative, Support, Waste Management	26	25	27
Education Services	3	2	2
Health Care and Social Assistance	55	57	61
Arts, Entertainment, and Recreation	17	15	20
Accommodation and Food Services	97	101	106
Other Services (except Public Administration)	86	92	103
Industries not Classified	1	-	-
Total, All Establishments	742	774	826

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 leave towards safety.

HOUSING UNITS

Knowledge of a community's housing base contributes to hazard and vulnerability analysis by identifying how many homes are at risk. Vehicles available to households is one indicator of a household's ability to evacuate when necessary.

As Table 4 reveals, there has been very little change in the number of housing units in the County. The table also indicates that over a quarter of the total housing units are vacant. According to County representatives, however,

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only about 800 homes in the unincorporated areas of the County are unoccupied (County staff, personal communication, July 14, 2016), this large variance could be due to the U.S. Census Bureau’s definition of ‘vacant’ which can be found in the definitions at the beginning of the Plan. Often unoccupied houses are not properly maintained and can cause additional debris hazards during high wind events. Between 1990 and 2005, over half of the new housing units were manufactured units (2014 Comprehensive Plan). These manufactured homes are typically more susceptible to storm damages incurred from winds and flooding.

Table 4: Accomack County Housing

	2014*	2010**	2000***
Total Housing Units	21,054	21,002	19,550
Occupied	14,289	13,798	15,299
Vacant	6,765	7,204	4,251
Owner-Occupied	10,053	9,963	11,482
Renter-Occupied	4,236	3,835	3,817
Median Housing Value	152,500 (owner occupied only)	NA	NA

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 that about 10% of the County’s occupied residences are without even a single vehicle. This is actually a slight decrease since 2000, although the number of residences without a vehicle is about the same. This can be assumed to be due to the fact that the owners of the estimated 1,504 new residences since 2000 most likely have at least one vehicle.

Table 5: Accomack County Vehicles Available per Households

Vehicles Available	2014*	2010**	2000***
None	1,470	2,574	1,447
One	4,664	8,744	5,570
Two	5,263	11,294	5,686
Three or more	2,892	5,558	2,596

* 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 typically offers to travel times from the Eastern Shore across the Chesapeake Bay Bridge Tunnel, however, does not have a stop in Accomack County, but rather right at the County line with Northampton in the Town of Belle Haven. The cost is not very high (about \$20 each way to either Norfolk or Salisbury), however, this service would probably not run during an emergency, and doesn’t have the capacity to evacuate all residents without a vehicle.

Prior to the construction of the railroad in 1884, water-based transportation dominated the region. Water-transportation is still vital in Accomack County. Used both commercially and recreationally for enjoyment and fishing activities, the waterways are essential to the economy of the County. The Town and Island of Tangier relies upon personal vessels and the ferries to gain access to the mainland and its essential commodities. Dredging of these channels is vital not only for safe transportation, but also for the local economy. The [Regional Dredging Needs Assessment](#) was completed in the fall of 2016 and provides detail about the condition of navigable waterways in the region.

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The Accomack County Airport (MFV) sits on 410 acres and is the only public airport on the Eastern Shore of Virginia. The runway is lit and is 100' wide and 5,000' long. The airport also has eighteen hangars and jet fueling services. This is also the location of the Automated Weather Observation System AWOS III. Although the train tracks are still active, they have not offered passenger services on the Eastern Shore of Virginia in over 50 years.

COMMUNITY SERVICES AND FACILITIES

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.

PUBLIC SAFETY

Emergency Services in Accomack County are provided by 50 career personnel and over 600 volunteer members. Services are delivered from 14 independent volunteer fire companies and 1 independent volunteer rescue squad. Crews respond to an estimated 7,000 calls annually. In addition to emergency response, the Department of Public Safety personnel provide free smoke detector program, disaster preparedness presentations, Emergency Response Training (CERT), community CPR training, and staff serve on regional committees to advance emergency services within the County and region. ([Accomack County Department of Public Safety web page](#), July, 2016) The Regional Chapter has details on the capabilities of each response facility.

All of the volunteer fire departments in the County are struggling to obtain an adequate amount of funding and number of volunteers. A lack of fire and EMS volunteers create additional demand on County resources. The Onley Fire Rescue is scheduled for potential closure, but the 20-minute response time for the area that it currently serves would still be upheld by the three adjacent volunteer fire departments.

With 26 deputies, the Accomack County Sheriff's Department responded to more than 9,500 calls and 1,450 arrests in 2015. None of the police stations are located within the SFHA.

According to FEMA estimates using Hazus, during a 1-percent-annual-chance flood event, of the 13 total fire stations in the County, 1 would be completely lost and 3 would be at least moderately damaged. According to Hazus, all of the police and fire stations are to be unaffected by a 1-percent-annual-chance wind event, although this statement is not supported by local representatives (County Staff, personal communications, July 14, 2016).

MEDICAL SERVICES

Although there is currently not an operating hospital in the County, the new Shore Memorial Hospital construction between Onley and Onancock will be completed by the end of 2016. The County has just hired 12 EMS personnel, as many of the fire companies also provide EMS services. There is currently a transition under way, in which the Wachapreague station will be discontinuing EMS services and the Painter station will be starting to supply EMS services, this will strengthen the effectiveness and decrease the EMS response time in the southern reaches of the County.

Of the five the Eastern Shore Rural Health System Medical Centers and four Dental Offices, most are located in Accomack County in Onancock, Onley, Atlantic, Parksley, Melfa, and Chincoteague.

PARKS AND RECREATION

The Accomack County Department of Parks and Recreation maintains three parks and a golf driving range at Pungoteague Elementary School (35 acres). Arcadia Park (25 acres), Wachapreague Park (15 acres), and Nandua

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Middle Park are used extensively for picnics, reunions, family gatherings and excursions. By fall of 2016, Accomack County's new Central Park is scheduled to open. The new park is located at the former Jones Lumber property adjacent to the Town of Accomac, and will include softball, football, and soccer fields, and a field house for activities such as batting cages, indoor soccer and basketball, as well as a playground and other amenities.

The County maintains twenty-seven water access sites of varying infrastructure, only two of which (Greenbackville and Quinby Harbors) incur any fee for use. A list of these access points with their location and facility types can easily be found on the [Accomack County website](#). There is extremely limited access to beaches in Accomack County. The beaches of Assateague Island in Chincoteague National Wildlife Refuge are accessible for a fee. There are two other water access sites which have a limited amount of sand and even more limited parking, including Guard Shore. Mutton Hunk is the only Natural Area Preserve in the County with public access, and although there are two walking trails and seaside bay views, there is no water access.

