Solid Waste Management Plan

CHA Project Number: 34873

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1.0 INTRODUCTION

1.1 PURPOSE

This Solid Waste Management Plan (SWMP or Plan) satisfies requirements of Virginia Solid Waste Management Regulations (VSWMR) found in 9 VAC 20-130 [(1)] and establishes solid waste management planning and recycling practices for the protection of public health, public safety, the environment and natural resources throughout the planning area comprised of Accomack County (County) and the 14 incorporated Towns of Accomack, Belle Haven, Bloxom, Chincoteague, Hallwood, Keller, Melfa, Onancock, Onley, Painter, Parksley, Saxis, Tangier and Wachapreague. In doing so, this plan provides for environmentally sound solid waste management that is compliant with VSWMR found in 9 VAC 20-81[(2)] the Virginia Hazardous Waste Management Regulations found in 9 VAC 20-60[(3)] and Regulated Medical Waste Management Regulations found in 9VAC 20-120[(4)], and makes the most effective and efficient use of available resources over a minimum of a 20-year planning period extending from 2018 through at least 2040.

In January 2017, the County purchased a 66.78-acre parcel immediately west of the landfill. This parcel creates an opportunity for the County to expand the landfill to the west. A western expansion, depending on the exact size and configuration, could conceivably extend the capacity of the Northern Landfill by up to another 20 years. The feasibility of permitting additional landfill capacity is currently being evaluated.

1.2 GOALS AND OBJECTIVES

This Plan addresses very specific requirements outlined in VSWMR found in 9 VAC 20-130-120[(4)] including the following:

- Basic Planning Elements:
  - Identifying objectives for solid waste management within the planning unit;
  - Providing a discussion of how the plan will be implemented and tracked;
  - Defining incremental stages of progress toward the objectives and

schedule for implementation;

- o
- o Presenting a strategy for provision of necessary funds and resources;
- o Describing funding and resources;
- o Presenting a strategy for public education and information related to source reduction, reuse and recycling;
- o Giving consideration of public and private sector partnerships in achieving various plan goals and objectives;
- o Establishing and maintaining a minimum recycling rate of 15 percent;

- Evaluating MSW generation data:
  - o Providing data and analysis of population and waste generation from various sources and municipalities within the planning district;
  - o Describing existing and planned infrastructure and facilities to enable collection, transfer and disposal of projected solid waste;
  - o Identifying milestones toward implementation over a minimum of a 20-year duration;
  - o Describing a program for reduction, reuse, recycling and disposal;
  - o Providing a description of public outreach programs for education, partnership and participation;
  - o Assessing current and predicted needs for solid waste management for a minimum 20-year planning period and description of actions to be taken to satisfy those needs;
- Describes all known disposal sites, closed, inactive and active;
- Develops a methodology to monitor the amount of solid waste produced within the area;
- Includes a local governing body resolution adopting the SWMP

1.3 SITE BACKGROUND

Solid waste management in Accomack County is strongly influenced by its rural nature in conjunction with unique coastal physiographic features. The County's land mass of approximately 456 square miles is defined partly by narrow elongated boundaries between the Chesapeake Bay and Atlantic Ocean, but moreover characterized by numerous waterways and

resulting 'necks of land' which limit or constrain interconnecting loops in the roadway system. The more populated areas are centered along the main highway, throughout the length of the county, with the remaining areas are largely rural and sparsely populated. These factors make certain aspects of solid waste managementsuch as waste collection and recycling more of a challenge than in smaller, heavily populated urban areas.

The last several years have represented a transition period during which significant changes in solid waste management were made in the planning area. The County's existing Southern Landfill (SLF) facility was closed December 31, 2012 pursuant to compliance with former HB1205 and closure prioritization efforts throughout the commonwealth, and transfer operations were adjusted to haul all waste to the Northern Landfill (NLF) via the South Transfer Station (STS) following the construction of a new bi-level building. The former MSW baler building is now used to handle recyclable materials.

In addition, the County's solid waste collection and recycling efforts were dramatically transformed from a former group of open-top 'green boxes' to a more effective network of public drop-off and convenience centers which support not justcollection and transfer but also recycling.

The transformation of change has resulted in the County meeting and exceeding recycling goals while simplifying disposal operations via consolidation to a single facility.

1.4 PLAN ORGANIZATION

This SWMP is comprised of additional sections which consist of the following section:

Section 2.0 - Planning Data provides a backdrop of relevant information against which decisions can be made and includes data and analysis of various population centers and corresponding waste stream. Population, waste tonnage and composition of the waste stream and total discards following diversion/recycling efforts are projected to enable prediction of solid waste management infrastructure requirements through the planningperiod.

Section 3.0 - Existing Solid Waste Management Practices summarizes the current state of the County's solid waste management system infrastructure used to enable collection, transfer and disposal (including current public or private sector partnerships).

Section 4.0 - Solid Waste Management Options considers various alternatives for managing the current and project solid waste stream via a recognized "hierarchy" promoted by the USEPA and VDEQ, and includes identification of possible public and/or private sector partnerships.

Section 5.0 - Solid Waste Management Plan presents those specific management options most suited for implementation in the planning area, including a program for reduction, re-use, recycling and disposal, a methodology to monitor waste generation, as well as public outreach programs for education, partnership and overall participation by local stakeholders. The plan identifies not only current, but predicted infrastructure needs, based upon previously described projections of waste stream tonnage and composition.

Section 6.0 - Plan Implementation describes how these selected management options may be implemented including identification of a strategy for funding and commitment of resources, establishment of key milestones and incremental stages of progress, and methods of tracking progress to ensure timely implementation.

Section 7.0 –Plan Amendments addresses various regulatory provisions for modifications to the SWMP.

Section 8.0 – Variances and Exemptions describes those conditions under which the County may engage VDEQ for regulatory relief.

Section 9.0 – Public Comments provides a compendium of information provided to and received during the outreach program and solicitation of public input.

Section 10.0 – Summary presents an overview of how the plan fulfills the needs of the County relative to solid waste management, as well as relevant conclusions and necessary actions to ensure continued efficient management of the identified solid waste stream. It further presents a Demonstration of Need with regard to permitting a "western" expansion of the landfill.

2.0 PLANNING DATA

2.1 GENERAL

Accomack County is located on the Eastern Shore on the northern half of the Virginia Peninsula. The County of Accomack encompasses several communities, rural areas, and theincorporated Towns of Accomac, Belle Haven, Bloxom, Chincoteague, Hallwood, Keller,Melfa, Onancock, Onley, Painter, Parksley, Saxis, Tangier and Wachapreague. **Figure 1** indicates the planning area along with the major roadway systems in Accomack County. The southern half of the peninsula is occupied by Northampton County.

2.2 POPULATION PROJECTIONS

The population of Accomack County based upon most recent 2010 census data and Weldon Cooper Center updates issued January 25, 2018 has been relatively stable at approximately 33,000 people and is shown in Table 1 below:

Table 1 - Population of Accomack County

			Change since 2010 Census	
Locality	**April 1, 2010 Census**	**July 1, 2017 Estimate**	**Numeric Change**	**Percent Change**
Virginia	8,001,024	8,470,020	468,996	5.9%
Accomack County	33,164	33,041	-123	-0.4%

Published on January 25, 2018 by the Weldon Cooper Center for Public Service Demographics Research Group https://demographics.coopercenter.org[5]

Similarly, as noted in the Virginia Employment Commission (VEC) 2017 Annual Report [6], the population is projected to increase at a rate of less than 1% through 2040. However, the 2018 Annual Report (provided in Appendix A) indicates that the population is expected to decline over the next 22 years (Table 2). It is unclear why there was such a significant change in the forecast, but the Weldon Center admits "*we understand projections further out are subject to a lot of uncertainty. We plan to consistently revise and update these numbers to ensure the best possible data is available and are currently developing updated population projections that will incorporate more recent changes up until 2017*" [5]. Given the relatively stable trend in population since the last census, for planning purposes, it

is assumed that the population will remain relatively flat through 2040.

Table 2 - Expected Population of Accomack County

	2017 Report*		2018 Report*	
Year	**Population**	**% Change**	**Population**	**% Change**
2010	33164		33,164	
2020	33432	0.81%	33,775	1.84%
2030	33568	0.41%	30,369	-10.08%
2040	33661	0.28%	26,615	-12.36%

*Virginia Employment Commission (VEC) Annual Report

An important consideration with respect to population estimates is the impact of the tourist industry, particularly in the north end of the County. The Chincoteague Visitors Center assists 23,000 people annually[7] and waste disposal at the Chincoteague and Horntown Convenience Centers notably increases during tourist season. This additional influx of people, at least for a portion of the year, impacts solid waste disposal within the County. Additional details concerning general demographic characteristics of Accomack County are provided in Appendix B in U.S. Census Quick Facts.

Another factor to consider is the population of neighboring Northampton County, currently at about 12,000 people. While the County currently exports its waste from the Eastern Shore, transporting it across the Chesapeake Bay, there is an agreement in place between Accomack County and Northampton County that allows for residential waste collected in Northampton County to be disposed of in Accomack County (see Appendix C).

2.3 MAJOR EMPLOYMENT

The types of occupations and businesses within the planning area affects the types of wastes generated. The various economic profiles provided in Appendix D (prepared by the Virginia Economic Development Partnership[8], includes the following breakdown of employment by industry in Accomack County (Table 3). Note the general trends have not changed significantly since 2013 except for a decrease in construction employment and increase in the government sector.

Table 3 - Employment by Industry

	2013		2017	
Industry	**No. of People Employed**	**Percentage**	**No. of People Employed**	**Percentage**
Construction	1,357	8%	465	3%
Manufacturing	2,945	18%	3,601	22%
Transportation, Public Utilities	581	4%	130	1%
Trade	2,660	16%	1,901	11%
Agriculture	1,050	6%	788	5%
Finance, Insurance, Real Estate	702	4%	347	2%
Services	5,943	36%	5,707	34%
Government	1,181	7%	3,788	23%
Total	16,419	100%	16,727	100%

Data shows that the largest number of commuters are going to jobs in neighboring Northampton County (977) while a slightly larger number of workers are coming to Accomack County from Northampton County (1,112).

The major employers in Accomack County are listed in Table 4 below (Virginia Economic Development Partnership). As was the case in 2013, the top two employers are related to poultry processing.

Table 4 - Major Employers in Accomack County

Rank	Company Name	Rank	Company Name
1	Perdue Products	13	Royal Farms 79
2	Tyson Farms	14	Eastern Shore Community College
3	Accomack County School Board	15	Marconi Technology
4	Riverside Regional Medical Center	16	Therapeutic Interventions
5	County of Accomack	17	The Hermitage
6	Nat'l Aeronautics & Space Admin.	18	U.S. Department of Defense
7	LJT Associates Inc	19	Postal Service
8	Wal Mart	20	McDonalds
9	Eastern Shore Community Services	21	A & N Electric Co-op
10	Eastern Shore Rural Health System	22	VDOT

Rank	Company Name	Rank	Company Name
11	URS Federal Services	23	Town of Chincoteague
12	Food Lion	24	U.S. Department of Agriculture
		25	Caring Touch Health Services

These businesses produce municipal solid wastes as well as some industrial process wastes that are disposed of in the County landfill.

2.4 ECONOMIC DEVELOPMENT

Waste management planning must consider the impact of economic development on waste generation. Economic growth in Accomack County during theplanning period is expected to be consistent with the growth illustrated in the population projections. Accomack County is part of the Accomack-Northampton Planning District Commission (A-NPDC) which includes the Counties of Accomack andNorthampton.

The County has one main industrial park near the Town of Melfa and the Accomack County Airport. The industrial park has multiple tenants and provides them with both water and waste water utilities. An additional research park (Wallops Research Park has been constructed and County staff are currently pursuing tenants). The research park is expected to increase regional economic development within the planning area.

Current drinking water and waste-water services within the County include water plants in the Towns of Chincoteague, Parksley, Onancock and Tangier and waste-water plants in the Towns of Onancock and Tangier. The construction or planned construction of additional utilities within the planning area provides another measure of economic growth potential.

2.5 TRANSPORTATION NETWORK

The transportation network primarily affects the collection of solid waste but also becomes a factor in decisions regarding disposal of the waste. U.S. Highway 13 is the main highway in Accomack County and runs along the entire length of the Virginia Peninsula. Access to Interstate 64 or 664 lies approximately 60 miles to the south of Belle Haven, across the Chesapeake Bay Bridge-Tunnel. No major road projects are currently being planned by the

Virginia Department of Transportation (VDOT) for Accomack County. Other modes of transportation within the County include a rail line which also runs along the entire length of the peninsula, and the Star Transit Bus Company. (These have limited capacity or access to function in support of solid waste transfer corridors or mechanisms).

2.6 WASTE TYPES

The Solid Waste Management Planning Regulations require a comprehensive assessment of all types of solid waste generated within the County, the sources that produce them and their ultimate fate in the waste management system. The major waste stream types that most counties deal with include the following:

Municipal Solid Waste – Municipal solid waste (MSW) is non-hazardous solid waste that is generated by the residences, businesses and institutions in a community. The State of Virginia has required that a minimum recycling rate of 15 percent of the MSW stream generated within the Accomack County planning district be maintained through a minimum 20-year planning period [(9)] (**Appendix E** also via http://www.deq.state.va.us/Portals/0/DEQ/Land/RecyclingPrograms/2011Fifteenpercentlisting.pdf) As required pursuant to both federal and state regulations, MSW must be disposed in engineered, lined landfills commonly referred to as "Subtitle D" landfills. The liner systems in Subtitle D landfills are designed to serve as a barrier that prevents leachate generated within the landfill from migrating to the groundwater table beneath the landfill while simultaneously allowing the leachate to be collected and removed from the landfill for treatment. MSW Subtitle D landfills are allowed to dispose of other types of non-hazardous wastes, such as construction and demolition wastes, or industrial solid wastes. MSW landfills are not allowed, however, to dispose of regulated medical (infectious) wastes.

Construction and Demolition Debris Waste – Construction and demolition debris waste, or CDD, includes waste that is generated during the construction, remodeling, repair, or

destruction of pavements, houses, commercial buildings, mobile homes and other structures as well as land- clearing debris. CDD wastes are required to be disposed of in engineered, permitted landfills including soil, synthetic or other engineered liner system. The inert components of CDD waste such as rubble, concrete, brick, block, pavement and soil are exempt from the solid waste management regulations and may alternatively be disposed of in an unlined inert debris landfill.

Industrial Solid Waste – is non-hazardous solid waste that is generated by manufacturing or industrial processes. Industrial solid waste is generally disposed of on site by the generating industry. No federal regulations currently exist that establish minimum standards for the disposal of industrial solid wastes. Industrial solid waste may be landfilled in a municipal waste landfill or in a lined industrial waste landfill with leachate collection.

Regulated Medical Waste – refers to solid waste that is "capable of producing an infectious disease" and specifically includes cultures and stock of microorganisms, human blood and other body fluids, tissues and other anatomical waste and sharps (needles, syringes with attached needles and scalpels), and animal carcasses intentionally infected with pathogenic organisms for research (and related bedding and other wastes). In Virginia, regulated medical wastes are addressed under the previously referenced Regulated Medical Waste Management Regulations[4]. Most regulated medical waste is currently incinerated.

Mining Wastes – are non-hazardous solid wastes that are generated during the mining and subsequent processing of ores. Unless one or more active mines are located within a planning district, it is unlikely that mining wastes are generated by the local community. Mining wastes are generally not required to be disposed of in landfills.

Agricultural Waste – is solid waste produced from farming operations or related commercial preparation of farm products for marketing. No federal or state regulations currently exist that establish minimum standards for the disposal of agricultural solid

wastes, which is generally disposed of on farms.

Based upon a review of available data, it does not appear that Accomack County generates significant quantities of regulated medical waste or mining waste. Therefore,this SWMP will provide current and projected quantities for municipal solid waste, CDD and industrial/agricultural solid waste only.

The Regulations also require quantity estimates for various subcomponents of the waste stream that are either recyclable or require specialhandling including:

Paper*	Waste Tires**	Tree Stumps (>6" diameter)**
Metal*	Waste Oil**	Land Clearing Debris
Plastic*	Used	Septage
Glass*	Used Oil	Spill Residue
Yard Waste*	Auto Bodies**	Friable Asbestos
Textiles*	Batteries**	Petroleum Contaminated Soil
Waste Wood*	Sludge	
White Goods*	Electronics**	

* *Indicates Principal Recyclable Material (PRM)*

*** Indicates Supplemental Recyclable Material (SRM)*

Based on a review of available data, it does not appear that spill residue, friable asbestos or petroleum contaminated soils are produced in significant quantities in Accomack County, so quantity estimates for these waste streams have not been developed. Descriptions of the remaining waste types are listed below.

- **Principal Recyclable Materials (PRMs)–** are materials that are contained in municipal solid waste that can be recycled. The Regulations specifically name the principal recyclable items indicated above (white goods are listed as metals).
- **Supplemental Recyclable Materials (SRMs)** – are materials that are generated in the MSW, CDD and Industrial Waste streams that, when recycled or reduced, can be included in the calculation of a locality's recycling rate. The supplemental recyclable materials indicated above are also specifically listed in the Regulations.
- **White Goods** – refer to large appliances, many of which are coated with white enamel and are therefore known as "white" goods. Such appliances include stoves, clothes washing and drying machines, refrigerators, freezers, air conditioners, dehumidifiers and other large appliances. Freon must be removed from appliances such as refrigerators, freezers and air conditioners before disposal.

- **Land Clearing Debris** – The clearing of land for site development generates solid wastes consisting mainly of stumps (greater than 6 inches in diameter), boulders, rocks, brush and soil.
- **Motor Vehicle Tires –** Waste tires are generated by passenger cars, trucks, tractor-trailers and off-road vehicles. Because waste tires are difficult to recycle, the State of Virginia enacted a waste tire tax to fund the transportation and management of the 7 million waste tires that are generated annually in the Commonwealth.
- **Waste Oil –** Waste oil refers to used oil from residential and commercial vehicles. While the majority of waste oil is collected through commercial vehicle service centers and retail establishments for recycling, some local governments operate used oil collection programs.
- **Batteries –** This special waste category includes lead acid batteries (used in automobiles).
- **Sludges –** Sludges are mixtures of liquids and solids that are generated in manufacturing or mining processes, as well as water and wastewater treatment plant operations. To be considered a solid waste, a sludge must pass a "paint filter" test designed to ensure that the sludge does not contain free liquids. (Liquid wastes are prohibited from disposal in MSW Subtitle D landfills.)
- **Electronics –** Electronic waste, commonly referred to as "e-waste" is a relatively new waste that is increasingly prevalent in municipal waste streams. E-waste includes items such as televisions, computer equipment, audio equipment, VCRs, DVD players, video cameras, telephones, fax and copying machines, cellular phones, wireless devices and video game consoles. These materials contain hazardous constituents (heavy metals) that require proper handling to protect the environment. Since e-waste is a relatively new waste management issue, there is still debate over how best to manage it. Currently in Virginia, e-waste devices that are *"managed as commercial products for rebuilding, reuse, or remanufacture by component substitution or replacement rather than for disposal would not be considered waste"* (VDEQ website at (http://www.deq.state.va.us/ecycling/ewaste.html) [10]. If the e-waste devices are broken apart or disassembled however, they may exhibit characteristics of hazardous waste and require handling as hazardous waste.

Finally, the Regulations require the County to assess what quantities of the waste stream are attributed to each major source such as residential, commercial/institutional and industrial. The quantities of waste types described above are presented in the sections to follow along with waste quantity estimates for incorporated towns in Accomack County.

2.7 CURRENT & PROJECTED SOLID WASTE STREAM

Available records on solid waste managed in Accomack County are primarily kept by Accomack County and include quantities of MSW disposed of via the various County landfills or recycled by the County. For wastes handled at the County landfill the quantities are measured by weigh scales. Tire quantities are sometimes measured on a tire basis (in contrast to a weight basis), since tires are processed by type. Recordson the quantities of materials that are recycled without going to a County landfill arekept in the normal course of business with recyclers or are estimated. The County alsogathers information annually from local industry regarding amounts of materials the industries are recycling.

The trailing 5 years of MSW disposal and recycling metrics are summarized in **Table 5**.

Table 5 - Historical MSW and Recycling Data

	Units	2013	2014	2015	2016	2017
Total Recycling	tons/year	ND	ND	16,617	41,770	47,592
Total MSW Disposal	tons/year	35,425	33,728	33,342	28,041	36,577
Diversion/Recycling Rate	%	ND	ND	41.6	52.4	54.8
MSW Disposal	lbs/capita/day	5.9	5.6	5.5	4.7	6.1

ND- No Data

The quantity of solid waste generated varies based on numerous factors such as population, commercial development, changes inpackaging materials, changes in information technology (online newspapers, homecomputers), and economic activity. Nationwide, the trend in per capita municipalsolid waste generation rates increased significantly from 1960 to 1990, largely as afunction of our nation's Gross Domestic Product (GDP) but has leveled off since1990 (see **Appendix F** and also via embedded hyperlink at http://www.epa.gov/osw/nonhaz/municipal/pubs/MSWcharacterization_508_053113_fs.pdf[(11)]).

The County's resulting MSW generation/disposal rate (from 2013 to 2017) ranges from 4.7 to 6.1 pounds per capita per day and is greater than the USEPA national average (4.4 lbs per capita per day). The County historically had diversion/recycling rates ranging from approximately 26 to 29 percent (2011-2013, inclusive), but increased focus on recycling have

driven the rates past 50 percent in the last two years. This rate significantly exceeds the VDEQ mandatory 15 percent requirement for rural areas. Additional details arecontained within annual recycling reports summarized in **Appendix G**.

The anticipated total solid waste disposal is anticipated to remain above 35,000 tons per year as reflected in Table 5.

Waste composition data from 2003 and 2017 is provided in **Table 6.**

Table 6 - Waste Composition

	2003		2017	
	tons	**% of total**	**tons**	**% of total**
Household MSW	23,855	49.07%	28,145	57.90%
Commercial MSW	11,911	24.50%	ND	ND
Construction and Demolition Debris	8,638	17.77%	5,755	11.84%
Industrial Ag Plastic/Waste	1,046	2.15%	2,436	5.01%
Yard Waste	1,916	3.94%	546	1.12%
Ash	22	0.05%	0	0.00%
Sludge	23	0.05%	239	0.49%
Tire	260	0.53%	164	0.34%
White Goods	942	1.94%	362	0.74%

ND - No Data

As previously discussed, the dominant component in the County's waste stream is MSW. The 2017 SWIA report does not specifically distinguish between household and commercial MSW and it is not clear whether Industrial Waste from a 2003 summary is the same as that in 2017. The next largest component, construction and demolition debris,comprises approximately 12 to 18 percent of the waste stream. The table identifies a small quantity of ash materials received annually for disposal from the Town of Tangier (waste incinerator ash accounting for about 99 percent of the total volume received) and the Eastern Shore Regional Animal Shelter. In addition, the United States Environmental Protection Agency (EPA)[(11)] provides analysis of the percentages by weight of various materials in municipal solid waste streams nationwide as of 2015. This breakdown is compared to the 2017 breakdown of waste types within the County in **Table 7** below**:**

Table 7 - Breakdown of Waste Stream

Material	% of Waste in US by Weight (2015)	Tons of Waste Accomack County (2017)	% of Waste in Accomack County by Weight (2017)
Paper/ Paperboard	25.9%	3,443	21.7%
Glass	4.4%	2,146	13.5%
Metals	9.1%	2,013	12.7%
Plastics	13.1%	1,245	7.9%
Rubber, Leather & Textiles	9.3%	1,863	11.8%
Wood	6.2%	3,017	19.0%
Yard Trimmings	13.3%	2,125	13.4%
Food Waste	15.1%	ND	
Other Products	3.6%	ND	

The data compares fairly closely to national averages published to USEPA.

3.0 EXISTING SOLID WASTE MANAGEMENT PRACTICES

3.1 GENERAL

Current methods for handling solid waste within Accomack County and incorporated towns consist primarily of the collection of solid waste by various publicand/or private haulers, transfer of waste materials from the southern end of the County via STS (located abutting the former Southern Landfill), and disposal at the Accomack County NLF. The County also maintains a current network of seven (7) public drop-off and convenience centers to facilitate collection and recycling.

3.2 FINANCIAL STRUCTURE

Funding for waste collection, vehicle maintenance and litter control is derived from the County's General Fund. Waste disposal (landfill operations, monitoring, closure, etc.) is accounted for through an enterprise fund supported by tipping fees for waste disposal at the NLF. (Tipping fees are currently waived for the Towns of Melfa, Tangier, Parksley and Wachapreague, which provide their own collection efforts).

3.3 COLLECTION & TRANSFER

Waste collection within the planning area is provided via various public and/or private haulers. The County maintains a fleet of roll-off trucks that collect waste from a network of seven (7) convenience centers (**see Figure 2**) on a weekly basis.

The incorporated Towns of Melfa, Tangier, Parksley and Wachapreague provide their own waste collection with Town forces, while the remaining towns in Accomack County contract curb-side solid waste collection with a private hauler. Waste from the Town of Tangier (including MSW ash, CDD, metals, etc.) is brought to the County's Harborton Loading/Off-Loading Facility by a private barge operation and unloaded there before being transported to the NLF for disposal. Funding for these collection efforts is typically provided via the respective town's general fund, user fees or combination thereof. Collected waste materials are hauled to either the STS for consolidation to reduce vehicle trips or directly to the Northern Landfill.

3.4 DISPOSAL

The SLF was closed by December 31, 2012 pursuant to compliance with the Closure Prioritization Schedule established by the VDEQ for HB1205 landfills. All legal disposal ofsolid waste by Accomack County and its incorporated towns occurs at the Accomack County NLF. The facility operates 8.5 hours per day (7.5 hours open to the public), 6 days a week, with a daily operating staff of 3-5 people.

The Accomack County Department of Public Works serves as the central archive for maintaining records of all known disposal sites and the amount of solid waste generated in the planning area. **Figure 3** is a map showing all the known historical County disposal sites. The County will submit records to the VDEQ of all new disposal sites and quantities of solid waste generated in the planning area.

3.5 RECYCLING

Virginia's Regulations for Solid Waste Management Planning, Amendment 1 define recycling as *"the process of separating a given waste material from the waste stream and processing it so that it may be used again as a raw material for a product, which may or may not be similar to the original product."* These regulations do not include processes that only involve size reduction in the definition of recycling. The state required recycling rate for municipal solid waste is a minimum of 25 percent. Per VDEQ requirements, the recycling rate is calculated as follows:

Recycling Rate in % = (PRM + SRM) / (PRM + SRM + MSW) x 100

- Where PRM = Total Tonnage of Principal Recyclable Material
- MSW = Total Tonnage of all Municipal Solid Waste mulched yard waste, chipped or mulched waste wood and textiles.
- SRM = Total Tonnage of Supplemental Recyclable Material (includes both recycled and reused items as below)

Recycled SRM

- Waste Tires
- Used Oil & Filters
- Used Antifreeze
- Abandoned Autos
- Batteries
- Composted Sludge
- Electronics
- Tree Stumps

Re-Used SRM

- Construction Waste
- Demolition Waste Debris
- Ash

As indicated previously and re-iterated below the reported recycling rate for Accomack County has met and exceeded the required 15 percent for the last two years by a wide margin, exceeding 50% (see detailed Annual Recycling Reports contained in previously referenced **Appendix G**). This is due to renewed efforts by the County to encourage recycling. The statewide average recycling rate was 42.6 % in 2016 as shown in the current VDEQ 2016 Annual Recycling Report[(12)].

These metrics show comparable performance with other similar municipalities despite having to rely upon less developed markets for recyclables and high collection and transportation costs associated with a rural County.

Table 8 - Comparison of Recycling Rates

Recycling Rate %	2010	2011	2012	2013	2014	2015	2016	2017
Accomack County	33	29	26	ND	ND	41.6	52.4	54.8
Statewide Average	40.5	43.5	42.7	41.2	42.5	44.2	42.6	ND

ND- No Data

Recycling activities include the County's efforts to provide the public with municipal solid waste recycling opportunities as well as private recycling carried on in the commercial and industrial sectors. Drop-off locations for the public to recycle include the NLF and STS as well as the established network of public convenience centers.

The NLF and STS accept, metals, white goods, used oil, batteries, and waste tires. The

network of solid waste convenience and recycling centers accepts the following recyclables:

- Plastic drink bottles
- Milk jugs
- Detergent bottles
- Newspapers and inserts
- Magazines
- Catalogs
- Junk mail
- Office paper
- Brown cardboard boxes
- Brown paper bags
- Aluminum cans
- Steel/tin cans
- Telephone books
- Cereal boxes.

The following materials are also accepted in their separate containers:

- Tires (not currently available at Chincoteague)
- Used Motor Oil (up to 5 gallons per day, non-commercial)
- Lead Acid Batteries (one battery per day)
- Rechargeable batteries
- Cell phones
- Antifreeze (not currently available at Chincoteague)
- Scrap Metal (including appliances) are accepted at Fisher's Corner, Horntown, Chincoteague, and Makemie Park only.

The recent collapse in the US recycling market could result in some waste diversion to the landfill, at least on a short-term basis. There has been an impact observed in the glass bottle recycling market observed in 2018.

In addition, re-usable items that are in good condition may be dropped off at "Put & Take" areas within any given facility with permission of the attendant on duty.Patrons may take items from these areas at any time the centers are open.

3.6 SPECIAL WASTE HANDLING

Special wastes include asbestos, PCB containing materials, liquids, tires, drums, white

goods, waste water treatment sludge, petroleum contaminated soils, household hazardous waste, antifreeze, used oil, batteries, and more recently, electronic waste (e-waste) such as computers and cellular telephones. Asbestos, PCB-contaminated materials, and petroleum contaminated soil are not accepted at the NLF or STS (exceptfor household waste containing potentially limited quantities of these materials). Non-hazardous free liquids must be absorbed onto other materials before being disposed ofin the landfill and drums must be cleaned, opened on at least one end and crushed before being placed in the fill. Household hazardous waste received commingled with other household waste may be disposed of in the general fill. White goods, used oil,and batteries are accepted at both landfills and are recycled. Tires are accepted at the NLF and the STS and can be sent off-site for recycling.

Small quantities of waste water treatment sludge are accepted at the Accomack County NLF and incorporated into the fill. The landfill also accepts limited amounts of industrialwaste from area industries, such as agricultural plastics from farms and packaging wastefrom Perdue Farms and Tyson Farms. The County also provides annual or semi-annual household hazardous and electronic waste collection days.

3.7 SPECIAL WASTE

Public information and education is provided to residents via the Litter Control and Recycling program coordinator, supported via the VDEQ sponsored Litter Controland Recycling Grants Program on an annual basis. This money is used by the County to support litter prevention and recycling programs and for coordination and funding support of litter pickup programs. Moreover, the program provides a platform for addressing broader solid waste management goals associated with recycling and soundwaste management practices.

4.0 SOLID WASTE MANAGEMENT OPTIONS

4.1 GENERAL

The Virginia Department of Environmental Quality has established a hierarchy of waste management practices for use in Virginia. This hierarchy is as follows:

1. Source reduction
2. Reuse
3. Recycling
4. Resource Recovery
5. Incineration
6. Landfilling

There are three motivations behind this hierarchy:

1. Removal of valuable resources from the waste stream
2. Reducing the volume of landfill space required for ultimate disposal
3. Reducing the risk of environmental pollution associated with disposal

The following is an introduction to each of the six components of this hierarchy and details of potential implementation strategies.

4.2 SOURCE REDUCTION

The Virginia Regulations for Solid Waste Management Planning state that source reduction means *"any action that reduces or eliminates the generation of wasteat the source, usually within a process. Source reduction measures include process modifications, feedstock substitutions, improvements in feedstock purity, improvements in housekeeping and management practices, increases in the efficiency of machinery, and recycling within a process".* Reduced packaging, improved product design and product substitution are source reduction strategies. Although local governments couldact to ban particular products; such action has not taken place in Virginia because:

7. The Commonwealth is a "Dillon Rule" state where local action can only betaken if provision for such action is allowed by the General Assembly.
8. The national scale involved in product marketing and distribution makes state and federal regulatory action more effective than local efforts at product modification.

On the local level, source reduction can be accomplished in office, industrial and residential settings in a number of ways and encouraged through public education and information. Common source reduction activities and strategies include:

- Backyard composting of yard and/or food waste
- Office Paper Reduction (Double sided printing, electronic file storage)
- Switch to reusable corrugated containers
- Landfill tipping fees for waste above a certain tonnage.
- Purchasing goods in bulk quantities to minimize packaging
- Workplace waste reduction incentive programs for employees

Source reduction is encouraged via public education and information provided by a public information officer (currently staffed via the Litter Control and Recycling program coordinator), The County also encourages source reduction by setting an example with its own practices such as office paper initiatives.

4.3 REUSE

As stated in the Virginia Regulations for Solid Waste Management Planning reuse means the *"process of separating a given solid waste material from the wastestream and using it, without processing or changing its form, other than size reduction, for the same or another end use"*. Reuse is finding a secondary use for a product in the home or business. Rather than throwing the product in the trash it can be used as a substitute for other consumer items, delaying its entry into the waste stream. For example, local government can reduce the volume of waste paper it generates by reusing single-sided copier paper as scratch paper. As with source reduction, local government's primary role is in setting an example and educating the public and industry. A public information officer can encourage reuse of products prior to disposal. Some other common reuse actions include:

- Donating Textiles (Good Will Stores for example)
- Repair and reuse of wood pallets
- Donating computers and other goods
- Encourage businesses to use waste exchanges
- Workplace waste reuse incentive programs for employees
- Encourage purchase of reusable items instead of one-use or throw away items

4.4 RECYCLING

As previously indicated, recycling is *"the process of separating a given waste material from the waste stream and processing it so that it may be used again as a raw material for a product, which may or may not be similar to the original product."* Recycling is the removal of materials such as aluminum, glass, newspapers, cardboard and plastics from the household or business "trash" and placing it in a secondary market. Recycling is typically a three-step process:

9. Extraction of the recyclable good from the total municipal waste stream;

10. Preparation of the extracted good for sale: this may involve cleaning, sorting, crushing, compacting and baling, to generate a marketable commodity; and,

11. Delivery of the prepared commodity to the secondary market.

Recycling is the point in the waste management hierarchy where local government can have the biggest immediate impact on waste stream reduction. The provision of curbside recycling, drop-off centers, locating recycling markets, and in- house recycling programs will result in removal of the recyclable fraction from the waste stream. Recycling not only includes the removal of metals, glass and paper from the disposal waste stream; it also includes composting.

Solid waste composting is one of several options available that divert solid waste from the landfill. Compost facilities can be broken into a number of different groups including:

1. Yard Waste Facilities - Waste stream is limited to grass, brush, leaves, and other chipped arboreal material;

2. Co-Composting Facilities - Waste stream includes sewage sludge as a source of microbes for the decomposition process.

Composting can be accomplished in either "open" or "closed" facilities. Composting involves removing yard debris, clean wood, and other vegetable matter from the disposal waste stream and accelerating the biodegradation process to create a marketable "compost" or "humus". In many localities, removal of yard debris alone could result in a significant diversion of

material from the disposal waste stream.

A very important component in reducing the planning area's disposal waste stream volume is through industrial reuse and recycling. This includes recycling of an industry's own waste or recycling of waste brought in by the industry as a profit motive.Local industries that have not already done so can invest in:

1. Production line modifications;
2. Recycling equipment; and,
3. Identifying markets for off-spec product and by-products.

4.5 RESOURCE RECOVERY

Resource recovery (waste to energy) typically refers to post-collection facilities that produce a burnable product or incinerate solid waste to generate energy. Resource recovery involves a much more substantial capital outlay with extensive facility development costs, personnel costs and operating expenses. Commitment to resource recovery requires a commitment to:

1. Existing technology.
2. An existing facility which must be amortized over a lengthy time period regardless of its productivity.
3. Uncertainties over the future regulatory controls on the facility and itsby-products.
4. A difficult siting problem, which is further complicated by the continued need for a landfill facility for ash generated by the facility and bypass waste.
5. Operation by highly skilled technical staff.

Resource recovery facilities typically require a large volume waste stream to be cost effective.

4.6 LANDFILLING

Landfilling is the placement of solid waste or incinerator ash/residuals in a prepared disposal area, compacting it and covering it with earth and is the leastpreferred but unavoidable disposal technology for waste that cannot otherwise be diverted via reuse, recycling or recovery.

Historically, landfilling has been the most economical, simplest, and well-known disposal option available. However, landfills are less desirable compared to other options in the waste management hierarchy for several reasons including:

1. Potential for groundwater; quality degradation as a result of leachate and/or landfill gas migration and associated difficulties to monitor and/or remedyin the event of a release of waste constituents to the surrounding environment.
2. Landfills require a relatively large amount of land compared to other disposal technologies and the amount of suitable land where there arenot competing uses is decreasing.
3. Because the waste mass does not dissipate over a short time period they represent a continuing legal liability.
4. Landfilling does not constitute "treatment", since there is not a volume reduction, saleable material produced or energy gained (with the exception of landfills with methane recovery units).

Landfill design in Virginia segregates the material from the environment using the most advanced technologies available. The landfill design process includes:

1. Site selection;
2. Establishment of a ground water monitoring program;
3. Construction of a multi-layer liner/leachate collection system under the fill areas;
4. Daily cover and operational requirements that reduce rainwater infiltration into the fill;
5. Capping the fill area with an impermeable cap; and,
6. Conducting a post-closure care program.

5.0 SOLID WASTE MANAGEMENT PLAN

5.1 GENERAL

Accomack County and its incorporated towns will undertake the following strategies and programs to address the goals outlined in Section 1.2. These strategiesand programs, when undertaken as proposed, will constitute the integrated solid waste management strategy for Accomack County and the incorporated towns within the County.

5.2 SOURCE REDUCTION

The following strategies will be undertaken to improve local source reduction efforts. These strategies focus on increased promotion of source reduction and interaction with local industry. Accomack County will support appropriate state andfederal legislation promoting or requiring source reduction. Accomack County can encourage source reduction measures by considering the following:

- Setting tipping fees for solid waste disposal at the actual cost of solid waste management operations;
- Assisting local industries to make capital investments necessary to reduce waste generated by current production processes through consideration of areduction in the local machine and tools taxes**;**
- Working with local industry to develop source reduction strategies;
- Assisting local businesses in joining regional waste exchanges;
- Examining current inventory management and operating practices to identify ways that waste generation can be reduced within the local government operations;
- Purchasing recycled paper;
- Avoiding disposable products;
- Promoting backyard composting of yard and/or food waste;
- Encouraging office paper reduction (double sided printing, electronic file storage);
- Purchasing goods in bulk quantities to minimize packaging;

To implement a public information and education program encouraging source reduction in the manner described above, Accomack County could consider employing a publicinformation officer.