WATER SUPPLY AND WASTEWATER

Most residents rely on private wells and septic systems for their water supply and wastewater disposal. The only two public Waste Water Treatment Plants in the County for residential sewage treatment are in the Town of Onancock and Tangier. There are several private sewage treatment plants, including NASA WFF designed to 800,000 GPD and Captain's Cove in Greenbackville designed to serve over 200 residences. The Captain's Cove facility has two lagoons for onsite effluent treatment and in 2016 updated their VDEQ permit to allow for infiltration polishing basins. 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.

The largest industries which discharge wastes directly into surface waters are Perdue, Inc., Tyson, NASA Wallops Flight Facility, the Town of Onancock's WWTP, and six seafood facilities. 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 VDEQ Water Quality Assessment Integrated Report, all almost all of the creeks in the County are considered impaired due to various causes such as pH, Enterococcus, Fecal Coliform, benthic-macroinvertebrate bioassessment, E. Coli, dissolved oxygen, etc. There are many causes for the various impairments, including wildlife, however, it is worth noting that there are an estimated 200 to 400 homes Shore-wide lacking any plumbing. This is a source of contamination that could be avoided, while at the same time directly improving the quality of life of individuals living in these conditions.

Due to the sole source aquifer designation of the Eastern Shore's water supply, Accomack County has revised its zoning ordinance to require that groundwater protection be considered in all major site plan review. The primary concern is not quantity of water in the York-Eastover aquifer, but rather quality, as salt water intrusion has already been documented in some coastal areas.

SOLID WASTE

The County operates seven Convenience Centers, all of which are closed one day each week (staggered) and offer recycling, tire, and used oil disposal, some offer disposal of scrap metal including appliances, but none accept commercial waste. There is one landfill and one landfill transfer station, which meet the disposal needs for commercial operations, construction companies, and households.

POWER AND COMMUNICATIONS INFRASTRUCTURE

Recently Old Dominion Electric Cooperative (ODEC) in cooperation with Accomack and Northampton Electric Cooperative (ANEC) replaced the main transmission line between Tasley and Exmore. This project extended the redundant line from the state line to Tasley that was installed several years ago (Janelle Dawkins, ANEC, personal

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communication, July 28, 2016). There are plans to add more redundant lines, which will help ensure that long-term power outages are not a wide-spread concern on the Eastern Shore. Maintaining and advancing our infrastructure is key to increasing our resiliency in the occasion of a hazard. In the last year there have been three large solar projects initiated, two 80-megawatt projects in Accomack County (one proposed, one approved) and one 20-megawatt project approved in Northampton County. This is a new land use, has required rezoning and additional permits, and decreases acreage available for agriculture, as currently there are currently no designated joint land uses for these operations.

One of the goals of the Accomack County Information Technology Department is to create an IT Disaster Recovery Plan, which has already been drafted, but is not a document for public use. This will aid in the County's ability to maintain efficiency following an IT Disaster.

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', providing high-speed internet to both Counties. That said, the majority of service is provided along Route 13 and there is still a high percentage of underserved households in Accomack County. Wide-spread high speed internet provides residents with 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. There are approximately 1,516 miles of primary and secondary roads in Accomack and Northampton Counties (Virginia Base Mapping Program Road Centerline Data, 2014).

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 Accomack County Public School Division is responsible for such planning. Each school has a Crisis Response Team, an emergency radio to receive updates on weather situations, two-way radios, a Crisis Management Plan for all bus drivers, and a pre-recorded warning message system.

There are six elementary and five secondary schools in the Accomack County school system, the location of these ten schools can be seen in Figure 2. In addition, there are four private schools in the County. According to FEMA estimates using Hazus, during a 1-percent-annual-chance flood event, of the fourteen total schools, Chincoteague Elementary would require more than a year to restore while the Tangier Combined School would only suffer minor damages. There are also an estimated 26 daycare facilities in the County, some are located in Accomac, Horntown, Hallwood, Tasley, Onley, Parksley, and Atlantic. Arcadia Middle School and Nandua Middle School are the emergency shelters for the County. The County has previously expressed willingness to open their shelters, and even additional schools if necessary, to Northampton County residents as well, since their neighbor to the south

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currently have no shelter. Six of the County's schools are designated emergency shelters and can be easily found on their [website](#).

The Eastern Shore Community College in Melfa provides opportunities for residents to continue their education. The facility has also been used as a base of operations during times of declared emergency and will be building a new, generator-equipped building in the near future.

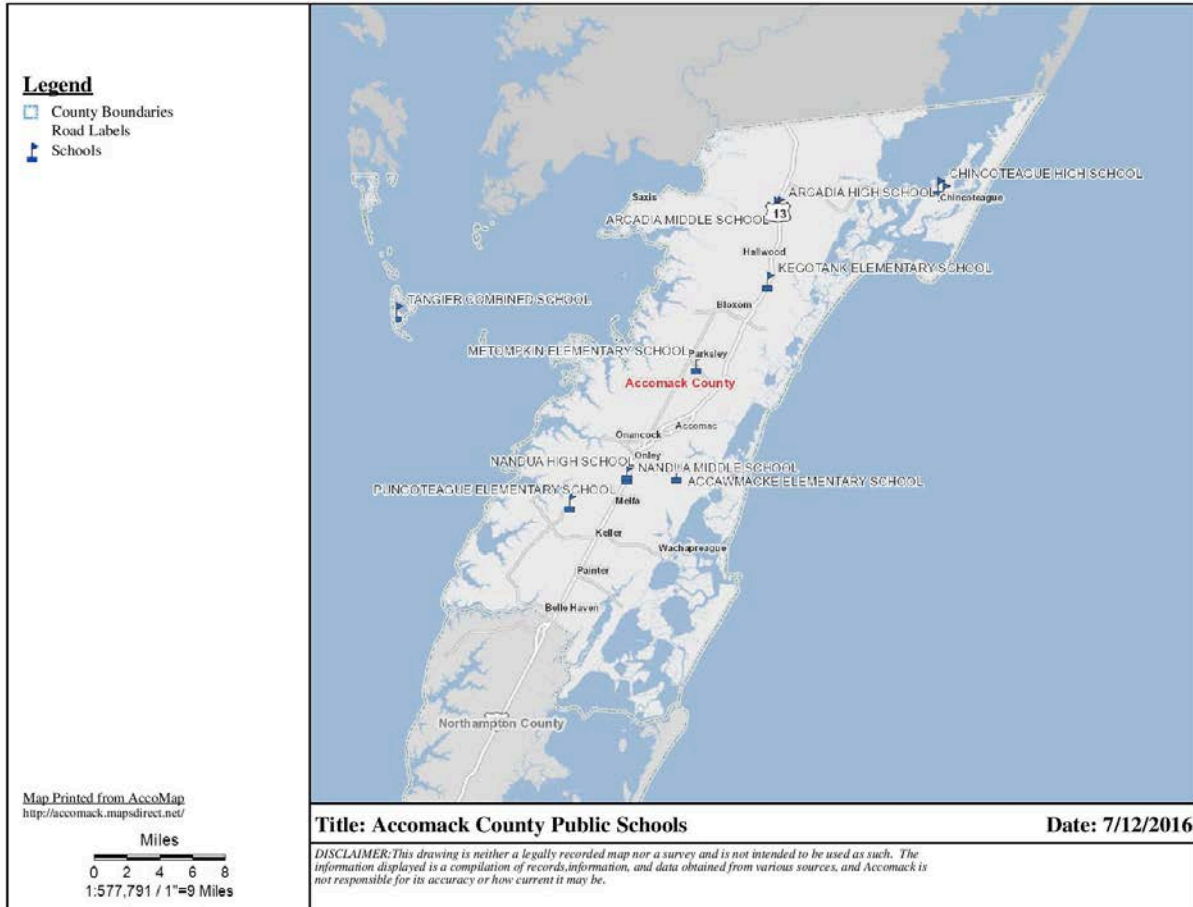


Figure 2: Accomack County Public Schools

CULTURAL RESOURCES

Although the County has several building museums, Kerr Place, Locustville Academy, the Debtors Prison, the Railway Museum, Tangier Island Museum, etc., there is no interpretive center or readily available materials that comprehensively teach the history of the Eastern Shore culture. The Historical Society of the Eastern Shore is based in Onancock, maintains three properties there, and offers a range of educational programs.

Accomack 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 Accomack County are registered with the Virginia Department of Historic Resources (VDHR) as official Historic Places. In 2001 the VDHR

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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

Accomack County, entirely within the Atlantic Coastal Plain, is relatively flat with the elevation ranging from sea level to about 50 feet above mean sea level. The majority of slopes are under 1%, but in a few sections, the slope reaches up to 15%. The average depth of the water table is about 18 inches. Flat areas are typically more prone to flooding problems, particularly where the water table is high and the hydric soils dominate.

There are approximately eighteen major tidal creeks on the seaside and twelve on the bayside, according to the FEMA reports. The [Regional Dredging Needs Assessment](#) (Appendix A) inventoried 34 seaside creeks and 24 bayside creeks in Accomack County.

LAND USE LAND COVER

The total land and water area of Accomack County is approximately 602 square miles, 476 of which is comprised of uplands and the adjacent wetland areas. 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 226 farms in 2012. This is a decline of 22 farms and 16,375 acres since 2007 and 53 farms since 1992. There has been a downward trend in the number of farms, the total acreage of farms, and the acreage of land in the agricultural and forestal districts dating back to at least 1992. Although there was a boom in subdivision activity which peaked between 2004 and 2006, many of those areas were never developed after the downturn in the economy. The larger decrease in farm acreage cannot be largely attributed to these subdivisions, but rather the result of various causes. A 2009 publication indicated that 47 acres of wetlands are created annually from the inundation of low-lying farms (Titus, 2009), which could be part of the cause in the continuing decrease of farm lands. Around the time of the 2012 Census, one of the major vegetable growers was going through bankruptcy. They owned and leased a large quantity of land. In 2013 another company bought the majority of their operations at auction, and now most of the land is back in production. It is estimated that the 2017 Census may show somewhat of a rebound, however, that depends on unforeseen circumstances and the expansion rate of operations such as solar energy production areas.

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Figure 3 has open water and wetlands excluded, as they originally made up approximately 65% collectively, and the terrestrial, upland land cover is more relevant for management purposes. According to the NOAA C-CAP Land Cover Atlas, between 1996 and 2010 there was a net increase of 4.75% and 8.27% in developed area and in impervious surfaces respectively. Still, Accomack County only has a total of 4% of its upland areas classified as developed and the percent of the County that is wetland has remained fairly constant for the past two decades. (NOAA, C-CAP, accessed July, 2016)