5.3 REUSE

The strategies identified below could be considered to improve reuse of waste materials in Accomack County. These strategies will require efforts within County government, business and among County residents.

- Utilizing state and federal surplus when possible;
- Reusing packing materials and pallets;
- Utilizing auctions for the sale of surplus property rather than disposing of the surpluses in the landfill;
- Considering equipment and supply purchases in terms of multiple uses and useable life rather than just initial purchase price;
- Donating textiles (Good Will stores, for example);
- Donating computers and other goods;
- Reuse of waste water sludge as a soil amendment at the landfills;
- Encouraging businesses to use waste exchanges;
- Promoting workplace waste reuse incentive programs for employees;

To encourage reuse, a public information officer could be used to implement a public information and public education plan within the County that will encourage local residents and businesses to implement these reuse strategies.

5.4 SOLID WASTE COLLECTION

The solid waste collection system in Accomack County underwent significant changes within the planning period due in part to the closure of the SLF in 2012. Subsequent to closure of the SLF all County waste is sent to the NLF for disposal, and an efficient system for transferring waste from the southern half of the County to the NLF was needed. A new bi-level building was constructed adjacent to the SLF to function as a MSW transfer station (Southern Transfer Station (STS) to serve the southern half of the County. The former MSW baling facility adjacent to the SLF was subsequently retrofitted to handle recyclable materials.

5.4.1 Collection Sites

Current methods for handling solid waste within Accomack County and incorporated

towns consist primarily of the collection of solid waste by various public and/or private haulers, transfer of waste materials from the southern end of the County via STS (located abutting the former SLF), and disposal at the Accomack County NLF. The County also maintains a current network of 7 public drop-off and convenience centers to facilitate collection and recycling along with a fleet of roll-off trucks and containers to facilitate weekly collection. These manned convenience centers have a roll-off compactor system for solid waste and for recyclable materials. The network of convenience and recycling centers is shown on **Figure 2**.

The incorporated Towns of Melfa, Tangier, Parksley and Wachapreague provide their own waste collection with Town forces, while the remaining towns in Accomack County contract curb-side solid waste collection with a private hauler. Waste from the Town of Tangier (including MSW ash, construction debris, metals, etc.) is brought to the County's Harborton Loading/Off-Loading Facility by a private barge operation and unloaded there before being transported to the NLF for disposal. Collected waste materials are hauled to either the STS for consolidation to reduce vehicle trips or directly to the NLF.

5.4.2 Waste Transfer

With the closure of the County's Southern landfill in 2012, the County needs to haul waste from the southern part of the County to the Northern Landfill. The baling facility adjacent to the Southern Landfill was subsequently retrofitted to handle recycling materials and a new bi-level building was constructed as the Southern Transfer Station (STS).

5.5 RECYCLING

The County's current network of 7 public drop-off and convenience centers to facilitate recycling with weekly collection has boosted recycling rates. As previously indicated, the recycling rates reported in the County for 2011 and 2012 were approximately 29 percent and 26 percent, respectively, but as shown in Table 8 have climbed above 50% for 2016-2017, which far exceeds the state mandatory 15 percent recycling rate for rural municipalities.

Accurate weight records will continue to be maintained to document the amount of

recyclable materials received at the centers. The centers will be evaluated on an annual basis to determine their effectiveness and the need for adjustments in the type and number of recyclable containers.

5.6 LANDFILLING

The combination of flat line population growth and enhanced diversion/recycling since 2010 is anticipated to maintain MSW waste generation and disposal rates through the planning period and beyond at approximately 36,000 tons per year. In 2016, the County constructed a new landfill cell designated cell 6A. Cell 6A included a piggyback on the south side of closed Cell 1 and several acres of new cell over virgin ground. In January 2017 The VDEQ approved an expansion of the landfill to south consisting of Cells 6A, 5, 4, 3, and 6B. The calculated site life of the expansion in the initial Part B Permit Application prepared by Arcadis estimated a site life of 42 years. However, Arcadis assumed a disposal rate of 32,000 tons per year and an airspace utilization factor of 0.65 tons/cy equating to approximately 50,000 cy of airspace used each year. Arcadis calculated the landfill expansion contained 2.1M cy of airspace, based on permit-level drawings (e.g., not final design drawings).

The County began filling cell 6A in February 2017. In January 2018, the County completed their first survey of Cell 6A. Over the first 11 months, the County received 35,449 tons of waste and used 55,444 cy of airspace. On an annual basis, that equated to 60,484 cy of airspace (see Table 9 below):

Table 9 - Waste Placement Efficiency

Waste Received (Tons)	Air Space Used* (cy)	Efficiency Factor	Efficiency Factor (lbs/cy)
35,449	55,444	0.64	1,279
Annualized	60,484		

*Based on actual survey completed for 11 months of disposal

CHA reevaluated the total airspace in 2018 based on more complete design drawings and calculated the airspace associated with the expansion to be 1.9M cy. Using actual disposal data (36,577 tons) and surveyed airspace usage (60,484 cy), the site life for the recent expansion is

31.3 years (Table 10).

Table 10 - Site Life Calculations

Cell #	Capacity		
	Airspace (cy)	Footprint (ac)	Calculated Life Expectancy
Cell 6A	266,848	7.58	4.4
Cell 5	349,872	4.53	5.8
Cell 4	299,960	3.71	5.0
Cell 3	425,762	5.67	7.0
Cell 6B	551,328	7.42	9.1
Total	**1,893,770**	**28.9**	**31.3**

It is critical to note that in the initial planning for the expansion, Arcadis planned on constructing Cell 3 first and Cell 6 last. This plan allowed for the continued use of the current baler building for the longest period of time. The baler building would ultimately be demolished when cell 6 was constructed. However, the baler building is used to handle recyclable materials and therefore a new building would eventually need to be constructed. However, the overall plan had certain downsides; most notably that by starting a new cell (Cell 3) that was not connected to the existing landfill, there was no means to utilize existing infrastructure (access roads, storm water, leachate collection, etc.). Prior to completion, the Part B Permit was updated to divide cell 6 into two parts (6A and 6B) such that Cell 6A would be the first cell constructed and Cell 6B could be the last cell constructed, and the sequence of construction would more logically tie into existing infrastructure. This approach continued to preserve the use of the existing baler building for the longest period of time.

The demolition and reconstruction of the baler building represents a significant capital expense for the County. The preliminary cost estimate at least $1M for the building alone. Considering the existing baler is 23 years old, it is almost certain that a new baler will need to be installed at an additional expense of $250,000 to $500,000. To the extent that the existing building and baler can continue to be used, the County can defer that expense further into the future. As Table 10 shows, landfill Cell 6B has an expected site life of 9.1 years. The site life for Cells 6A, 5, 4, and 3 is therefore 22.2 years. Given that Cell 6A has been operational since

February 2017, there is only a little more than 20 years remaining before Cell 6B would need to be opened and less than 20 years before it would need to be constructed.

As mentioned in the Introduction to this Plan, new property immediately adjacent to the existing landfill was purchased by the County in January 2017. The County is pursuing a Part A Permit to build a "western" expansion to the current landfill. If permitted, construction of Cells 5, 4, 3, and 6B would be deferred further into the future. A western expansion, depending on size and configuration, could add at least another 20 years of capacity to the landfill.

5.7 LITTER CONTROL

Existing litter control programs will continue to be implemented by each individual locality. Through public education and information efforts, citizens will be encouraged to use the solid waste collection and disposal services provided by their local government. In particular, citizens should be made aware of the weight- based fee exclusion in the County Solid Waste Management Ordinance which states that *"Persons disposing of solid waste in sanitary landfill facilities, the weight of which does not exceed 200 pounds, will not be charged."* In addition, the County could consider a bulky waste collection program through which citizens can contact their local government for collection of these items on an appointment basis.

5.8 SOLID WASTE REPORTING PROGRAM

Currently, businesses in Accomack County are not required to report their recycling activities but many do so on a voluntary basis. This voluntary arrangement is considered to be adequate and capable of accurately assessing recycling activities. If the voluntary reporting becomes inadequate, the County and Towns have the legal authority to implement mandatory reporting. The mandatory reporting would need to be adopted by ordinance.

6.0 PLAN IMPLEMENTATION

6.1 GENERAL

Implementation of the integrated solid waste management plan will require the efficient use of available resources within the County and its incorporated towns. Detailed implementation schedules and program funding plans will be required for successful implementation of the Plan.

6.2 SCHEDULE

Successful implementation of the SWMP will require adherence to various milestone dates. Throughout the minimum 20-year planning period, periodic evaluation of the plan and its programs will also be required to ensure that milestone dates are successfully met and available resources are efficiently and effectively utilized. In addition, solid waste management planning must be continued such that changes in technologies, local conditions, and state and federal requirements can be incorporated into plan amendments. A schedule of solid waste activities during the minimum 20-year planning period is presented in **Table 11**. The activities on this schedule are discussed in the sections to follow.

Table 11 - Solid Waste Management Activity Schedule

Solid Waste Management Activities	Year
Update SWMP	2014
Permit "Southern" Expansion at Northern Landfill	2016-2017
Construct New Cell 6A at Northern Landfill	2016
Close Cell 2 at Northern Landfill	2017
Update SWMP	2018
Permit "Western" Expansion	2018-2019
Construct New Cell in Western Expansion	2020
Update SWMP	2023
Update SWMP	2028
Update SWMP	2033

6.2.1 Planning

This SWMP will be the basis for the solid waste management strategy for Accomack County and its incorporated towns. The SWMP will become effective with Board ofSupervisors adoption of formal resolution and be updated as necessary to meet the plan goals and objectives. The current Solid Waste Management Planning Regulations do notrequire plan updates at specific intervals, however, a thorough review of the SWMP and its implementation at least every 5 years is recommended.

6.2.2 Recycling

Solid waste recycling is anticipated to continue through the planning period via the established network of seven (7) facilities throughout the County.

6.2.3 Recycling Ordinances

No new recycling ordinances are considered necessary at this time. Voluntary reporting has been considered adequate and an ordinance requiring businesses or residents to recycle would not be considered until the convenience centers are operational and producing improved recycling rates.

6.2.4 Collection

No further significant changes are anticipated in the way the Towns within Accomack County or the County collects solid waste. Each Town will need to periodically review its solid waste collection program to maintain efficiency and incorporate needed changes.

6.2.5 Landfilling

As stated previously, an expansion of the landfill consisting of future cells 6A, 5, 4, 3, and 6B was approved by the Virginia Department of Environmental Quality in January 2017. With permission of VDEQ, cell 6A was constructed in late 2016 and was approved to start accepting waste in January 2017. The permitted expansion is expected to add 31 years of capacity to the Northern Landfill.

The purchase of a 66.78-acre parcel immediately to the west of the existing landfill is providing the County an opportunity for an additional expansion to be permitted. The County is currently evaluating the feasibility of permitting an additional expansion with VDEQ. An initial concept includes a piggyback over the northern portion of Cell 1 thus optimizing air space usage. More importantly, a piggyback cell over the remainder of Cell 1 would include the use of a 50 or 60 mil LLDPE or HDPE base liner on top of the closed Cell 1. This additional liner would provide a higher level of environmental protection for the entire landfill, due to the use of old technology (30 mil PVC liner) in the original construction of Cell 1.

6.2.6 Public Information/Public Education

To effectively and successfully implement an integrated strategy for solid waste management, both public information and public education must continue to play an important role. As previously indicated, a public information officer may be employed to handle the responsibilities of the position. The ongoing duties of the public information officer would be as follows:

1. Promote the waste management strategy adopted by Accomack County and its incorporated towns;
2. Educate citizens and businesses within the planning area regarding the waste management strategy through workshops with industries, public school programs, etc.;
3. Relay concerns and/or potential changes regarding the waste management strategy, which are identified by citizens or businesses of the County to the Board of Supervisors; and
4. Assist businesses with recycling programs and associated reporting.

6.3 PROGRAM FUNDING

Funding of the various solid waste management programs must play an important role in the planning process to ensure that the waste management strategyadopted is affordable by the planning area. The following section identifies the estimated funding requirements for each component of the integrated waste management strategy such that total funding requirements

can be determined.

6.3.1 Planning

As previously noted, changes in solid waste management needs within the County are expected, and updates to keep this Solid Waste Management Plan current should be conducted. To provide for updates of this SWMP, the County should consider making specific appropriations for that purpose.

6.3.2 Recycling

The County's recycling programs will involve capital costs for periodic maintenance and/or replacement of collection containers as well as costs associated with collection and transport of the recyclables to market. Most localities (especially rural areas) recognize that recycling programs frequently do not pay for themselves and therefore recycling revenues must be supplemented with government funding for the program to be successful. The goal of most recycling programs is to break even or minimize the funding required to operate.

6.3.3 Collection

Funding for waste collection in Accomack County will need to cover costs associated with maintenance and operations of convenience centers and the transfer station. Funding will be via general fund supported by waste tipping fees.

6.3.4 Landfills

Continued development of the NLF will require permitting, design and construction of new disposal cells, as well as incremental closure of completed areas. It is anticipated that new cell construction and progressive phased closure will be financed incrementally via borrowing capital monies and paid back over a 3- to 5-year period during the lifespan of any given disposal cell.

6.3.5 Public Information/Public Education

To provide for a staff person to serve as a public information officer as previously described and to provide the necessary resources for successful accomplishment of the responsibilities and goals of the position, an annual funding is anticipated via combination of the County's general fund and grant monies made available from a "Litter Prevention and Recycling" grants program through the VDEQ.

6.4 LOCAL ORDINANCES

The enactment of local ordinances is used throughout the planning period to support on-going achievement of the recycling rates mandated by the VDEQ, to set user fees and to successfully implement this Plan. At present, no additional ordinances are necessary for implementation of this Plan.

7.0 PLAN AMENDMENTS

Amendments to this SWMP are classified as major and minor pursuant to VSWMR found in 9 VAC20-130-175, briefly summarized hereafter. Major amendments shall include:

- Any addition, deletion, or cessation of operation of any solid waste disposal facility;
- Any increase in landfill capacity;
- Any change that moves toward implementation of a waste management strategy that is lower in the waste management hierarchy;
- Action plan(s), including an action plan to address a planning unit' recycling rate that has fallen below the statutory minimum; or
- Any change to membership in the approved area.

Major amendments shall require the same public participation as detailed in 9VAC20-130-130 prior to submittal to the Department for approval and implementation.

Minor amendments shall include:

- Any addition, deletion, or cessation of operation of any facility that is not a solid waste disposal facility;
- Any change that moves toward implementation of a waste management strategy that is higher in the waste management hierarchy; or
- Any non-substantive administrative change such as a change in name.

8.0 VARIANCES AND EXEMPTIONS

Accomack County may petition the VDEQ for a variance or exemption to any of the requirements in the Solid Waste Management Planning Regulations. The petition must include: *"A description of need and justification for the proposed action, including impacts from existing operations and market conditions (if, based on the evidence submitted in a petition, the director determines that market conditions within a county,city, town or region make unreasonable the mandatory recycling rates…, and that the market conditions are beyond the control of the county, city, town or region, a variance from those rates may be issued)"*

9.0 PUBLIC COMMENTS

In accordance with 9VAC20-130-130, the County is providing the public an opportunity to comment on this revision to the Plan. The County intends to publish a notice and hold a public hearing on the Plan in November 2018. A record of the published notice, the public hearing, a copy of all written comments received, and responses to comments received, has been included in Appendix H.

10.0 SUMMARY AND DEMONSTRATION OF NEED

10.1 SUMMARY

This updated SWMP follows a transition period during which significant changes were made in the planning area. The County's Southern Landfill (SLF) facility was closed December 31, 2012 pursuant to compliance with former HB1205 and closure prioritization efforts throughout the Commonwealth and disposal of all the County's solid waste became necessary at the Northern Landfill (NLF) facility. Prior to closing the SLF, an in-depth evaluation was performed to address collection needs in the southern half of the County. The evaluation resulted in the County building a new bi-level transfer station adjacent to the SLF to enable consolidation and transport of the waste materials generated in the south portions of the County to the NLF. Transfer operations were subsequently adjusted to haul all waste previously disposed at the SLF to the NLF.

The County's solid waste collection and recycling efforts were also dramatically transformed from a former group of open-top 'green boxes' to a more effective network of public drop off and convenience centers which support not just collection and transfer but also recycling. The resulting system modifications have improved aesthetics, enhance control over materials entering the waste stream, increase collection efficiency, and have proven to significantly increase recycling while reducing operating costs.

These significant changes have been implemented while successfully maintaining an integrated waste management strategy based on consideration of the hierarchy supported by the VDEQ:

1. Source Reduction
2. Reuse
3. Recycling
4. Disposal (via Landfilling)

The resulting Solid Waste Management Plan (SWMP) satisfies requirements of VSWMR found in 9 VAC 20-130 and establishes solid waste management planning and recycling practices for the protection of public health, public safety, the environment and natural resources throughout the planning area.

10.2 DEMONSTRATION OF NEED

In January 2017, the County purchased a 66.78-acre parcel immediately to the west of the existing landfill and is now considering a "western" expansion of the landfill. Although the VDEQ approved an expansion of the Northern Landfill consisting of Cells 6A, 5, 4, 3 and 6B in January 2017, the purchase of this parcel provides a timely opportunity to conduct additional planning for the long-term solid waste disposal needs of the County.

If a western expansion is permitted and approved prior to Cell 6A becoming full, the County does not intend to build or utilize any of the other permitted cells (e.g., 5, 4, 3 and 6B) until the western expansion approaches capacity.

The reasons it is important for the County to obtain a permit to construct a "western' expansion are as follows:

- Accomack County is geographically isolated from the rest of Virginia which is one of the key reasons why the County has provided solid waste disposal to its residents and businesses since the early 1990s. The County would like to continue to provide these essential services well into the future which is important to the long-term economic stability and high quality of life of the planning area residents and businesses.
- The Northern Landfill is the only open landfill on the Eastern Shore and there are no other economical disposal options that will serve the needs of County residents and businesses. It is therefore critical to ensure the County's ability to provide solid waste disposal services well into the future.
- While the site life of the expansion consisting of Cells 6A, 5, 4, 3, and 6B was originally estimated at 42 years, the assumptions used to derive that estimate have been updated based on current waste generation and landfill operations data. Actual disposal rates are higher than those used to arrive at in the previous estimates and the airspace utilization is higher than predicted. The assumed airspace utilization factor was determined based upon actual density results achieved using a recently purchased compactor which is 40,000 lbs heavier than the previous compactor. Therefore, the site life is now calculated to be 31 years. Because the expansion cell 6A has been in operation for approximately two years, a more realistic landfill life estimate is now 29 years.
- The County will need to demolish the current baler building to construct Cell 6B and given that the estimate site life for Cell 6B is 9.1 years, construction of that cell would need to begin in less than 20 years, which is the minimum planning horizon of this Plan. The cost to demolish and reconstruct the baler building (used to process recyclables) is likely greater than $1M. The County needs to defer that expense as

long as possible, particularly since they have made significant capital improvements to the building in the last 5-10 years.

- While Northampton County currently transports its waste across the Chesapeake Bay to the Bethel Landfill, there is an agreement in place between the two counties for waste to be disposed of in the Northern Landfill. Should conditions change (political, transportation routes, transportation costs, etc.), additional disposal capacity of approximately of 16,000 tons per year would be required at the Northern Landfill to accommodate their MSW.
- If a western expansion is permitted and approved, it would include a piggy back over the northern portion of cell 1. Because the bottom liner in Cell 1 is constructed of PVC, the piggyback, including the use of a thicker high- or low-density polyethylene liner, would provide a higher level of environment protection for the site.
- The cost per cubic-yard of disposal capacity to construct a new cell and its required infrastructure over virgin ground (e.g., Cell 5) is greater than the cost per cubic yard to construct a piggyback cell. Therefore, a western expansion would be more cost effective to implement than the existing expansion plan.
- While population estimates for the County are projected to be flat or even declining, the tourist industry in the County is thriving and the Visitors Center in Chincoteague has provided assistance to 23,000 people annually. Even if the tourists visit the County only on a seasonal basis, those additional visitors will likely keep solid waste disposal rates at their current level.
- The County has been actively promoting recycling and recycling rates for the last two years have exceeded 50%, significantly greater that the mandated rate of 15 for rural areas in the State and even greater than the statewide average. Therefore, it seems unlikely that MSW disposal volumes will be significantly reduced by higher levels of recycling. However, given the dynamic changes that are occurring in the recycling markets in 2018, it is possible that additional materials (e.g., glass) could be diverted to the landfill.
- Finally, there is no precedent to limit disposal capacity for landfills within the state. According to the 2017 Annual Report for Virginia (Appendix J), there are 29 landfills in the State with a disposal capacity greater than 20 years. Permitting of additional landfill capacity provides greater certainty to the County's residents and businesses.

11.0 REFERENCES

1. Regulations for Solid Waste Management Planning, 9 VAC 20-130, Commonwealth ofVirginia, Department of Environmental Quality, as amended.
2. Regulations for Solid Waste Management Planning, Amendment 7, 9 VAC 20-81, Commonwealth of Virginia, Department of Environmental Quality, as amended.
3. Regulations for Hazardous Waste Management Planning, 9 VAC 20-60, Commonwealth of Virginia, Department of Environmental Quality, as amended.
4. Regulations for Regulated Medical Waste, 9VAC 20-120, Commonwealth of Virginia, Department of Environmental Quality, as amended.
5. Weldon Cooper Center for Public Service Demographics Research Group, January 25, 2018, *https://demographics.coopercenter.org*
6. Virginia Employment Commission, Community Profile, Accomack County, September 6, 2018.
7. Chincoteague Tourism Drives Revenue, December 13, 2015, *https://www.delmarvanow.com/story/news/local/virginia/2015/12/13/chincoteague-tourism-drives-revenue/76774438/*
8. Virginia Economic Development Partnership, Eastern Shore Profile, 2018.
9. Olver, Incorporated, Accomack County, Solid Waste Management Plan, February 3, 2005.
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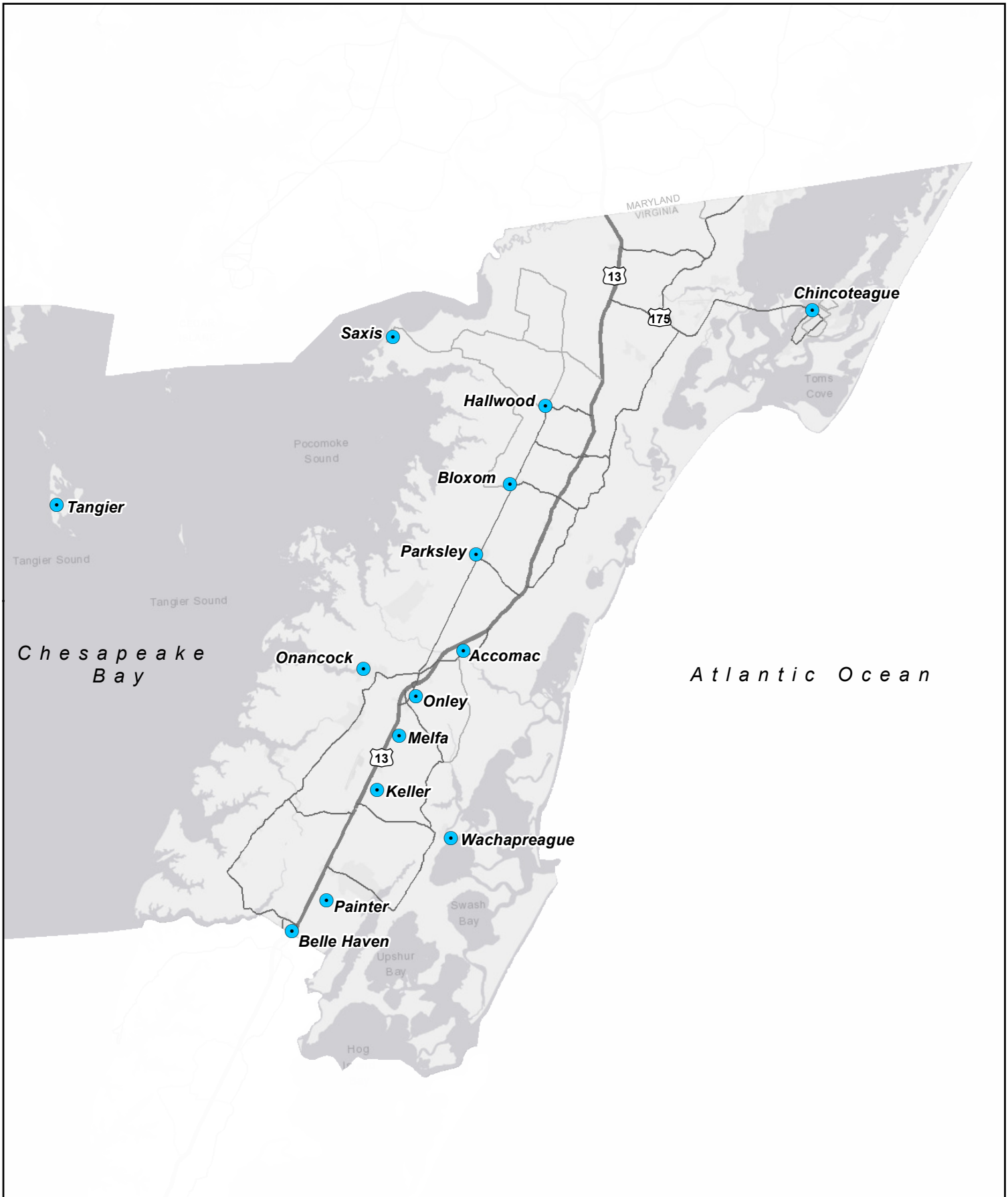
11. US EPA Office of Solid Waste and Emergency Response, Advancing Sustainable Materials Management 2015 Fact Sheet: Assessing Trends in Material Generation, Recycling, Composting, Combustion with Energy Recovery and Landfilling in the United States: July 2018.
12. 2018 Annual Solid Waste Report for CY2017, Virginia Department of Environmental Quality, June 2018.
13. Personal Communication, Shonel Sen, Weldon Cooper Center, to Christopher Burns, CHA, September 27, 2018.

FIGURES



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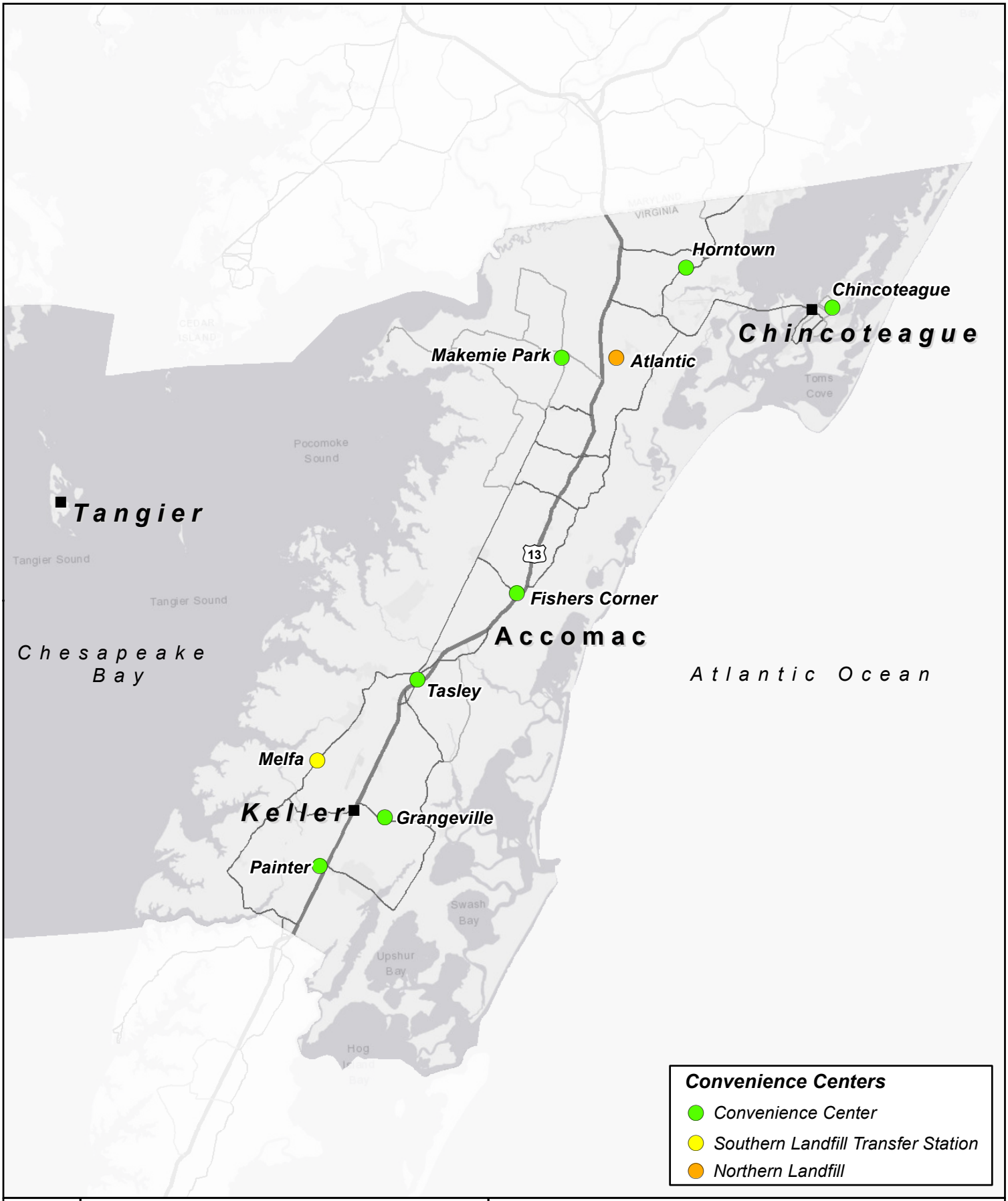
CHA design/construction solutions

Figure 1 - Vicinity Map

Accomack County
SWMP

Scale 1" = 6 miles	CHA Project No.: 34873	*Image Courtesy of: Esri, HERE, DeLorme, Open StreetMap*



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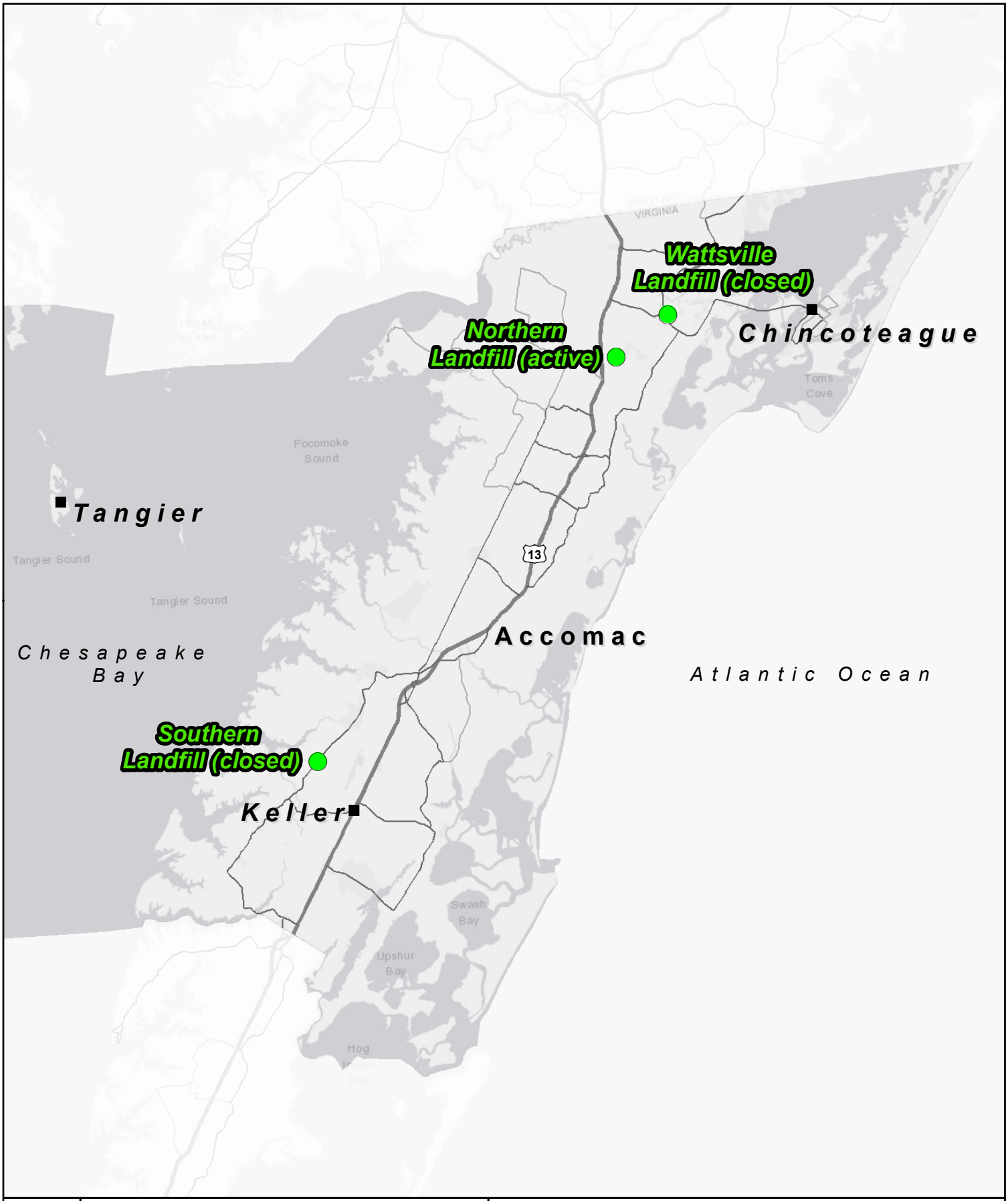
design/construction solutions

Figure 2 - Locations of Public Convenience & Recycling Centers

Accomack County SWMP

Scale 1" = 6 miles | CHA Project No.: 34873 | *Image Courtesy of: Esri, HERE, DeLorme, Open StreetMap*



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design/construction solutions

Figure 3 - Locations of Historical Waste Disposal Sites

Accomack County SWMP

Scale 1" = 6 miles	CHA Project No.: 34873	*Image Courtesy of: Esri, HERE, DeLorme, Open StreetMap*

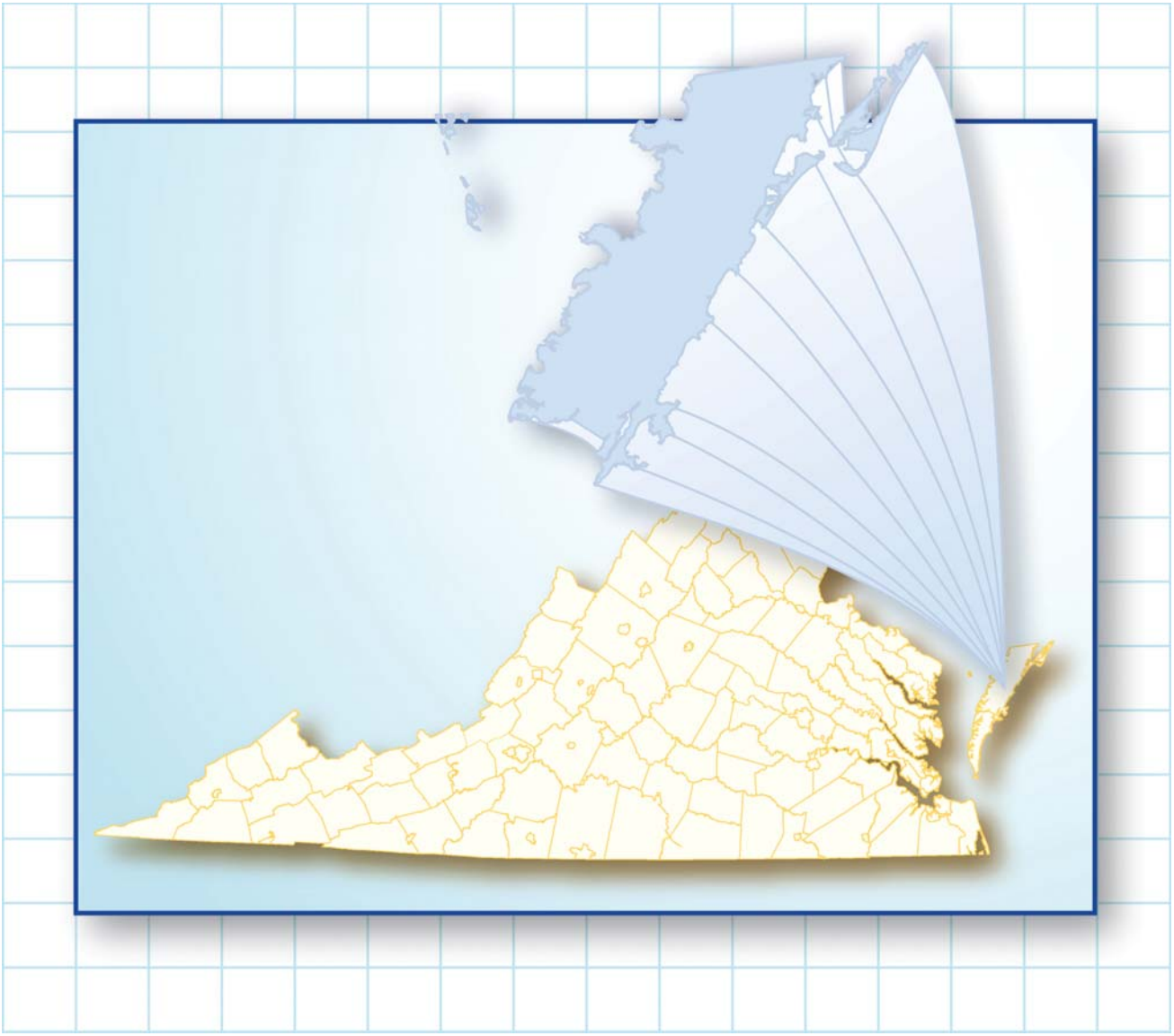
APPENDIX A

Virginia Employment Commission (VEC) Annual Report (2018)

Virginia

COMMUNITY PROFILE

Accomack County



Virginia Employment Commission

703 East Main Street • Richmond, Virginia 23219

Tel: (804) 786-8223 • www.VirginiaLMI.com

Last updated: 9/6/2018 1:01:21 AM

Table of Contents

I. Introduction

This report provides a community profile of Accomack County. It is intended to complement the information found in our Virginia Workforce Connection application, which can be accessed online at:

www.VirginiaLMI.com

The report is divided into three major sections. The first contains a profile of regional demographic characteristics and trends, the second supplies similar information for the regional economy, and the third provides a profile of regional education characteristics.