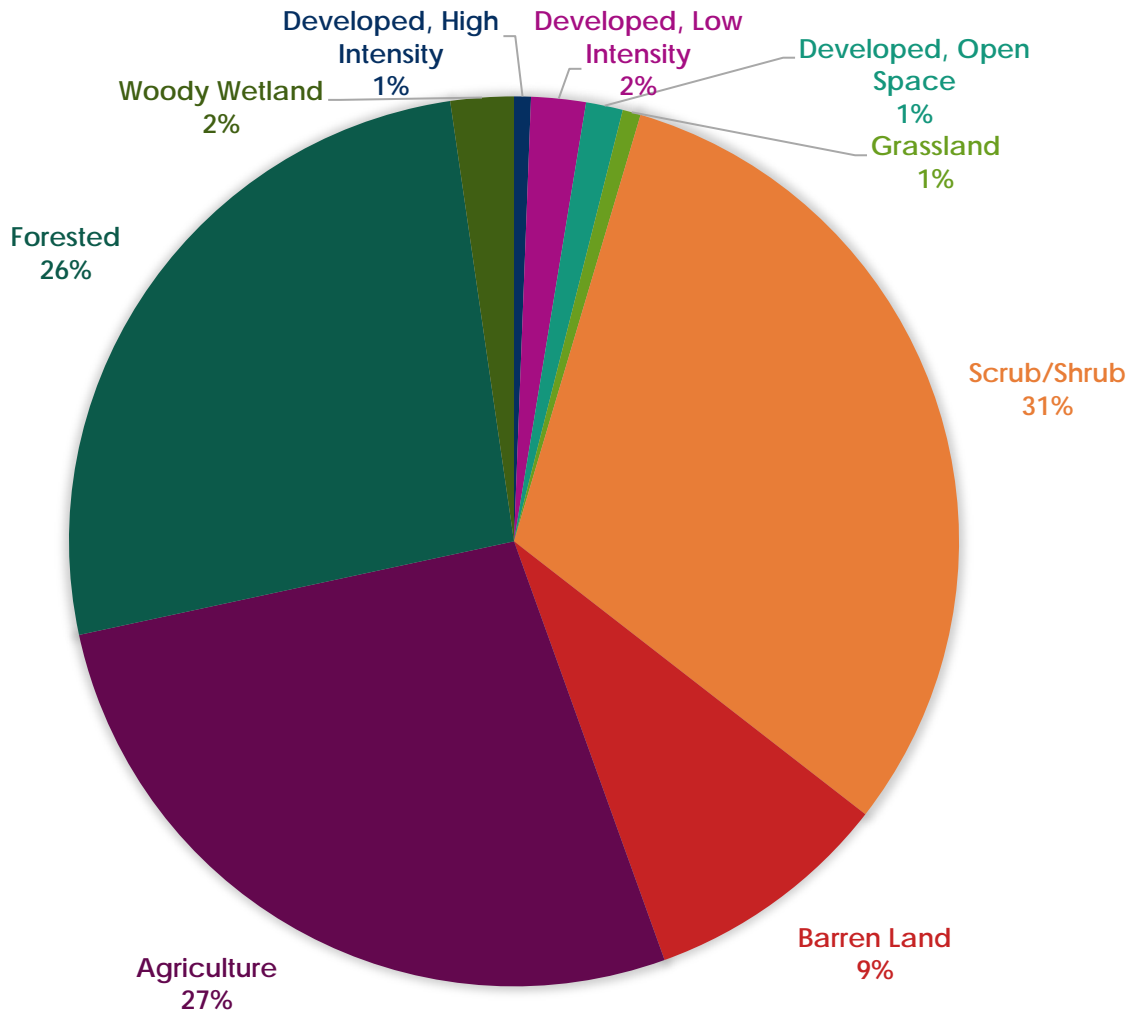


Figure 3: Accomack County Land Cover Percentages

HAZARD PREPAREDNESS & COMMUNITY CAPABILITIES

PREVIOUS HAZARD MITIGATION PLANS

Accomack County has participated in the hazard mitigation planning process since 2006. The County’s primary risk is associated with coastal and storm water flooding. Although the County’s Comprehensive Plan was updated in 2014, much of the content refers to dated data from the early 2000’s. The comprehensive plan further emphasizes the need to protect groundwater, open space, historic resources, agricultural lands, National Aeronautics and Space Administration (NASA) Wallops Flight Facility (WFF), and to strengthen existing towns and communities.

Table 6: Accomack County Hazard Mitigation Resources

Authority	Ordinances, Plans, & Publications													Resources, Committees				
	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

There have been six past Federal Disaster Declarations for flooding in the County. There are three severe repetitive loss properties and 37 NFIP-recognized repetitive loss properties, which is 12 more than there were in 2003 (FEMA Flood Risk Report 2015, FEMA NFIP Report December 2003). The Accomack-Northampton Regional Housing Authority indicated that they have a list of more than 70 residents that would like to have their homes raised (John Aigner, personal communication, July 13, 2016). Table 7 reveals that there has been a decrease in the total number of policies since 2011. For 2016, this count is estimated to actually be lower 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.

With the 2015 updates to the FIRM, there were changes to the associated Special Flood Hazard Area (SFHA) for the County. The total area of the SFHA increased by 12 square miles and decreased by 16.6 square miles for a net decrease of 4.6 square miles including 1,111 buildings. The area within the V zone increased by 3.6 square miles and decreased by 44.8 square miles for a net decrease of 41.2 square miles including 300 buildings. This is extremely important as 1,411 structures that previously were required to have flood insurance under a mortgage are no longer required to have even basic flood insurance coverage. Flood insurance is cost prohibitive for many residents in the County (Charles Pruitt, personal communication, July 14, 2016). Without insurance, should there be flooding, the recovery time for residents, businesses, and the overall community will be much longer.

The County participates in the Community Rating System (CRS) program in order to pass on a policy discount to residents and businesses in the unincorporated areas of the County. As of 2016, their CRS rating is an 8, providing a 10% discount.

Table 7: Summary of Accomack 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>	<i>unknown</i>	4,017	2,908	3,600 policies: 61 V-zone, 3,162 A-zone, and 377 other	2,306 policies: 59 V-zone, 2,001 A-zone, and 246 other
Policy Premium	<i>unknown</i>	<i>unknown</i>	\$3,225,177	\$2,222,279	\$3,371,381	\$2,044,239
Total Coverage	<i>unknown</i>	<i>unknown</i>	\$784,621,700	\$577,667,100	\$783,148,000	\$508,113,600
Total paid since 1978	\$3,810,884	\$3,434,634	\$6,048,514	\$4,379,826	\$11,906,426	\$9,578,778
Claims since 1978	525	460	740	570	1,062	833
Average Pay per Claim	\$7,259	\$7,467	\$8,173	\$7,683	\$11,211	\$11,449
HMGP	1999 Floyd 28 homes elevated (6 in Tangier); 2003 Isabel 53 homes (16 Saxis, 12 Tangier, 6 Wachapreague)		In 2011 applied to elevate 9 homes (1 Chincoteague, 1 Wachapreague), still underway.		Last application was submitted in 2013, but was not funded. Currently application being prepared for 2016 submission.	

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FEMA NFIP Report, December 2003, April 2011, and January 2016,

HMGP

The County of Accomack has historically participated in the Hazard Mitigation Grant Program. After Hurricane Floyd in 1999, the County received a 28 home elevation project for homes located in the unincorporated portions of the County and in the Town of Tangier. See Table 7 for more details. As of 2016, a total of almost 100 homes in Accomack County have been elevated out of the floodplain and no houses have been relocated or razed under the program.

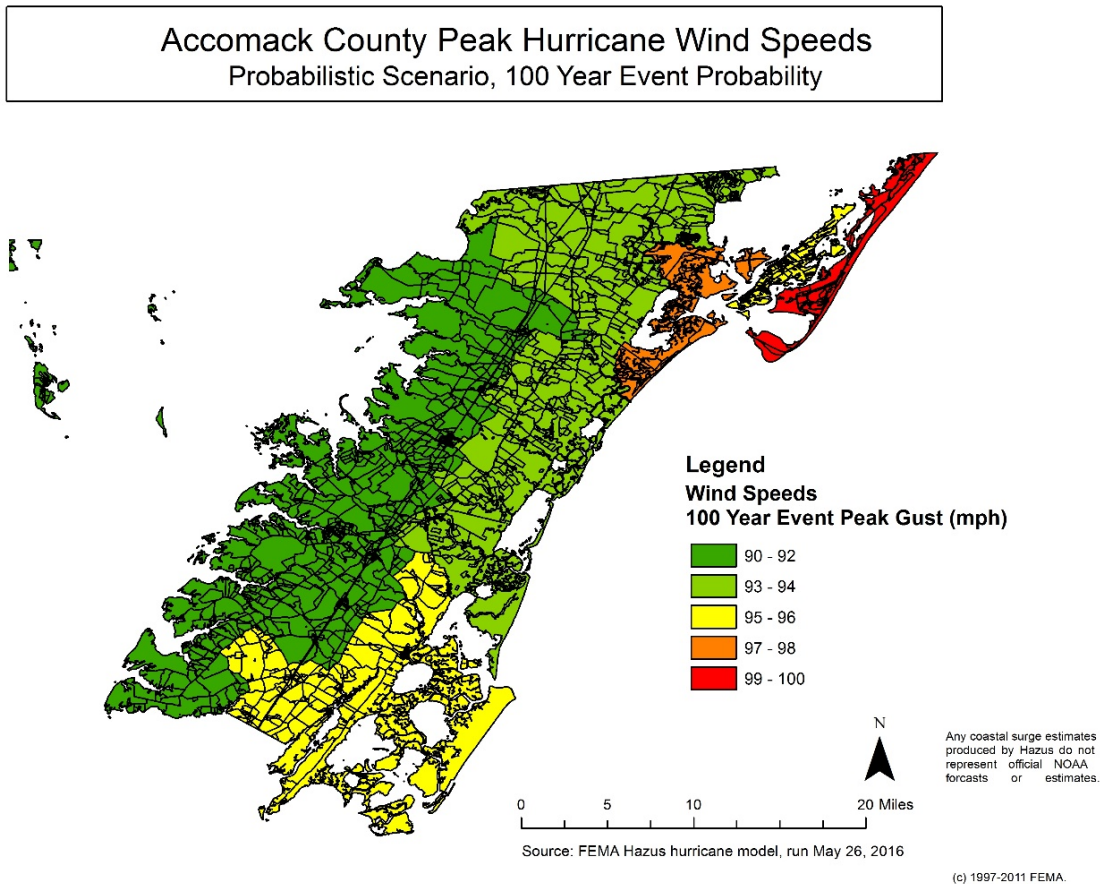
HAZARD PROFILE

WIND

The peak wind gusts predicted by Hazus during a 1-percent-annual-chance wind event are evidenced in Figure 5. About 386 of Accomack County's buildings are estimated by Hazus to be at least moderately damaged and 29 completely destroyed during such an event. This is about 1.5% of the total number of buildings. The majority of damages, about 90%, are to residential buildings. The total property damage losses predicted is approximately \$63 million, of which about 82% 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 264,672 tons of debris will be generated. Only about 10,350 tons (414 truckloads at 25 tons/truck) of this are 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 : Accomack County Peak Hurricane Wind Speeds, 1-percent annual chance wind event, Hazus predictions



The County's Building Code is currently based on the 2012 Virginia Uniform Statewide Building Code (USBC), the USBC is periodically updated, and the County will update their code respectively. Our region lies within the 110 mph winds zone, and thus, the County requires structures be built to withstand winds of at least this strength (Bruce Herbert, Building Inspector, personal communications, August, 1, 2016). These standards affect many aspects of the construction, from the quality of the shear walls to the number of nails used to secure shingles.

For the anticipated damages from each category of hurricane, please see the Chapter 4: High Winds, Table 1. Additional wind hazards, which are also described in Chapter 4, are straight line winds, tornados, and nor'easters. Manufactured homes are at the highest risk to wind damages.

COASTAL EROSION

Accomack 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.

Accomack County

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 Accomack County Comprehensive Plan emphasizes the importance of consulting with the VIMS Shoreline Situation Report to prevent building in high erosion areas, or those areas indicated to have a loss of greater than one foot per year. The Coastal Resilience Tool is finalizing an application that will show historic positions of the seaside barrier islands, and this will be available to the public in January of 2017.

Table 8 reveals the areas in the County identified by the 2002 VIMS *Shoreline Situation Report* and updated information from local County representatives. According to the VIMS Center for Coastal Resources Management 2016 Accomack County Shoreline Inventory, 46 of the 708 miles of shoreline surveyed are defended in some way, the majority of which (26.6 miles) are bulkheads.

Table 8 : Accomack County areas Experiencing Coastal Erosion

Area	Location Description	Erosion Rate (feet/year)	Mitigation Strategy	Other
Critically Eroding Areas				
Tangier Island, & Uppards	All coastlines, western shore of Tangier least in danger due to existing seawall	10+	Jetties, Seawalls, Enhancing the Uppards, Reinforcement of the eastern shoreline, Extend seawall on eastern shoreline	
Sluitkill Neck	Between Pungoteague and Matchotank Creeks	4-5 On Bayshore, 1.5 on mainland	Retain as is. Unsuitable for residential or recreational development	Includes Finneys, Scarborough, and Parker Islands
Severely Eroding Areas				
Saxis			Beach nourishment, Groynes, Jetty, Breakwater	
Scarboroughs Neck	Northern shoreline of Occohannock Creek	5	Continue as agricultural use	Unsuitable for residential development. Suitable for recreational camping.
Parkers Marsh	Between Chesconessex and Onancock Creeks	5	Retain as state natural area. Restrict development at Crystal Beach to relatively low value seasonal residences	Includes residentially developed Crystal Beach area
Freeschool Marsh	Between Saxis and mainland	1.9-4.9 (maximum along Saxis waterfront)	Retain as is.	Most is set aside as a wildlife refuge
Moderately Eroding Areas				
Hyslop Marsh	Between Craddock and Back Creeks	2-3	Retain as is.	None.

Eastern Shore of Virginia Hazard Mitigation Plan

Nandua Creek	Southwestern Accomack Co.	2-3 in lower creek, 0 in upper creek	Continue as agricultural and lowdensity residential use	Lower creek unsuitable for residential development
Broadway Neck	Between Matchotank Creek and East Point	2 south of Thicket Point, no data for north of Thicket Point	High flood hazard should be considered before future development	The presence of old beach defenses at East Point indicates history of moderate erosion
Onancock Creek	Central Accomack Co. Bayside	Moderate erosion of sand beaches	Restrict additional development on lower part of creek	Localized erosion in areas such as at the end of Bailey Neck
Big Marsh	Between Chesconessex and Deep Creeks	0-3	Continue as agricultural and lowdensity residential use	Includes Schooner Bay development
Parksley	Between Hunting and Young Creeks	2 along beaches, 0 along remainder of creeks	Retain as marshland or agriculture	None.
Michael Marsh	Between Cattail and Messongo Creeks	1.3-1.7 along shore facing Beasley Bay	Retain as is.	Most is set aside as part of Saxis Wildlife Management Area

Assateague Island, an area vital to the economy in Accomack County, has experienced severe erosion and decisions are currently being made for the long-range plan for the National Wildlife Refuge, with regards to new locations for parking, beach access, interpretive structures, facility buildings, etc. Chincoteague Inlet is funded for both 2016 and 2017.

Just to the south of Assateague is Wallops Island, which is owned by the federal government and home to the NASA WFF, and a major economic driver for the County. In June of 2016, the United States Army Corps of Engineers (USACE) completed the Wallops Island beach nourishment, which cost almost \$36 million (about \$10 /yd³ of sediment).

The restrictions within the Resource Protection Areas identified in the Chesapeake Bay Act typically prevent new construction within 100 feet of our waterways, and thus reduces increased exposure to erosion. However, erosion does cause additional problems for our navigable waterways, as the eroded sediments can fill channels and create a hazard for water-based transportation and businesses.