II. Demographic Profile

Overview

This Demographic Profile provides an in-depth analysis of the population in Accomack County. Most of the data is produced by the U.S. Census Bureau, and includes demographic characteristics such as age, race/ethnicity, and gender.

Related Terms and Definitions

Ability to speak English
For people who speak a language other than English at home, the response represents the person's own perception of his or her ability to speak English. Because census questionnaires are usually completed by one household member, the responses may represent the perception of another household member.

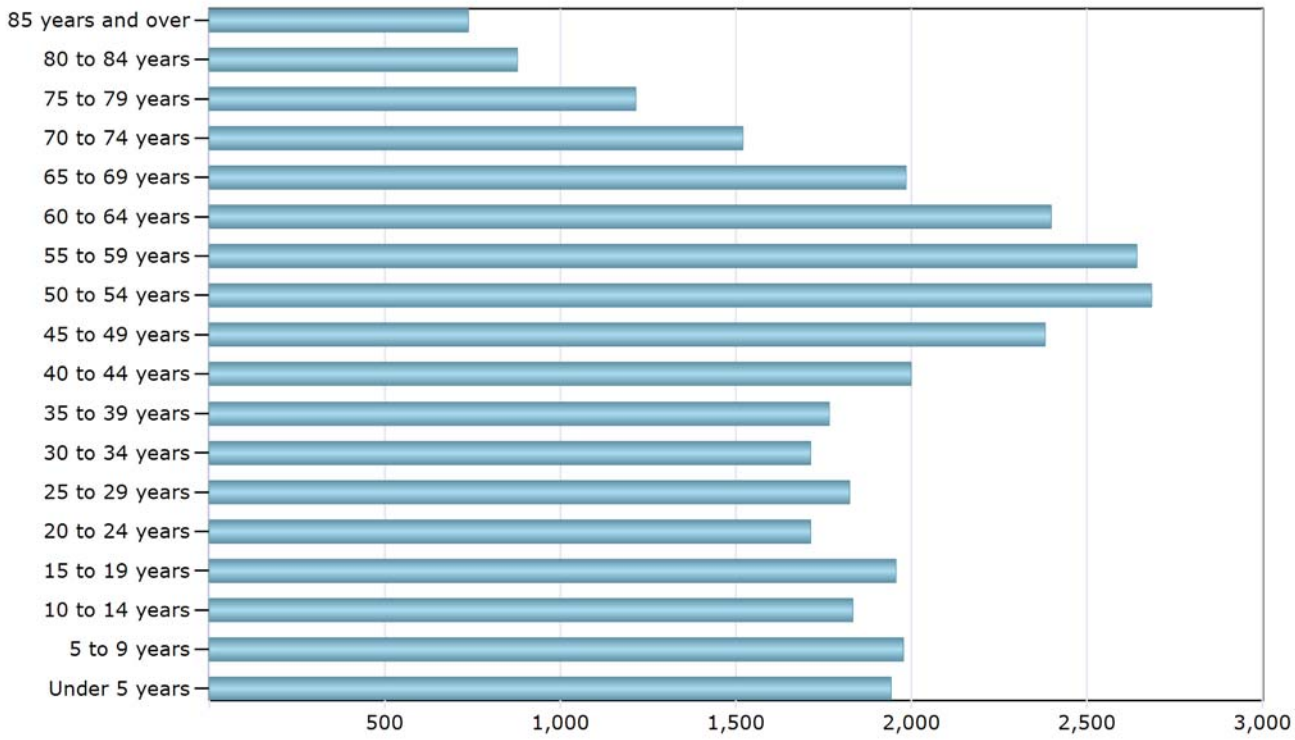
Age
The age classification is based on the age of the person in complete years as of April 1, 2010. The age of the person usually was derived from their date of birth information. Their reported age was used only when date of birth information was unavailable.

Gender
The data on gender were derived from answers to a question that was asked of all people. Individuals were asked to mark either "male" or "female" to indicate their gender. For most cases in which gender was not reported, it was determined by the appropriate entry from the person's given (i.e., first) name and household relationship. Otherwise, gender was imputed according to the relationship to the householder and the age of the person.

Race
The concept of race as used by the Census Bureau reflects self-identification by people according to the race or races with which they most closely identify. The categories are sociopolitical constructs and should not be interpreted as being scientific or anthropological in nature. Furthermore, the race categories include both racial and national-origin groups.

Please note: In the past, our population by race/ethnicity data has always excluded the Hispanic ethnicity from each race category. Starting in January 2013, each race category now includes all ethnicities.

Population by Age



	Accomack County	Virginia	United States
Under 5 years	1,942	509,625	20,201,362
5 to 9 years	1,977	511,849	20,348,657
10 to 14 years	1,833	511,246	20,677,194
15 to 19 years	1,956	550,965	22,040,343
20 to 24 years	1,713	572,091	21,585,999
25 to 29 years	1,824	564,342	21,101,849
30 to 34 years	1,713	526,077	19,962,099
35 to 39 years	1,766	540,063	20,179,642
40 to 44 years	1,999	568,865	20,890,964
45 to 49 years	2,381	621,155	22,708,591
50 to 54 years	2,684	592,845	22,298,125
55 to 59 years	2,642	512,595	19,664,805
60 to 64 years	2,398	442,369	16,817,924
65 to 69 years	1,985	320,302	12,435,263
70 to 74 years	1,520	229,502	9,278,166
75 to 79 years	1,215	173,929	7,317,795
80 to 84 years	878	130,801	5,743,327
85 years and over	738	122,403	5,493,433
	33,164	**8,001,024**	**308,745,538**

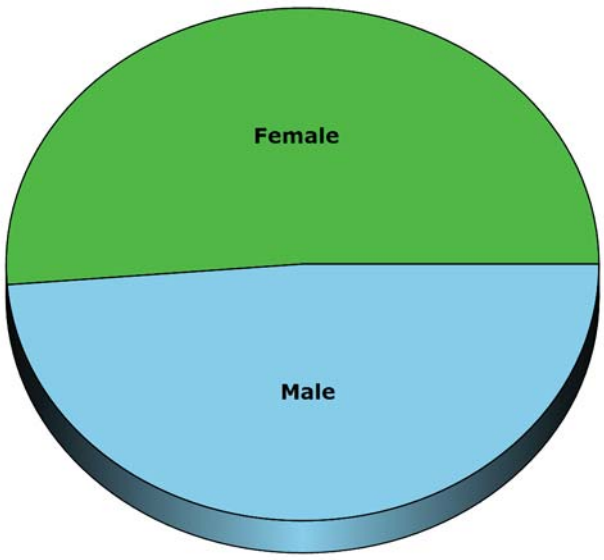
Source: 2010 Census.

Population by Race/Ethnicity

	Accomack County	Virginia	United States
Total			
Total Population	33,164	8,001,024	308,745,538
Race			
White	21,662	5,486,852	223,553,265
Black or African American	9,303	1,551,399	38,929,319
American Indian or Alaska Native	135	29,225	2,932,248
Asian	183	439,890	14,674,252
Native Hawaiian/Pacific Islander	40	5,980	540,013
Other	1,302	254,278	19,107,368
Multiple Races	539	233,400	9,009,073
Ethnicity			
Not Hispanic or Latino (of any race)	30,314	7,369,199	258,267,944
Hispanic or Latino (of any race)	2,850	631,825	50,477,594

Source: 2010 Census.

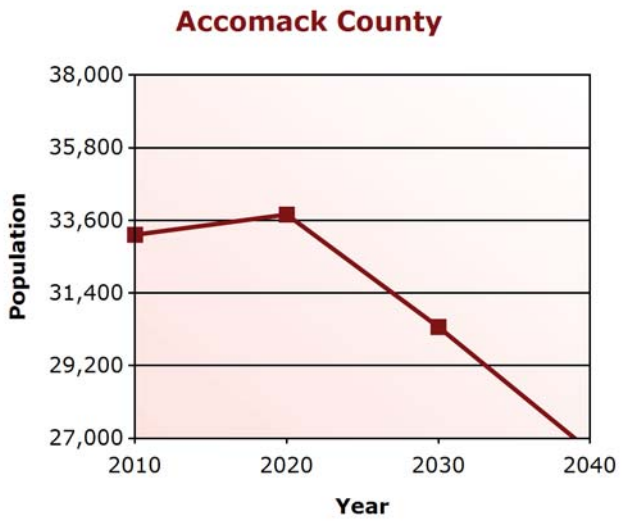
Population by Gender

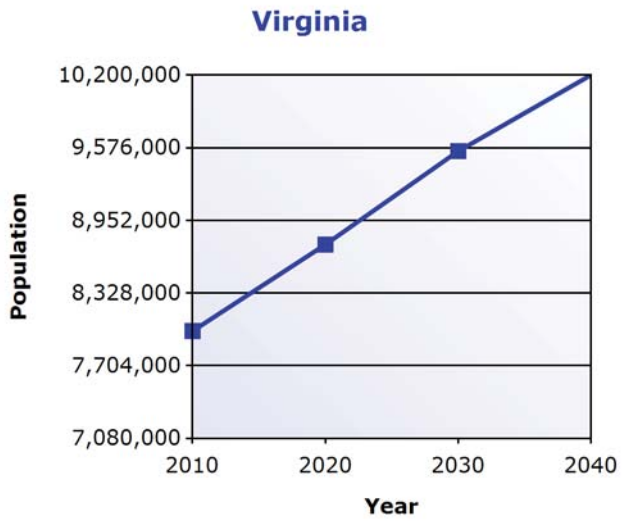


	Accomack County	Virginia	United States
Male	16,154	3,925,983	151,781,326
Female	17,010	4,075,041	156,964,212
	33,164	**8,001,024**	**308,745,538**

Source: 2010 Census.

Population Change





	Accomack County	(% change)	Number Change	Virginia	(% change)
2000	38,305			7,079,030	
2010	33,164	-13.42 %		8,001,024	13.02 %
2020	33,775	1.84 %		8,744,273	9.29 %
2030	30,369	-10.08 %		9,546,958	9.18 %
2040	26,615	-12.36 %		10,201,530	6.86 %

Source: U.S. Census Bureau, Weldon Cooper Center for Public Service.

Did you know...

you can log on to our website today and see population counts from each Decennial Census all the way back to 1900? Looking for annual population estimates? We have those too, all the way back to the 1970s!

For this data and more, visit us on the web at:

www.VirginiaLMI.com

United States™ Census 2010

Number Change

Population Projections by Age and Gender

	2020		2030		2040	
	Female	Male	Female	Male	Female	Male
Under 5 years	919	962	768	804	650	680
5 to 9 years	861	991	737	848	621	715
10 to 14 years	896	1,025	761	870	646	739
15 to 19 years	890	919	730	754	635	656
20 to 24 years	727	764	667	702	576	606
25 to 29 years	865	875	701	709	585	591
30 to 34 years	866	835	660	637	617	595
35 to 39 years	962	930	804	777	663	641
40 to 44 years	1,015	980	883	852	684	661
45 to 49 years	963	891	904	836	769	711
50 to 54 years	1,234	1,134	1,079	991	954	876
55 to 59 years	1,505	1,368	1,027	933	980	891
60 to 64 years	1,786	1,587	1,381	1,226	1,227	1,090
65 to 69 years	1,260	1,104	1,373	1,203	949	832
70 to 74 years	922	861	1,307	1,220	1,016	948
75 to 79 years	699	602	823	709	888	764
80 to 84 years	503	348	580	401	816	565
85 years and over	480	243	473	240	517	262
	17,353	**16,419**	**15,658**	**14,712**	**13,793**	**12,823**
	33,772		**30,370**		**26,616**	

Source: Weldon Cooper Center for Public Service.

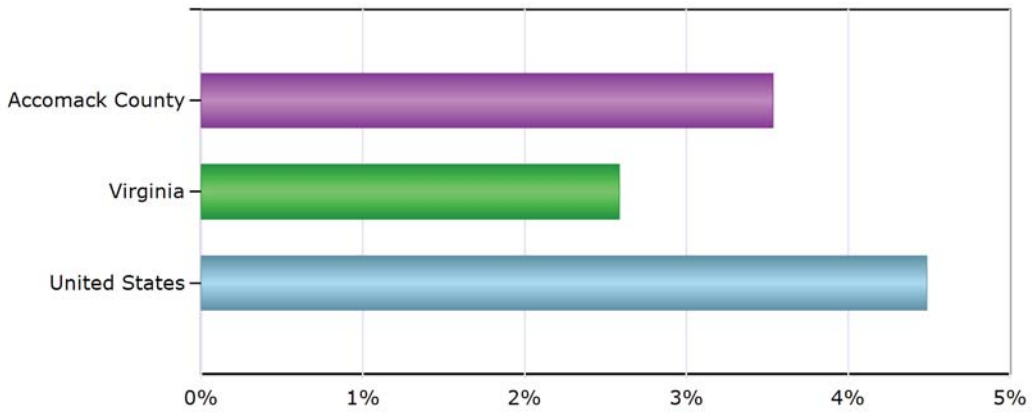
Population Projections by Race/Ethnicity

	2020	2030	2040
Total			
Total Population	33,775	30,369	26,615
Race			
White	19,786	17,859	15,308
Black or African American	8,207	5,832	4,025
Asian	325	476	692
Other	820	848	876
Ethnicity			
Hispanic or Latino (of any race)	4,637	5,355	5,714

Source: Weldon Cooper Center for Public Service.

English Language Skills

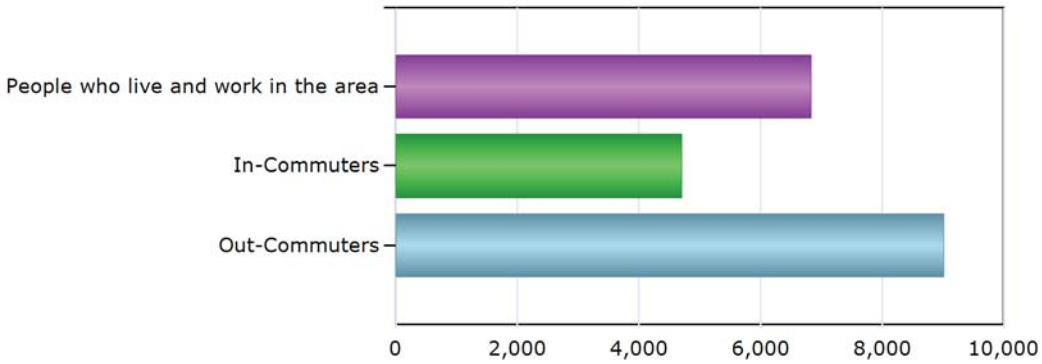
(Age 5 and over that speak English less than well)



	Total	Speak English less than well	Percent
Accomack County	31,112	1,100	3.54%
Virginia	7,800,044	201,628	2.58%
United States	298,691,202	13,400,003	4.49%

Source: U.S. Census Bureau
American Community Survey, 2012-2016.

Commuting Patterns



Commuting Patterns	
People who live and work in the area	6,830
In-Commuters	4,702
Out-Commuters	9,014
Net In-Commuters (In-Commuters minus Out-Commuters)	-4,312

Source: U.S. Census Bureau,
OnTheMap Application and LEHD Origin-Destination Employment Statistics, 2014.

Top 10 Places Residents are Commuting To

Area	Workers
Northampton County, VA	977
Virginia Beach city, VA	530
Newport News city, VA	475
Worcester County, MD	470
Fairfax County, VA	447
Wicomico County, MD	441
Norfolk city, VA	333
Chesapeake city, VA	306
Prince George's County, MD	251
Henrico County, VA	223

Top 10 Places Workers are Commuting From

Area	Workers
Northampton County, VA	1,112
Worcester County, MD	505
Wicomico County, MD	432
Somerset County, MD	192
Virginia Beach city, VA	152
Chesapeake city, VA	140
Norfolk city, VA	129
Henrico County, VA	101
Richmond city, VA	88
Newport News city, VA	78

Source: U.S. Census Bureau,
OnTheMap Application and LEHD Origin-Destination Employment Statistics, 2014.

Please Note: Commuting patterns data is no longer produced from the Decennial Census. As an alternative, we are providing commuting data from the U.S. Census Bureau's OnTheMap application and LEHD Origin-Destination Employment Statistics program. Since this data is produced from an entirely different data set, it is not advisable to compare the new data with previously released commuting patterns. For more information about the OnTheMap application or the LEHD program, please visit the following website:

http://lehd.ces.census.gov

III. Economic Profile

Overview

The Economic Profile of Accomack County consists primarily of data produced by the Virginia Employment Commission, U.S. Census Bureau, and the Bureau of Labor Statistics.

Related Terms and Definitions

Average Weekly Wage
Computed as average quarterly wages divided by 13.

Consumer Price Index (CPI)
The Consumer Price Index measures the average change over time in the prices paid by urban consumers for a representative market basket of consumer goods and services.

Local Employment Dynamics (LED)
The Local Employment Dynamics Program at the Census Bureau, together with its state partners, provides employment information at the county, city, and Workforce Investment Area level. This information tracks workers in different industries by age and gender and provides statistics on job creation, separation, turnover, and wages.

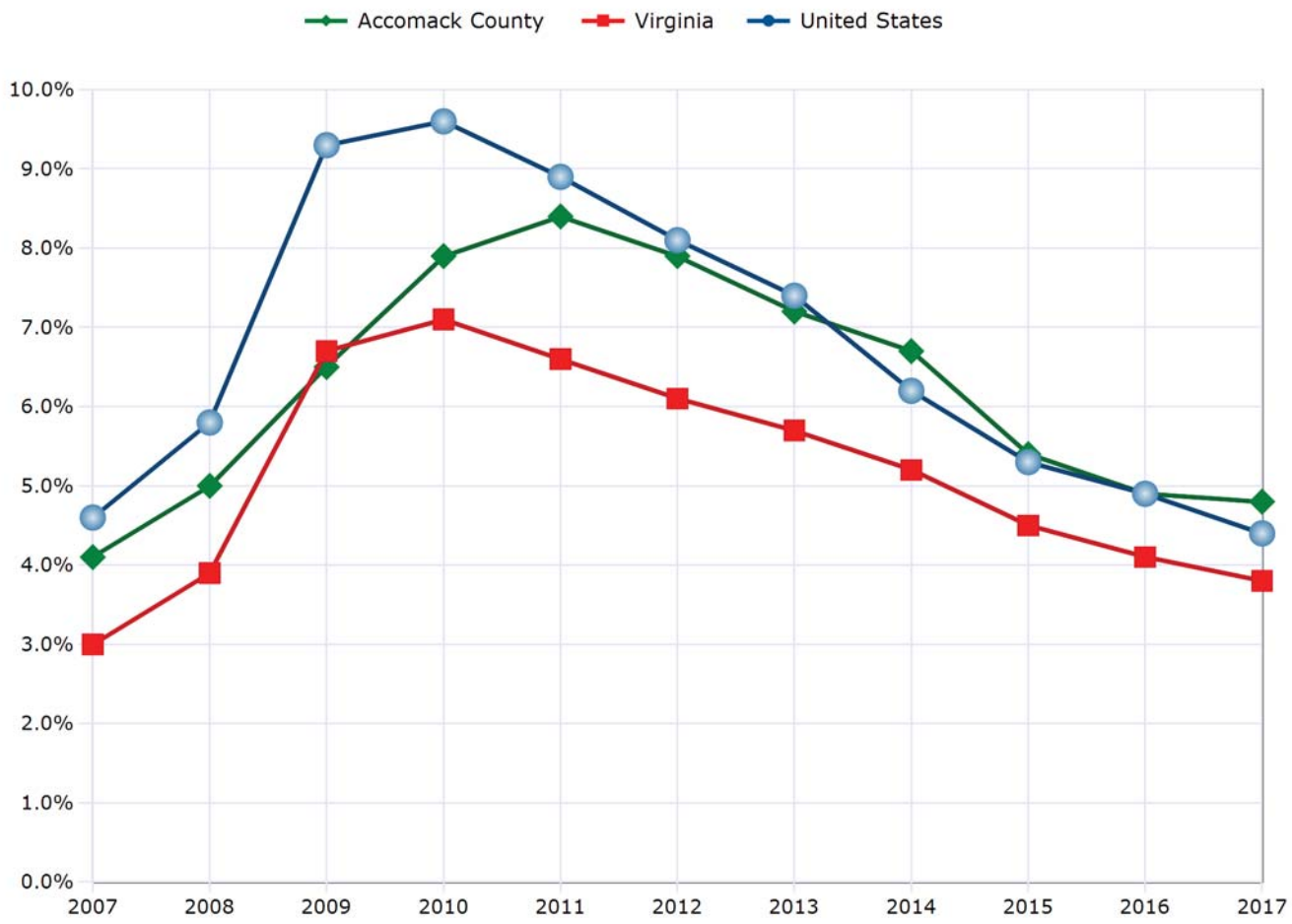
Quarterly Census of Employment & Wages (QCEW)
A federal/state cooperative program that collects and compiles employment and wage data for workers covered by state unemployment insurance (UI) laws and the federal civilian workers covered by Unemployment Compensation for Federal Employees (UCFE). These data are maintained at the state in micro and macro levels and also sent to BLS quarterly.

Unemployment Insurance (UI)
Unemployment insurance is a program for the accumulation of funds paid by employers to be used for the payment of unemployment insurance to workers during periods of unemployment which are beyond the workers' control. Unemployment insurance replaces a part of the worker's wage loss if he becomes eligible for payments.

Unemployment Rate
The number of unemployed people as a percentage of the labor force.

Unemployment Rates

Trends

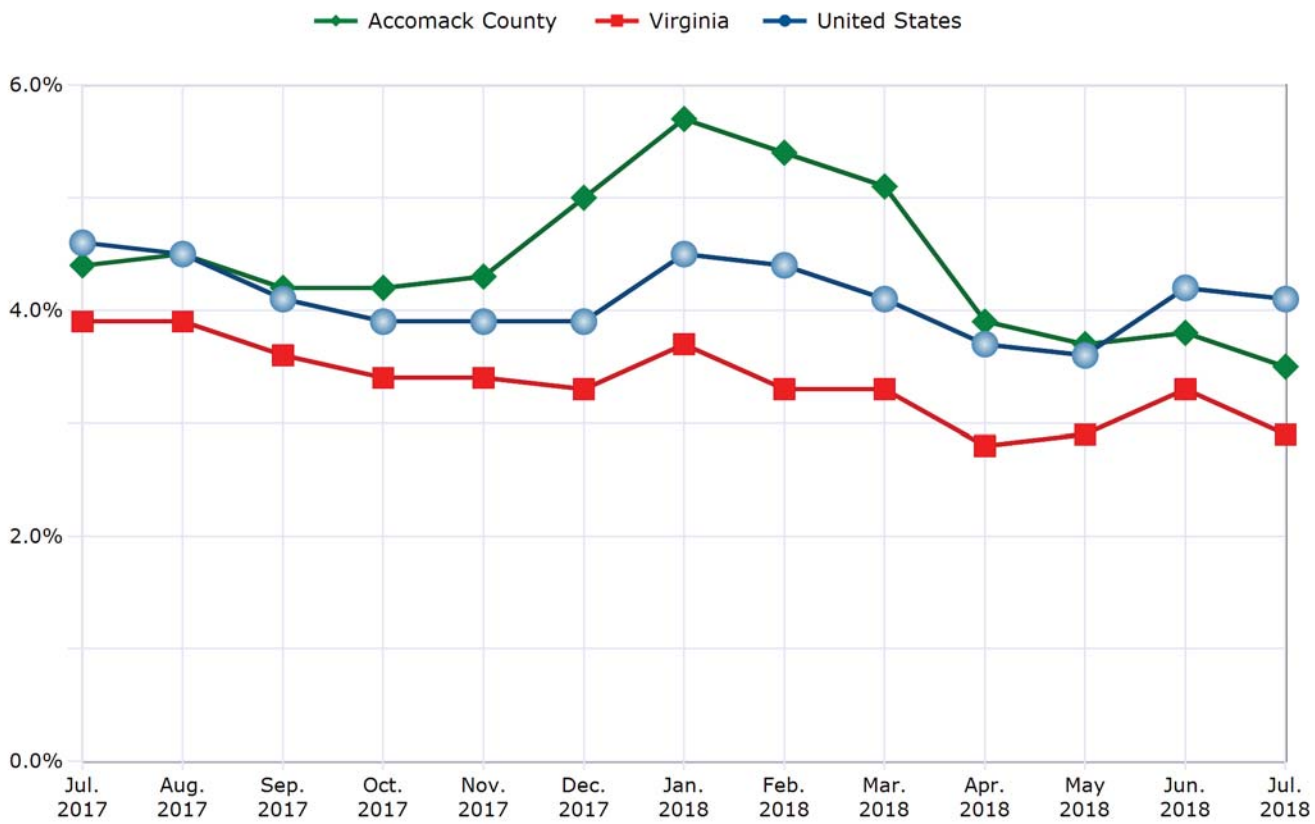


	Accomack County	Virginia	United States
2007	4.1%	3.0%	4.6%
2008	5.0%	3.9%	5.8%
2009	6.5%	6.7%	9.3%
2010	7.9%	7.1%	9.6%
2011	8.4%	6.6%	8.9%
2012	7.9%	6.1%	8.1%
2013	7.2%	5.7%	7.4%
2014	6.7%	5.2%	6.2%
2015	5.4%	4.5%	5.3%
2016	4.9%	4.1%	4.9%
2017	4.8%	3.8%	4.4%

Source: Virginia Employment Commission, Economic Information & Analytics, Local Area Unemployment Statistics.

Unemployment Rates

Past 12 Months



	Accomack County	Virginia	United States
Jul. 2017	4.4%	3.9%	4.6%
Aug. 2017	4.5%	3.9%	4.5%
Sep. 2017	4.2%	3.6%	4.1%
Oct. 2017	4.2%	3.4%	3.9%
Nov. 2017	4.3%	3.4%	3.9%
Dec. 2017	5.0%	3.3%	3.9%
Jan. 2018	5.7%	3.7%	4.5%
Feb. 2018	5.4%	3.3%	4.4%
Mar. 2018	5.1%	3.3%	4.1%
Apr. 2018	3.9%	2.8%	3.7%
May 2018	3.7%	2.9%	3.6%
Jun. 2018	3.8%	3.3%	4.2%
Jul. 2018	3.5%	2.9%	4.1%

Source: Virginia Employment Commission, Economic Information & Analytics, Local Area Unemployment Statistics.

Characteristics of the Insured Unemployed

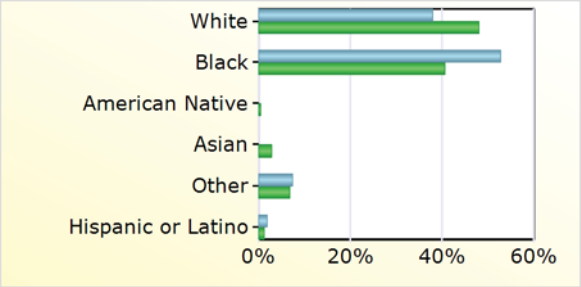
Total number of claimants: 108

Accomack County - (108 claimants)

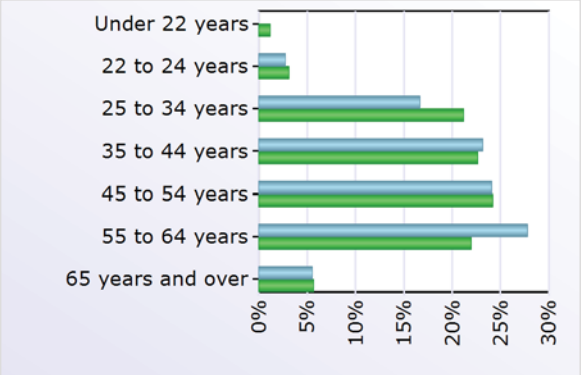
Virginia - (24,439 claimants)

Gender	Accomack County	Virginia
Male	42	11,044
Female	66	13,395
Unspecified		

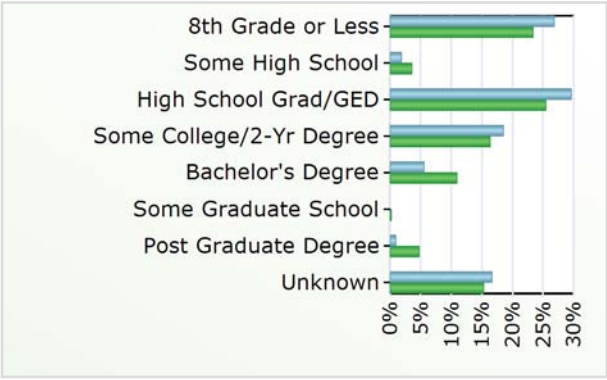
Race	Accomack County	Virginia
White	41	11,748
Black	57	9,926
American Native		108
Asian		694
Other	8	1,657
Hispanic or Latino	2	306



Age	Accomack County	Virginia
Under 22 years		291
22 to 24 years	3	766
25 to 34 years	18	5,178
35 to 44 years	25	5,533
45 to 54 years	26	5,912
55 to 64 years	30	5,368
65 years and over	6	1,391
Unknown		



Education	Accomack County	Virginia
8th Grade or Less	29	5,710
Some High School	2	877
High School Grad/GED	32	6,227
Some College/2-Yr Degree	20	3,999
Bachelor's Degree	6	2,674
Some Graduate School		46
Post Graduate Degree	1	1,160
Unknown	18	3,746

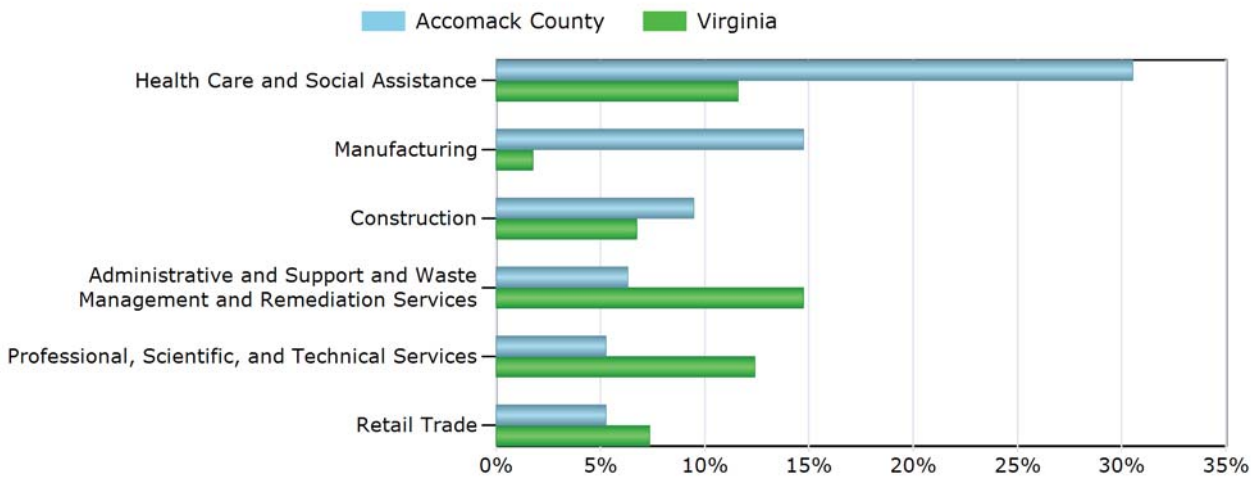


Source: Virginia Employment Commission, Economic Information & Analytics, Characteristics of the Insured Unemployed, August 2018.

Characteristics of the Insured Unemployed

Top 5 Industries With Largest Number of Claimants in Accomack County

(excludes unclassified)



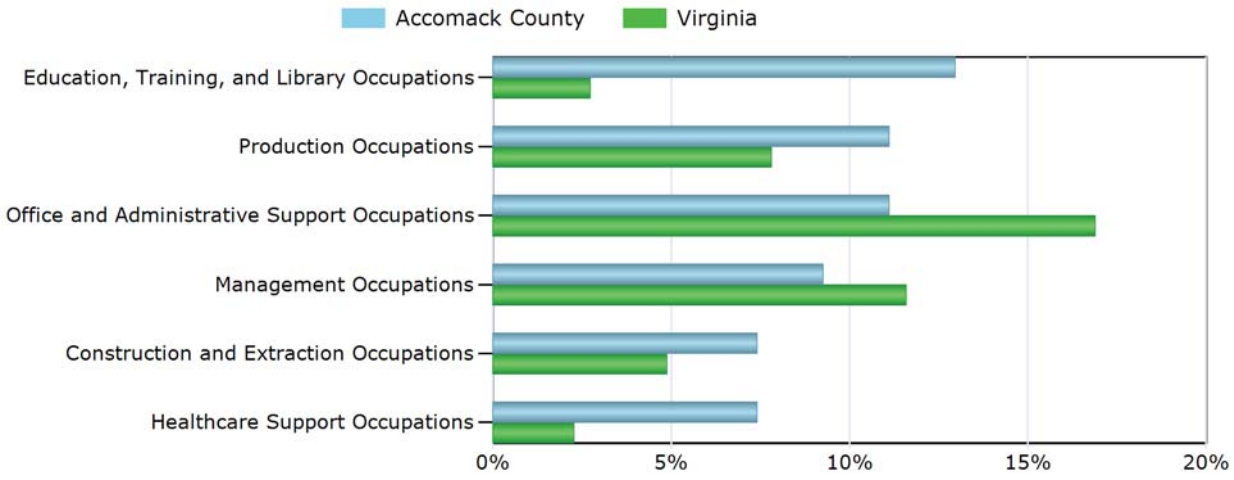
Industry	Accomack County	Virginia
Health Care and Social Assistance	29	2,456
Manufacturing	14	372
Construction	9	1,426
Unclassified	8	1,970
Administrative and Support and Waste Management and Remediation Services	6	3,118
Retail Trade	5	1,558
Professional, Scientific, and Technical Services	5	2,626
Management of Companies and Enterprises	4	147
Agriculture, Forestry, Fishing and Hunting	3	66
Wholesale Trade	3	939
Educational Services	3	792
Real Estate and Rental and Leasing	2	395
Information	1	584
Finance and Insurance	1	1,056
Arts, Entertainment, and Recreation	1	180
Accommodation and Food Services	1	1,944
Mining, Quarrying, and Oil and Gas Extraction		77
Utilities		37
Transportation and Warehousing		557
Other Services (except Public Administration)		869

Source: Virginia Employment Commission, Economic Information & Analytics, Characteristics of the Insured Unemployed, August 2018.

Characteristics of the Insured Unemployed

Top 5 Occupation Groups With Largest Number of Claimants in Accomack County

(excludes unknown occupations)



Occupation	Accomack County	Virginia
Education, Training, and Library Occupations	14	667
Office and Administrative Support Occupations	12	4,128
Production Occupations	12	1,909
Management Occupations	10	2,832
Healthcare Support Occupations	8	556
Construction and Extraction Occupations	8	1,193
Sales and Related Occupations	7	1,561
Transportation and Material Moving Occupations	6	1,427
Unknown Occupation Code	6	2,311
Community and Social Service Occupations	4	379
Food Preparation and Serving Related Occupations	4	1,380
Healthcare Practitioners and Technical Occupations	3	518
Building and Grounds Cleaning and Maintenance Occupations	3	448
Business and Financial Operations Occupations	2	1,252
Personal Care and Service Occupations	2	483
Installation, Maintenance, and Repair Occupations	2	693
Computer and Mathematical Occupations	1	1,129
Architecture and Engineering Occupations	1	341
Arts, Design, Entertainment, Sports, and Media Occupations	1	584
Protective Service Occupations	1	254
Farming, Fishing, and Forestry Occupations	1	49
Life, Physical, and Social Science Occupations		172
Legal Occupations		120
Military Specific Occupations		53

Source: Virginia Employment Commission, Economic Information & Analytics, Characteristics of the Insured Unemployed, August 2018.

Unemployment Insurance Payments

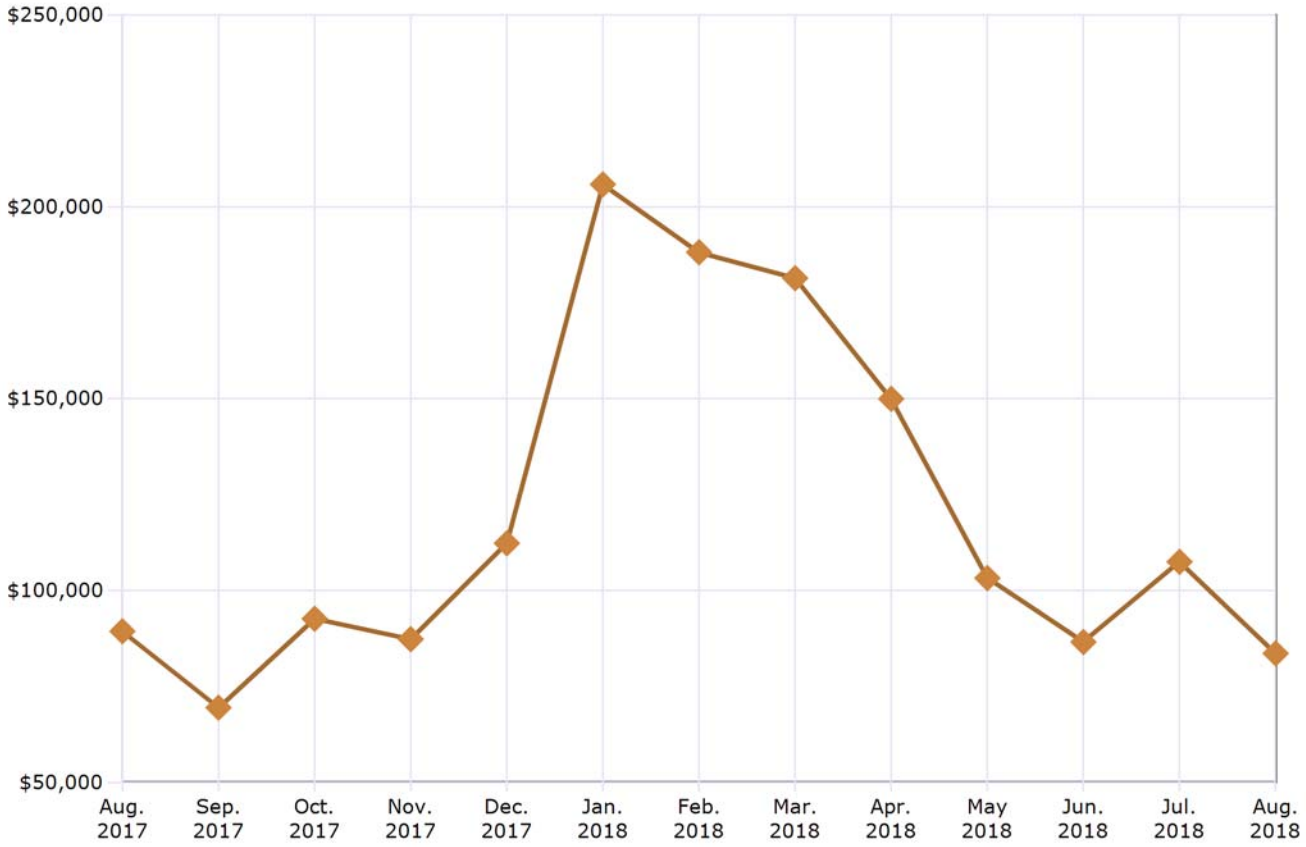
Trends

	Accomack County		Virginia	
	Weeks Paid	Amount Paid	Weeks Paid	Amount Paid
2007	7,655	$1,445,120	1,384,335	$364,789,088
2008	7,254	$1,478,645	1,699,923	$468,544,246
2009	12,324	$2,733,359	3,782,630	$1,069,206,277
2010	11,465	$2,357,583	2,727,738	$748,174,724
2011	11,502	$2,424,414	2,242,341	$612,702,314
2012	9,873	$2,067,250	2,102,986	$592,044,339
2013	9,023	$1,929,675	1,999,039	$574,074,609
2014	7,600	$1,643,710	1,684,690	$490,522,709
2015	4,287	$954,367	1,198,476	$351,290,100
2016	5,251	$1,235,421	1,263,292	$379,622,081
2017	5,600	$1,369,710	1,114,650	$336,664,624

Source: Virginia Employment Commission, Economic Information & Analytics, Unemployment Insurance Program.