COASTAL FLOODING

According to the 2015 FEMA Flood Risk Report, 311.5 square miles of Accomack County are in the SFHA and 144.6 square miles are in the V zone. This is approximately 68% and 31% respectively of land area (excluding marsh or emergent wetlands) using the land cover data from NOAA presented in Figure 2. The three largest landholders are the Commonwealth of Virginia, the federal government, and The Nature Conservancy (TNC).

There are an estimated 27,422 buildings in Accomack County with a total building replacement value (excluding contents) of \$3,540 M. Approximately 91.31% of the buildings (and 75.14% of the building value) are associated with residential housing. (Hazus, 2016)

It is estimated that a 1-percent-annual-chance flood event would incur at least moderate damage to 3,081 buildings in the County. This is over 10% of the total number of buildings. There are an estimate 665 buildings that are estimated to be completely destroyed. As to be expected, manufactured housing units obtain the most

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damage, with 663 being damage more than 50%. With this level of damages, Hazus estimates that 2,389 households will be displaced, of which, 5,024 (approximately 15% of the County's population) will seek temporary shelter in public shelters. The County estimates that 10% of the population is a more reasonable estimate for those that would seek temporary shelter (Doug Jones, personal communication, July 14, 2016).

The estimated building-related loss totals \$287 million for building, content, and inventory. The additional economic loss from income loss, relocation costs, loss rental income and wages totals \$6.45 million. Residential occupancies make up about 70% of the total losses, commercial about 14%, and industrial about 6%. Figure 4 provides a representation of geographic distribution of these losses by Census block.

Additionally, the Hazus model estimates that a total of 68,727 tons of debris would be generated during such a flooding event. This would require 2,749 truckloads (at 25 tons/truck) to remove the debris. The local County landfill cannot accommodate this quantity of debris, and thus would have to have the trucks sent inland.

Following hurricane Sandy in 2012, there were over 200 reported home damages in the County. However, within two weeks, about half of these had already been repaired, and about a quarter were being processed with their respective insurance companies. Between 15 and 20 homes received volunteer assistance for their repairs and two residents from two homes relocated off of the Eastern Shore. (Doug Jones, personal communications, July 14, 2016)

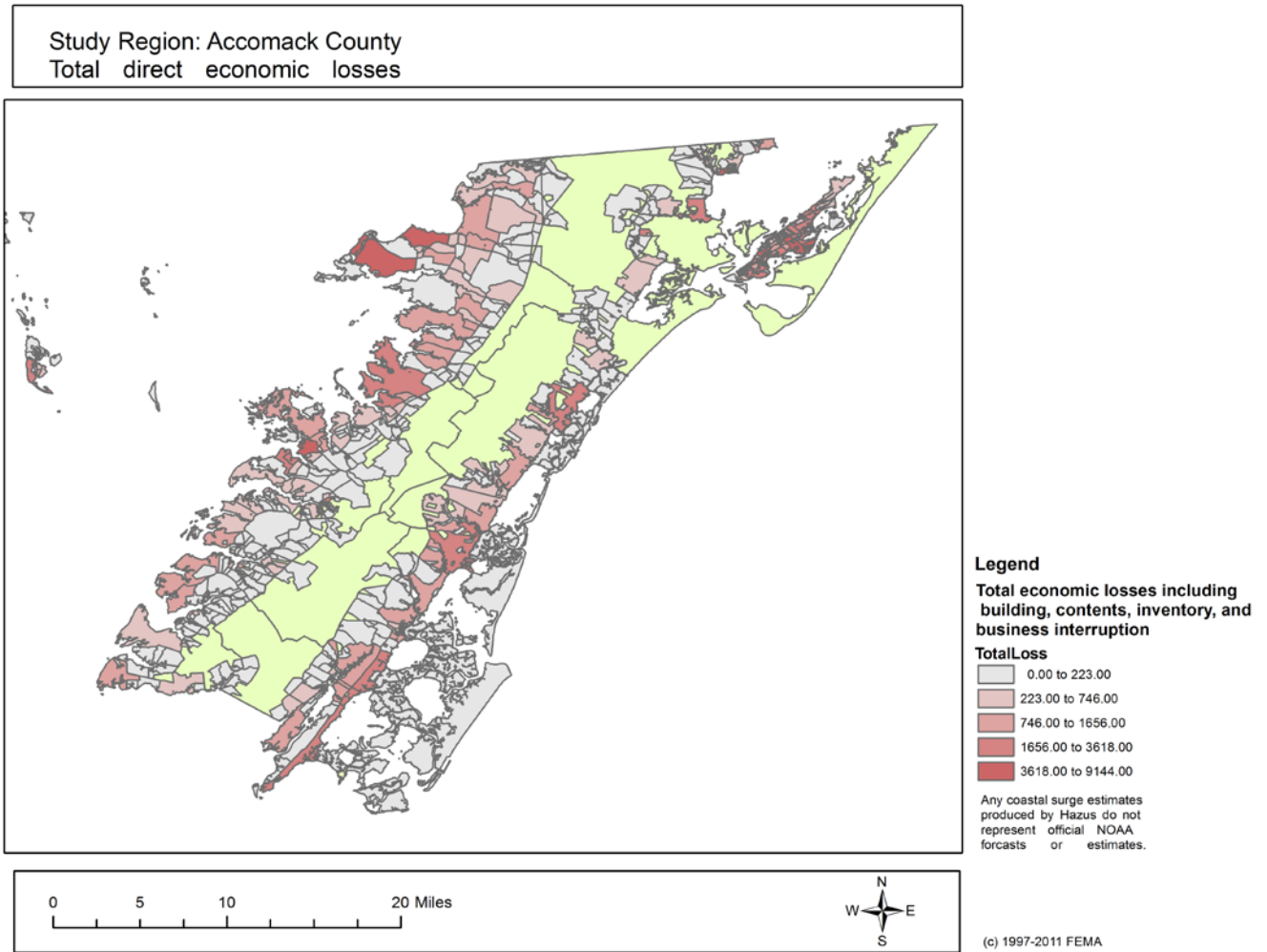


Figure 5 : Accomack County Total Economic Losses from a 1% annual chance Flooding Event

SEA LEVEL RISE

Based on 2010 U.S. Census data, 4,623 people in the County are on land below 3 feet elevation and 6,957 people are below 5 feet. Accomack County has 33,153 people in total. Of the County’s 1014 miles of roads, 31 miles (3.1%) will be inundated with 1 foot of sea level rise (SLR) (estimated year 2025-2050), 115 miles (11.3 %) with 2 feet (2045-2090), and 183 (18%) with 3 feet (post-2060) (TIIVA, 2014). Another study by VIMS estimated 326 miles of roads in Accomack County were vulnerable to 1.5 feet of relative SLR when combined with a storm surge of 3 feet. Even small amounts of sea level rise make rare floods more common by adding to tides and storm surge. With 3 feet of sea level rise, there are many Towns, unincorporated communities, economically critical facilities (including NASA WFF and various working waterfront areas) that would be disconnected, inaccessible, or have the majority of the roads inundated with 3 feet of relative SLR. Without significant engineering solutions in the coming years, it should be expected that the livelihood and safety of communities and the integrity of the roadways in the County will largely decline. Figure 5 shows a map from the Transportation Infrastructure Inundation Vulnerability Assessment of one of the most susceptible areas to SLR effects in the County. According to a 2014 report prepared by Climate Central, the County has 41,816 acres of land below 5 feet MHHW.