Unemployment Insurance Payments

Past 12 Months



	Accomack County		Virginia	
	Weeks Paid	Amount Paid	Weeks Paid	Amount Paid
Aug. 2017	354	$89,397	106,830	$32,052,040
Sep. 2017	273	$69,493	78,463	$24,100,313
Oct. 2017	371	$92,664	88,873	$27,477,193
Nov. 2017	354	$87,346	77,737	$23,867,491
Dec. 2017	481	$112,315	78,488	$23,849,844
Jan. 2018	886	$205,843	111,016	$33,360,363
Feb. 2018	794	$188,158	90,330	$27,381,314
Mar. 2018	732	$181,391	83,966	$25,617,093
Apr. 2018	603	$149,951	85,615	$26,239,392
May 2018	406	$103,257	72,790	$22,212,680
Jun. 2018	318	$86,596	73,754	$22,086,756
Jul. 2018	396	$107,489	90,439	$26,886,361
Aug. 2018	303	$83,629	74,098	$22,384,827

Source: Virginia Employment Commission, Unemployment Insurance Program.

Employers by Size of Establishment

	Accomack County	Virginia
0 to 4 employees	740	166,207
5 to 9 employees	187	38,710
10 to 19 employees	91	28,189
20 to 49 employees	70	20,858
50 to 99 employees	26	7,325
100 to 249 employees	5	3,863
250 to 499 employees	***	1,041
500 to 999 employees	0	375
1000 and over employees	***	242
	1,125	**266,810**

Employment by Size of Establishment

	Accomack County	Virginia
0 to 4 employees	1,039	232,999
5 to 9 employees	1,204	257,435
10 to 19 employees	1,192	383,108
20 to 49 employees	1,947	630,031
50 to 99 employees	1,651	501,050
100 to 249 employees	782	574,142
250 to 499 employees	***	359,077
500 to 999 employees	0	257,049
1000 and over employees	***	638,491
	12,988	**3,833,382**

Note: Asterisks (***) indicate non-disclosable data.
'Zero; no employment' typically represents new startup firms or sole-proprietorships.

Source: Virginia Employment Commission, Economic Information & Analytics,
Quarterly Census of Employment and Wages (QCEW), 1st Quarter (January, February, March) 2018.

50 Largest Employers

1. Perdue Products
2. Tyson Farms
3. Accomack County School Board
4. Riverside Regional Medical Center
5. County of Accomack
6. Nat'l Aeronautics & Space Admin.
7. LJT Associates Inc
8. Wal Mart
9. Eastern Shore Community Services
10. Eastern Shore Rural Health System
11. URS Federal Services
12. Food Lion
13. Royal Farms 79
14. Eastern Shore Community College
15. Marconi Technology
16. Therapeutic Interventions
17. The Hermitage
18. U.S. Department of Defense
19. Postal Service
20. Mcdonalds
21. A & N Electric Co-op
22. VDOT
23. Town of Chincoteague
24. U.S. Department of Agriculture
25. Caring Touch Health Services
26. Norfolk Cent YMCA
27. Northrop Grumman Corporation
28. Shore Healthcare Group LLC
29. U.S. Department of Commerce
30. Intrepid USA Inc
31. VT Services, Inc.
32. Virginia State Department of Health
33. Applied Technical Services, Inc.
34. Aging Community Action
35. Eastern Quality Vending Inc
36. Eastern Shore Nursery of Virginia
37. Singus Enterprises Inc
38. Dolgencorp LLC
39. Shore Transport Services
40. E & C Mid-Atlantic Ventures, LLC
41. Virginia Polytechnic Institute and State University
42. Bundick Well & Pump Company
43. Don's Seafood
44. Bay Partners, LLC
45. Comfort Suites
46. Pizza Hut
47. SGT Incorporated
48. 739 Enterprises LLC
49. Arcadia Nursing Center
50. Helena Chemical Company

Source: Virginia Employment Commission, Economic Information & Analytics,
Quarterly Census of Employment and Wages (QCEW), 1st Quarter (January, February, March) 2018.

Did you know...

you can search over 300,000 employer listings on our website provided by Infogroup? This easy-to-use feature lets you search for employers by keyword, industry, sales volume, size range, and more!

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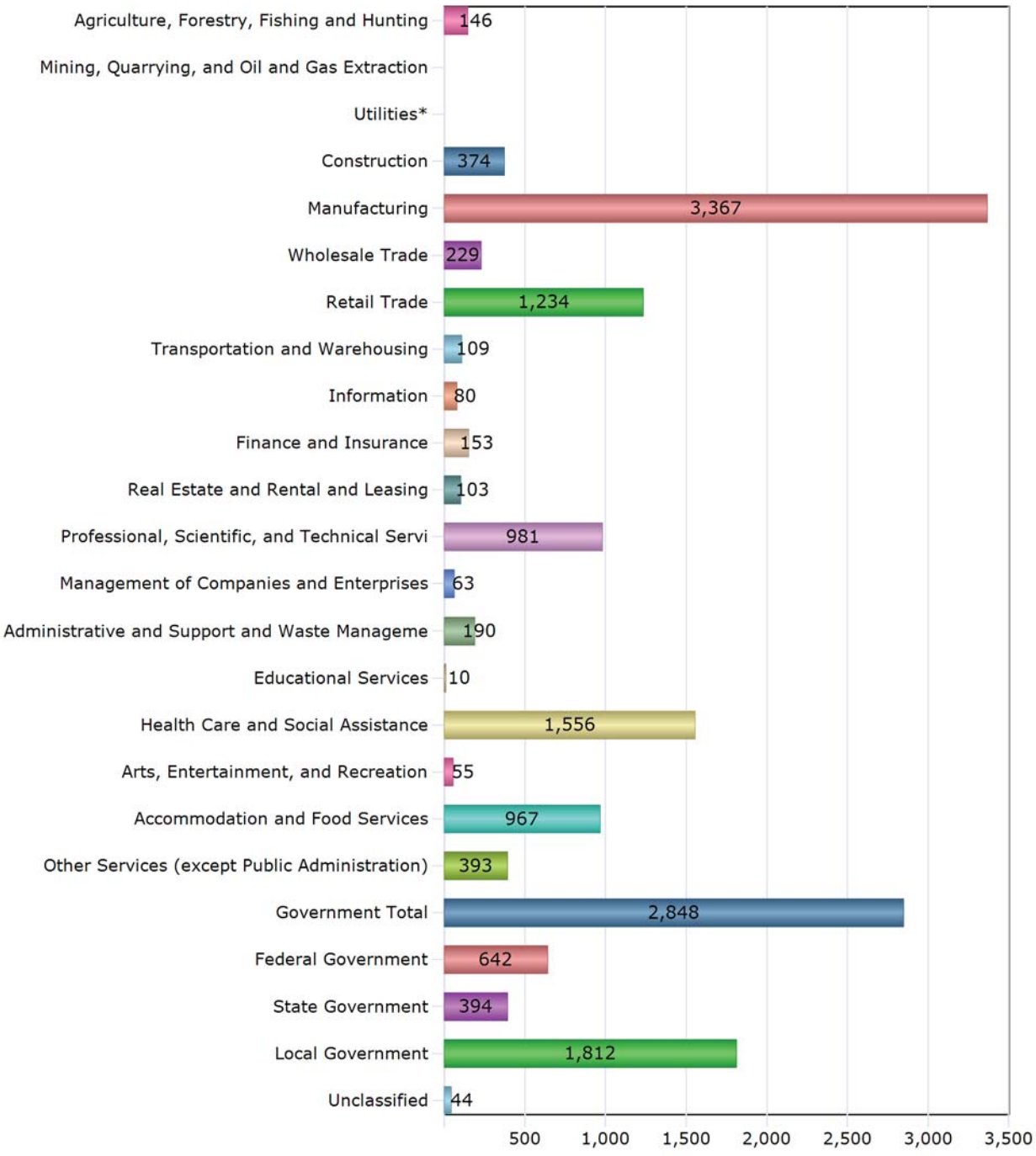
www.VirginiaLMI.com

Employment by Industry

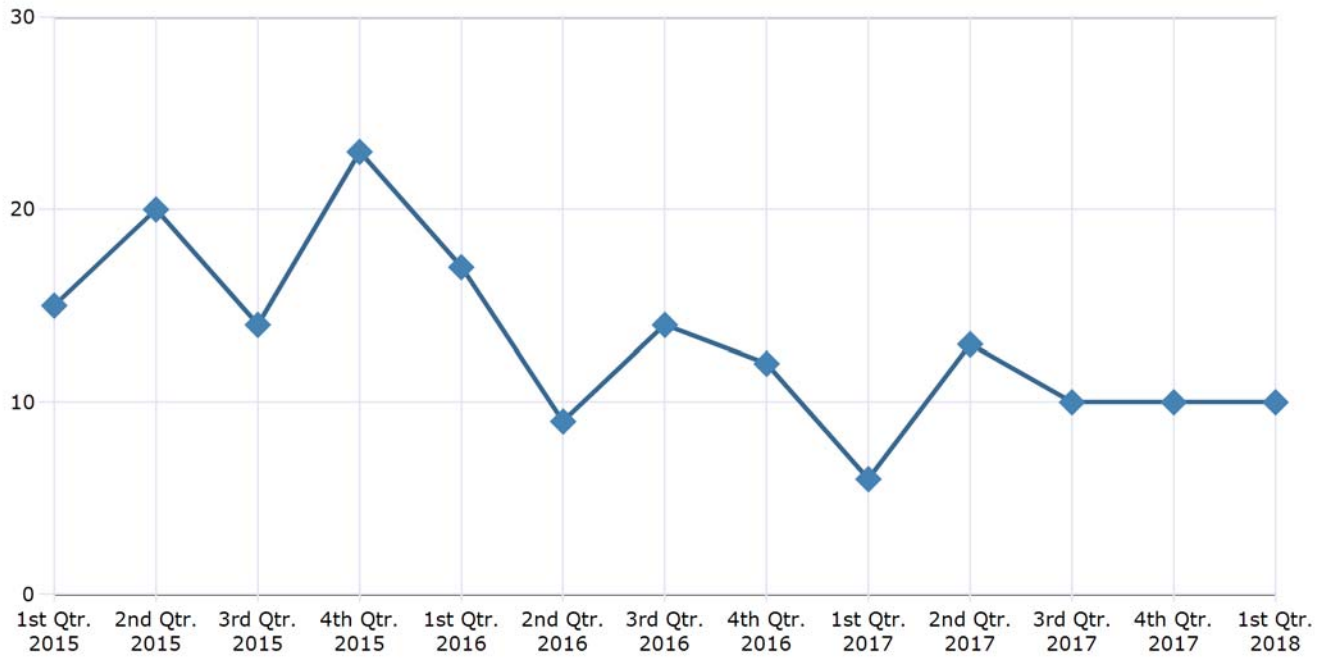


Total: 12,988

Note: Asterisk (*) indicates non-disclosable data.

Source: Virginia Employment Commission, Economic Information & Analytics,
Quarterly Census of Employment and Wages (QCEW), 1st Quarter (January, February, March) 2018.

New Startup Firms

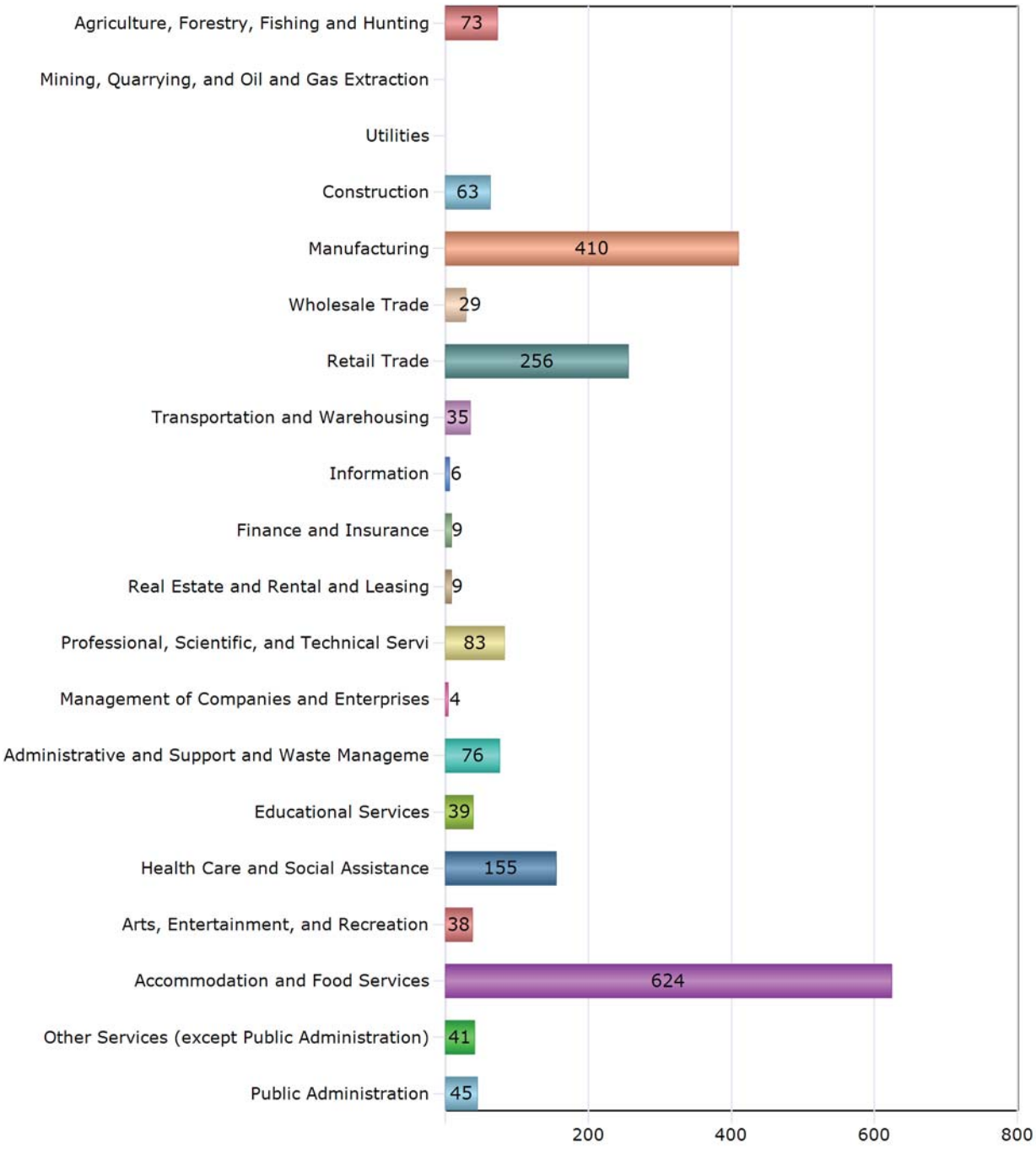


	Accomack County	Virginia
1st Qtr. 2015	15	3,923
2nd Qtr. 2015	20	3,749
3rd Qtr. 2015	14	3,396
4th Qtr. 2015	23	3,000
1st Qtr. 2016	17	3,802
2nd Qtr. 2016	9	4,283
3rd Qtr. 2016	14	3,398
4th Qtr. 2016	12	3,426
1st Qtr. 2017	6	3,838
2nd Qtr. 2017	13	3,961
3rd Qtr. 2017	10	2,736
4th Qtr. 2017	10	3,058
1st Qtr. 2018	10	3,936

Note: The following criteria was used to define new startup firms:
1.) Setup and liability date both occurred during 1st Quarter (January, February, March) 2018
2.) Establishment had no predecessor UI Account Number
3.) Private Ownership
4.) Average employment is less than 250
5.) For multi-unit establishments, the parent company must also meet the above criteria.

Source: Virginia Employment Commission, Economic Information & Analytics,
Quarterly Census of Employment and Wages (QCEW), 1st Quarter (January, February, March) 2018.