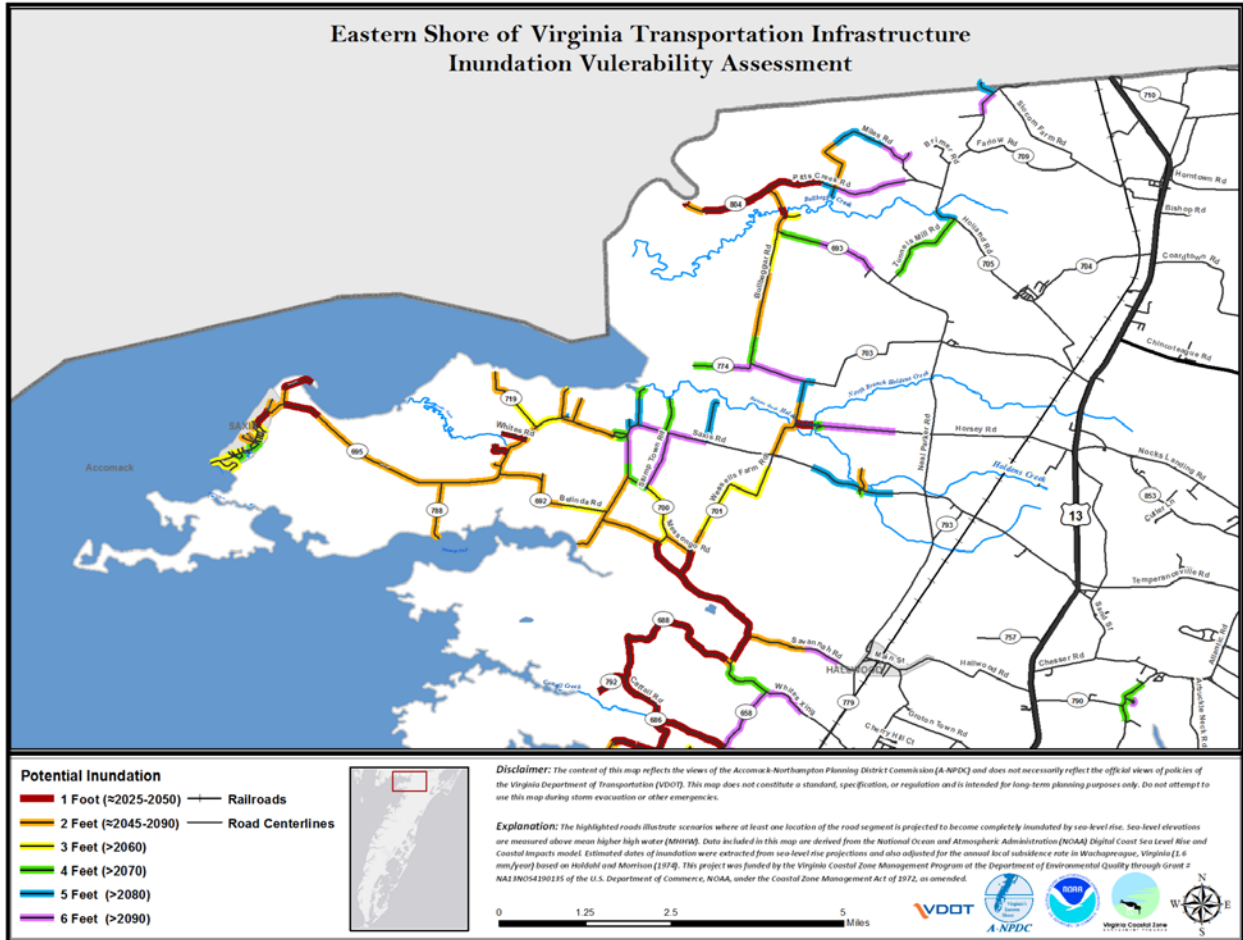


Figure 6: Northwestern Accomack County Transportation Infrastructure Inundation Vulnerability

STORM WATER FLOODING

Local officials identified various areas in the County that have storm water flooding problems. These areas include, but are not limited to the intersection of Route 13 and Route 175 in New Church, Horntown Road east of Route 13, Neil Parker Road in Sanford, parts of the villages of Pastoria and Mapps ville, the low lying lands south from Messongo to Chesconnessex, parts of the Town of Accomac, Bayside Road between Shields and Craddockville, and the Family Dollar store in Tasley.



Figure 7: Accomack County Storm Water Flash Flooding July 1, 2016.
Photo by Shannon Alexander, A-NPDC

Intense rain events, such as that on Friday July 1, 2016, can come without warning and have serious impacts to travel and safety. Slow moving storms moved over Accomack County brought nine inches of rain by evening in the Parksley area, where south bound U.S. 13 was forced to close. Throughout the County, homes were surrounded by and often inundated by water. The gauge in Onley measured 8.58 inches of rain. Ambulances and fire rescue vehicles struggled to reach individuals in need of aid. Luckily, there are alert systems in place that, if signed up for, will send alerts when such a flash flood warning is in effect, but often the waters are already rising by the time these are issued.

Educating residents about the risks associated with storm water 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:

- New Church; Rt. 13 & Rt. 175
- Sanford
- Especially Neil Parker Rd (Sanford)
- Pastoria
- Mappsville

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- Bayside Rd between Shields and Craddockville
- Family Dollar Store in Tasley
- Intersection of Locustville Rd & Drummondtown Rd
- Clam
- Messongo
- Belinda

The causes are typically from soil type, elevation, lack of proper ditch design and maintenance, or any combination of these.

HAZARDS OF LOCAL SIGNIFICANCE

Other hazards for Accomack County are described in the Regional Chapter. They include, but are not limited to: above and underground storage tanks, snow and ice, fire and drought, fish kills, and biological hazards.

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, isolated communities (by water – Tangier, and roads to many locations) and economic issues from damages to agriculture, etc.

FIRE AND SMOKE

According to ACS estimates, in 2014 3,583 (25%) of Accomack County houses are heated with fuel oil, kerosene, etc. another 3,623 (25%) with bottled, tank, or LP gas, and also 460 (3%) wood as the primary 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 County Facilities in Accomack County

Facility	Hazards	No of People Affected	Loss potential	Relocation Potential	Retrofit Potential
County-Owned Properties					
Schools: Tangier Combined, Chincoteague High and Elementary, Arcadia High	Storm Water Flooding Wind	7,708 ≤ 20 yrs old (~23%)	Major Disruption	Yes	Yes

Eastern Shore of Virginia Hazard Mitigation Plan

Facility	Hazards	No of People Affected	Loss potential	Relocation Potential	Retrofit Potential
and Middle, Kegotank Elementary, Metompkin Elementary, Accawmacke Elementary, Nandua High and Middle, Pungoteague elementary	Coastal Flooding (some) Fire, Ice	5,752 ≤ 15 years (~17%)			
911 Communications/ Emergency Operations Center (Accomac)	Wind Fire, Ice	45,000+	Devastating	Yes	Yes
Sheriffs Office & Jail Complex	Wind, Fire, Ice	~33,000	Major Disruption	No	Yes
Health Department	Wind, Fire, Ice	33,000	Minor Disruption	Yes	Yes
Social Services	Wind, Fire, Ice	~20,000	Major Disruption	Yes	Yes
Administration Building	Wind, Fire, Ice	~33,000	Minor Disruption	Yes	Yes
Public Safety Bldg. (Parksley)	Wind, Fire, Ice, Storm water flooding	~33,000	Major Disruption	Yes	Yes
Fire Training Center (Melfa)	Fire	~33,000	Minor Disruption	No	No
Building & Grounds Maintenance Shop	Wind, Fire, Ice, Flooding	~20,000	Minor Disruption	Yes	Yes
Veteran's Affairs Office	Wind, Fire, Ice	~500	Minor Disruption	Yes	Yes
County Garage	Wind, Fire, Ice, Flooding	~33,333	Major Disruption	Yes	Yes
Industrial Prkwy, Service Rd, & Atlantic Dr	Wind, Fire, Ice, Flooding	~20,000	Minor Disruption	No	Yes
Airport Complex	Wind, Fire, Ice, Flooding	~3,000	Major Disruption	No	Yes
North & South Landfills	Wind, Fire, Ice, Flooding (Coastal & Stormwater)	~33,000	Major Disruption	No	Yes
Mappsville Communications Tower	Wind, Fire, Lightening, Ice	~33,000	Major Disruption	Yes	Yes
Planning Office	Wind, Fire, Ice	~33,000	Minor Disruption	Yes	Yes
Lumber Mill Complex (Joynes Neck Rd)	Wind, Fire, Ice, Stormwater Flooding	~33,000	Inconvenience	No	Yes
Convenience Centers: Chincoteague, Fisher's Corner, Horntown, Makemie Park, Grangeville, Painter, Tasley	Wind, Fire, Ice, Flooding (Coastal and Stormwater)	~33,000	Major Disruption	Yes	Yes
County-Owned & Operated Public Utilities					
Industrial Park Water & Wastewater Systems	Wind, Fire, Ice, Flooding	~33,000	Major Disruption	No	Yes
Leachate Treatment Plant	Wind, Fire, Ice, Flooding	~33,000	Major Disruption	No	Yes
Accomac Water System	Wind, Fire, Ice, Flooding	~2,000	Major Disruption	No	Yes

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Facility	Hazards	No of People Affected	Loss potential	Relocation Potential	Retrofit Potential
Health Dept. Water System	Wind, Fire, Ice, Flooding	~33,000	Major Disruption	No	Yes
Court Systems Buildings Complex	Wind, Fire, Ice, Flooding	~10,000	Major Disruption	No	Yes
DSS Water & Wastewater Systems	Wind, Fire, Ice, Flooding	~3,000	Major Disruption	No	Yes
Schools	Wind, Fire, Ice, Flooding	~10,000	Major Disruption	No	Yes

FINDINGS

1. During a 1-percent-annual-chance flood event the damages and economic losses are estimated to total about \$293.5 million. During the same chance wind event, that total is \$63 million. If these Hazus estimates are combined, which is a likely scenario during a hurricane, the damages are over \$350 million. A high wind storm system that also resulted in 1-percent-annual chance flooding, is a significant threat to the County.

2. During a 1-percent-annual-chance flood event there are approximately 3,081 structures that are estimated to incur at least moderate damage, and 665 that would be completely destroyed, at a total cost of \$287 million and additional disruption costs of \$6.5 million. Over 2,000 households would be displaced, with over 10% of the population estimated to seek shelter. Several schools, fire stations, and EMS operations are vulnerable. Coastal flooding is the greatest threat to the County.

3. With the 2015 updates to the FIRM, 4.6 square miles, including 1,111 buildings, were removed from the SFHA and 41.2 square miles, including 300 buildings, were removed from the V zone. From April of 2011 to January of 2016, there has been a decrease of 602 policies in the unincorporated areas, and this number is estimated to continue to increase as more residents learn that flood insurance is no longer required. The changes in the FIRM are thought to create a sense of decreased vulnerability to flooding, and the resulting drops in policies may increase the rebound time for the County and its' residents following a flood event.

4. There are 38 repetitive loss properties and 3 severe repetitive loss structures in the County. There are over 70 owners who would like to receive assistance in raising their homes.

5. The Towns of Accomac, Keller, Melfa, and Painter do not participate in the NFIP as of 2016, but have storm water flooding issues. Many areas of storm water flooding are not identified by the current FIRMs. Residents and business owners in these areas cannot currently purchase flood insurance or be eligible for some loan opportunities.

Often drainage ditches are the culprit behind storm flooding, and thus maintenance and reevaluation of many systems may be needed to address this hazard.

6. High winds from a 1-percent-annual-chance event are predicted to cause at least moderate damage to 386 buildings and completely destroy 29. Property damages and economic losses would total approximately \$63 million. Although this is significant, it is just over a quarter of the damage incurred by a 1-percent-annual-chance flooding event. About 90% of the damages are to residential buildings.

7. Most of the worst coastal erosion in Accomack County has occurred on the bay shoreline. Erosion also causes shoaling of channels and creeks, thus hindering waterway navigation and increasing maintenance dredging needs and costs.

8. There have been several factors that have increased the risk in the County since 2011. These include an increase in the number of vacant homes, an increase in the number of manufactured homes, an increase in the number of homes with no vehicle available, and an increase in the number of non-English speaking residents.

9. The County has identified other additional hazards including winter storms, sewage spills, drought, wildfire, hazmat incidents, heat waves, biohazards, and well contamination. Furthermore, the County faces secondary hazards from flooding such as poultry kills and mosquito-borne disease which could potentially impact the health of residents and the local economy. Of concern for wildfire and structure fire is the increasing difficulty with which the fire companies are having in securing sufficient volunteers to offer complete services.