New Hires by Industry



Total: 1,995

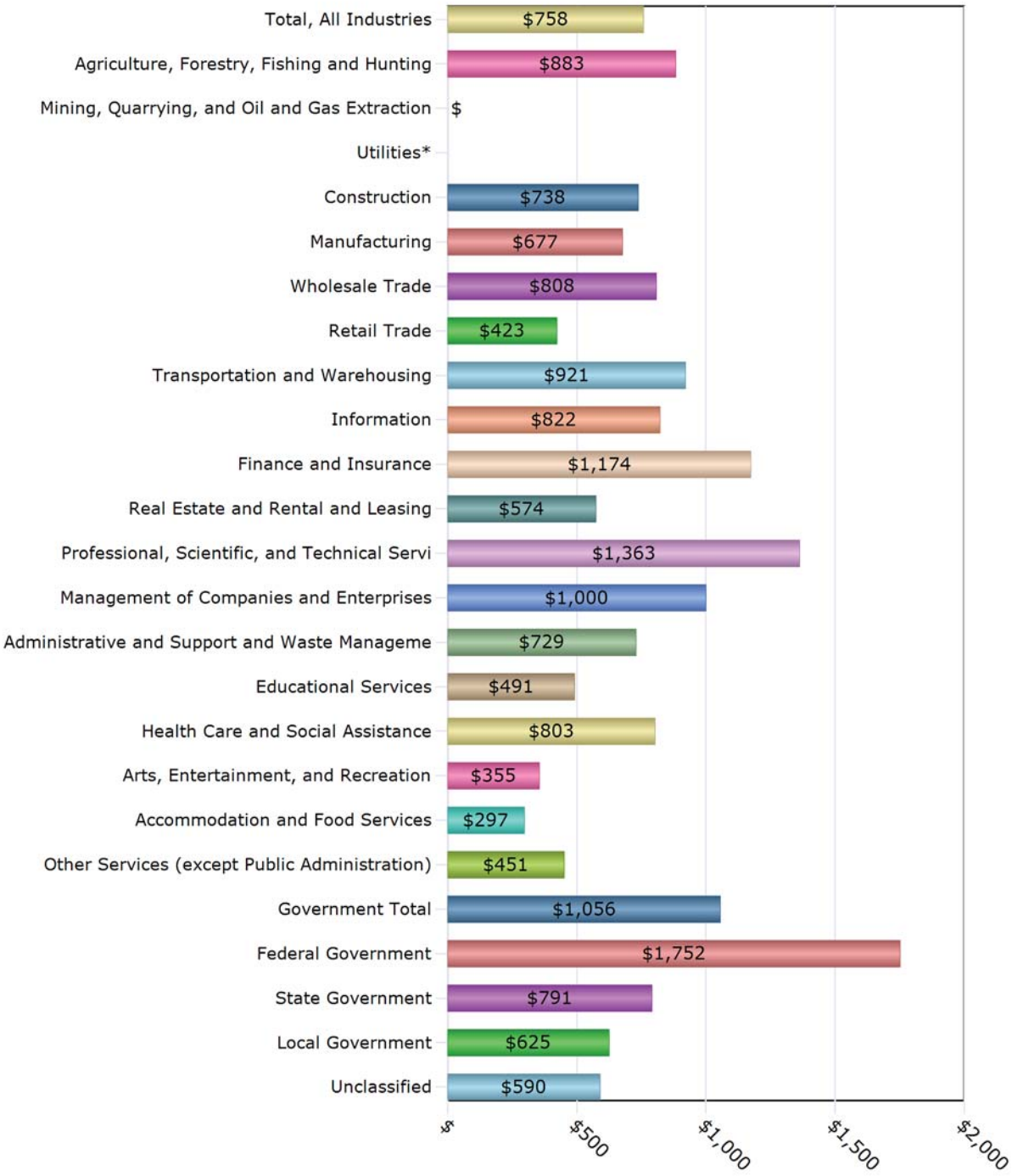
Source: U.S. Census Bureau,
Local Employment Dynamics (LED) Program, 2nd Quarter (April, May, June) 2016, all ownerships.

Turnover by Industry

Average: 8.1%

Source: U.S. Census Bureau,
Local Employment Dynamics (LED) Program, 1st Quarter (January, February, March) 2016, all ownerships.

Average Weekly Wage by Industry



Note: Asterisk (*) indicates non-disclosable data.

Source: Virginia Employment Commission, Economic Information & Analytics,
Quarterly Census of Employment and Wages (QCEW), 1st Quarter (January, February, March) 2018.

Age of Workers by Industry

	14–18	19–21	22–24	25–34	35–44	45–54	55–64	65+
Total, All Industries	188	340	543	2,219	2,129	2,551	2,440	929
Agriculture, Forestry, Fishing and Hunting		3	12	31	41	38	38	22
Mining, Quarrying, and Oil and Gas Extraction								
Utilities			3	18	17	17	14	6
Construction		5	12	64	76	98	107	23
Manufacturing	19	99	176	705	596	672	598	148
Wholesale Trade			5	41	50	61	57	24
Retail Trade	30	66	77	190	171	203	184	96
Transportation and Warehousing		3	6	22	29	38	44	11
Information				14	17	21	15	8
Finance and Insurance			3	25	27	37	29	12
Real Estate and Rental and Leasing		3	3	21	22	17	21	20
Professional, Scientific, and Technical Servi		7	24	124	148	188	151	46
Management of Companies and Enterprises				11	13	14	12	6
Administrative and Support and Waste Manageme		7	14	51	60	73	71	34
Educational Services		7	40	219	239	301	409	189
Health Care and Social Assistance		19	41	284	242	301	240	98
Arts, Entertainment, and Recreation	4		5	25	22	12	13	7
Accommodation and Food Services	117	95	88	224	187	204	183	72
Other Services (except Public Administration)	8	10	13	55	44	68	60	30
Public Administration		7	20	95	130	190	194	78

Source: U.S. Census Bureau,
Local Employment Dynamics (LED) Program, 2nd Quarter (April, May, June) 2016, all ownerships.

What is LED?

Developed by the U.S. Census Bureau, the Local Employment Dynamics (LED) program merges Virginia's Unemployment Compensation wage and employer records with Census demographic data. Read more about LED on the following website:

http://lehd.did.census.gov/led/

Industry Employment and Projections

Long Term

	Employment			Percent	
	Estimated 2014	Projected 2024	Change	Total	Annual
Total, All Industries	165,334	184,268	18,934	11.45%	1.09%
Agriculture, Forestry, Fishing and Hunting	476	522	46	9.66%	.93%
Mining, Quarrying, and Oil and Gas Extraction	185	184	-1	-.54%	-.05%
Utilities	519	466	-53	-10.21%	-1.07%
Construction	7,245	8,178	933	12.88%	1.22%
Manufacturing	8,849	8,336	-513	-5.8%	-.6%
Wholesale Trade	4,481	4,587	106	2.37%	.23%
Retail Trade	22,080	23,986	1,906	8.63%	.83%
Transportation and Warehousing	3,163	3,348	185	5.85%	.57%
Information	1,508	1,408	-100	-6.63%	-.68%
Finance and Insurance	***	***	***		***
Real Estate and Rental and Leasing	***	***	***		***
Professional, Scientific, and Technical Servi	9,667	11,651	1,984	20.52%	1.88%
Management of Companies and Enterprises	1,891	1,960	69	3.65%	.36%
Administrative and Support and Waste Manageme	4,437	4,793	356	8.02%	.77%
Educational Services	17,784	19,905	2,121	11.93%	1.13%
Health Care and Social Assistance	19,432	24,318	4,886	25.14%	2.27%
Arts, Entertainment, and Recreation	2,041	2,282	241	11.81%	1.12%
Accommodation and Food Services	16,230	19,859	3,629	22.36%	2.04%
Other Services (except Public Administration)	5,484	6,041	557	10.16%	.97%

Note: Asterisks (***) indicate non-disclosable data.
Projections data is for Bay Consortium (LWDA XIII). No data available for Accomack County.

Source: Virginia Employment Commission, Economic Information & Analytics,
Long Term Industry and Occupational Projections, 2014-2024.

Industry Employment and Projections

Short Term

	Employment			Percent	
	Estimated 2015	Projected 2017	Change	Total	Annual
Total, All Industries	3,977,496	4,093,656	116,160	2.92%	1.45%
Agriculture, Forestry, Fishing and Hunting	4,210	4,433	223	5.3%	2.61%
Mining, Quarrying, and Oil and Gas Extraction	6,805	5,869	-936	-13.75%	-7.13%
Utilities	10,717	10,695	-22	-.21%	-.1%
Construction	185,026	195,598	10,572	5.71%	2.82%
Manufacturing	232,632	233,073	441	.19%	.09%
Wholesale Trade	110,001	111,188	1,187	1.08%	.54%
Retail Trade	412,345	421,889	9,544	2.31%	1.15%
Transportation and Warehousing	112,837	117,619	4,782	4.24%	2.1%
Information	69,554	68,654	-900	-1.29%	-.65%
Finance and Insurance	131,712	136,266	4,554	3.46%	1.71%
Real Estate and Rental and Leasing	52,593	53,535	942	1.79%	.89%
Professional, Scientific, and Technical Servi	394,584	409,625	15,041	3.81%	1.89%
Management of Companies and Enterprises	74,086	75,252	1,166	1.57%	.78%
Administrative and Support and Waste Manageme	224,339	236,780	12,441	5.55%	2.74%
Educational Services	365,350	372,071	6,721	1.84%	.92%
Health Care and Social Assistance	427,570	446,476	18,906	4.42%	2.19%
Arts, Entertainment, and Recreation	56,096	57,991	1,895	3.38%	1.68%
Accommodation and Food Services	334,516	349,857	15,341	4.59%	2.27%
Other Services (except Public Administration)	133,850	136,332	2,482	1.85%	.92%

Note: Asterisks (***) indicate non-disclosable data.
Projections data is for Virginia Statewide. No data available for Accomack County.

Source: Virginia Employment Commission, Economic Information & Analytics,
Short Term Industry and Occupational Projections, 2015-2017.

Occupation Employment and Projections

Long Term

	Employment			Openings		
	Estimated 2014	Projected 2024	% Change	Replace-ments	Growth	Total
Total, All Occupations	165,334	184,268	11.45%	3,972	2,008	5,980
Management Occupations	6,332	6,932	9.48%	146	63	209
Business and Financial Operations Occupations	7,669	8,426	9.87%	148	80	228
Computer and Mathematical Occupations	6,069	7,018	15.64%	87	104	191
Architecture and Engineering Occupations	4,319	4,312	-.16%	104	9	113
Life, Physical, and Social Science Occupations	1,535	1,641	6.91%	36	15	51
Community and Social Service Occupations	2,363	2,741	16%	51	38	89
Legal Occupations	931	1,006	8.06%	16	8	24
Education, Training, and Library Occupations	13,339	14,961	12.16%	295	162	457
Arts, Design, Entertainment, Sports, and Media Occupations	1,526	1,627	6.62%	39	13	52
Healthcare Practitioners and Technical Occupations	7,624	9,449	23.94%	168	183	351
Healthcare Support Occupations	3,979	5,098	28.12%	84	112	196
Protective Service Occupations	3,792	4,223	11.37%	102	44	146
Food Preparation and Serving Related Occupations	16,522	20,274	22.71%	628	377	1,005
Building and Grounds Cleaning and Maintenance Occupations	5,735	6,224	8.53%	114	49	163
Personal Care and Service Occupations	7,235	8,455	16.86%	139	123	262
Sales and Related Occupations	21,334	23,248	8.97%	644	193	837
Office and Administrative Support Occupations	24,475	26,287	7.4%	540	214	754
Farming, Fishing, and Forestry Occupations	925	965	4.32%	21	6	27
Construction and Extraction Occupations	7,233	7,952	9.94%	108	72	180
Installation, Maintenance, and Repair Occupations	6,143	6,708	9.2%	145	61	206
Production Occupations	7,037	6,911	-1.79%	150	22	172
Transportation and Material Moving Occupations	9,217	9,810	6.43%	207	60	267

Note: Asterisks (***) indicate non-disclosable data.
Projections data is for Bay Consortium (LWDA XIII). No data available for Accomack County.

Source: Virginia Employment Commission, Economic Information & Analytics,
Long Term Industry and Occupational Projections, 2014-2024.

Occupation Employment and Projections

Short Term

	Employment			Openings		
	Estimated 2015	Projected 2017	% Change	Replace-ments	Growth	Total
Total, All Occupations	3,977,496	4,093,656	2.92%	92,736	59,171	151,907
Management Occupations	211,684	216,918	2.47%	4,446	2,618	7,064
Business and Financial Operations Occupations	276,201	284,397	2.97%	4,962	4,098	9,060
Computer and Mathematical Occupations	203,891	212,732	4.34%	2,536	4,451	6,987
Architecture and Engineering Occupations	78,184	79,032	1.08%	1,861	488	2,349
Life, Physical, and Social Science Occupations	33,613	34,156	1.62%	820	278	1,098
Community and Social Service Occupations	53,847	56,057	4.1%	1,101	1,105	2,206
Legal Occupations	43,892	44,747	1.95%	712	428	1,140
Education, Training, and Library Occupations	243,781	249,029	2.15%	5,092	2,624	7,716
Arts, Design, Entertainment, Sports, and Media Occupations	61,233	62,553	2.16%	1,408	678	2,086
Healthcare Practitioners and Technical Occupations	205,158	211,360	3.02%	4,160	3,102	7,262
Healthcare Support Occupations	90,672	94,357	4.06%	1,859	1,842	3,701
Protective Service Occupations	105,361	107,514	2.04%	2,354	1,081	3,435
Food Preparation and Serving Related Occupations	327,173	342,449	4.67%	14,249	7,644	21,893
Building and Grounds Cleaning and Maintenance Occupations	151,649	157,036	3.55%	2,839	2,694	5,533
Personal Care and Service Occupations	155,803	163,251	4.78%	3,230	3,728	6,958
Sales and Related Occupations	423,418	432,998	2.26%	13,691	4,790	18,481
Office and Administrative Support Occupations	554,516	566,160	2.1%	11,737	5,962	17,699
Farming, Fishing, and Forestry Occupations	6,868	7,147	4.06%	168	141	309
Construction and Extraction Occupations	187,792	195,659	4.19%	2,884	4,098	6,982
Installation, Maintenance, and Repair Occupations	152,257	156,081	2.51%	3,384	2,080	5,464
Production Occupations	181,313	183,120	1%	3,937	1,364	5,301
Transportation and Material Moving Occupations	229,190	236,903	3.37%	5,304	3,878	9,182

Note: Asterisks (***) indicate non-disclosable data.
Projections data is for Virginia Statewide. No data available for Accomack County.

Source: Virginia Employment Commission, Economic Information & Analytics,
Short Term Industry and Occupational Projections, 2015-2017.

Growth Occupations

	Employment			Average Annual Openings			Average Annual Salary
	Estimated 2014	Projected 2024	% Change	Replace -ments	Growth	Total	
Physical Therapist Assistants	237	384	62.03%	7	15	22	$63,846
Personal Financial Advisors	***	***	***	***	***	***	N/A
Forensic Science Technicians	***	***	***	***	***	***	N/A
Nurse Practitioners	178	272	52.81%	4	9	13	$107,709
Physical Therapists	301	459	52.49%	8	16	24	$97,079
Home Health Aides	138	209	51.45%	3	7	10	$22,081
Physician Assistants	94	139	47.87%	2	4	6	$103,536
Diagnostic Medical Sonographers	***	***	***	***	***	***	N/A
Occupational Therapists	133	185	39.1%	3	5	8	$108,484
Cardiovascular Technologists and Technicians	158	217	37.34%	3	6	9	$57,983
Taxi Drivers and Chauffeurs	109	147	34.86%	2	4	6	$33,107
Cooks, Restaurant	2,137	2,876	34.58%	56	74	130	$25,289
Ophthalmic Medical Technicians	***	***	***	***	***	***	N/A
Medical Assistants	392	525	33.93%	8	13	21	$34,402
Computer Systems Analysts	880	1,164	32.27%	11	28	39	$93,984
Food Servers, Nonrestaurant	368	486	32.07%	9	12	21	$20,811
Opticians, Dispensing	127	167	31.5%	3	4	7	$46,392
Physicians and Surgeons, All Other	280	368	31.43%	8	9	17	$252,988
Animal Trainers	***	***	***	***	***	***	N/A
Information Security Analysts	244	320	31.15%	3	8	11	$102,484

Note: Asterisks (***) indicate non-disclosable data.
Projections and OES wage data are for Bay Consortium (LWDA XIII). No data available for Accomack County.

Source: Virginia Employment Commission, Economic Information & Analytics,
Long Term Industry and Occupational Projections, 2014-2024
Occupational Employment Statistics (OES) Survey, 2017.

Declining Occupations

	Employment			Openings		
	Estimated 2014	Projected 2024	% Change	Replace-ments	Growth	Total
Mail Clerks and Mail Machine Operators, Except Postal Service	132	96	-27.27%	3	0	3
Postal Service Clerks	166	125	-24.7%	2	0	2
Postal Service Mail Carriers	369	278	-24.66%	7	0	7
Telecommunications Line Installers and Repairers	235	197	-16.17%	4	0	4
Computer Programmers	***	***	***	***	***	***
Radio and Television Announcers	126	109	-13.49%	4	0	4
Molders, Shapers, and Casters, Except Metal and Plastic	***	***	***	***	***	***
Paper Goods Machine Setters, Operators, and Tenders	471	413	-12.31%	7	0	7
Printing Press Operators	182	161	-11.54%	3	0	3
Tool Grinders, Filers, and Sharpeners	116	104	-10.34%	3	0	3
Engineering Technicians, Except Drafters, All Other	250	225	-10%	6	0	6
Telemarketers	***	***	***	***	***	***
Helpers--Production Workers	232	215	-7.33%	8	0	8
Industrial Engineers	123	116	-5.69%	4	0	4
Packaging and Filling Machine Operators and Tenders	211	199	-5.69%	8	0	8
Food Batchmakers	***	***	***	***	***	***
Surveying and Mapping Technicians	***	***	***	***	***	***
Tellers	636	603	-5.19%	25	0	25
Social Scientists and Related Workers, All Other	196	186	-5.1%	2	0	2
Weighers, Measurers, Checkers, and Samplers, Recordkeeping	119	113	-5.04%	4	0	4

Note: Asterisks (***) indicate non-disclosable data.
Projections data is for Bay Consortium (LWDA XIII). No data available for Accomack County.

Source: Virginia Employment Commission, Economic Information & Analytics,
Long Term Industry and Occupational Projections, 2014-2024.

Consumer Price Index (CPI)

All Urban Consumers (CPI-U)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Ann.	% chg
2008	211.080	211.693	213.528	214.823	216.632	218.815	219.964	219.086	218.783	216.573	212.425	210.228	215.303	3.8
2009	211.143	212.193	212.709	213.240	213.856	215.693	215.351	215.834	215.969	216.177	216.330	215.949	214.537	-0.4
2010	216.687	216.741	217.631	218.009	218.178	217.965	218.011	218.312	218.439	218.711	218.803	219.179	218.056	1.6
2011	220.223	221.309	223.467	224.906	225.964	225.722	225.922	226.545	226.889	226.421	226.230	225.672	224.939	3.2
2012	226.665	227.663	229.392	230.085	229.815	229.478	229.104	230.379	231.407	231.317	230.221	229.601	229.594	2.1
2013	230.280	232.166	232.773	232.531	232.945	233.504	233.596	233.877	234.149	233.546	233.069	233.049	232.957	1.5
2014	233.916	234.781	236.293	237.072	237.900	238.343	238.250	237.852	238.031	237.433	236.151	234.812	236.736	1.6
2015	233.707	234.722	236.119	236.599	237.805	238.638	238.654	238.316	237.945	237.838	237.336	236.525	237.017	0.1
2016	236.916	237.111	238.132	239.261	240.229	241.018	240.628	240.849	241.428	241.729	241.353	241.432	240.007	1.3
2017	242.839	243.603	243.801	244.524	244.733	244.955	244.786	245.519	246.819	246.663	246.669	246.524	245.120	2.1
2018	247.867	248.991	249.554	250.546	251.588	251.989								

Urban Wage Earners and Clerical Workers (CPI-W)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Ann.	% chg
2008	206.744	207.254	209.147	210.698	212.788	215.223	216.304	215.247	214.935	212.182	207.296	204.813	211.053	4.1
2009	205.700	206.708	207.218	207.925	208.774	210.972	210.526	211.156	211.322	211.549	212.003	211.703	209.630	-0.7
2010	212.568	212.544	213.525	213.958	214.124	213.839	213.898	214.205	214.306	214.623	214.750	215.262	213.967	2.1
2011	216.400	217.535	220.024	221.743	222.954	222.522	222.686	223.326	223.688	223.043	222.813	222.166	221.575	3.6
2012	223.216	224.317	226.304	227.012	226.600	226.036	225.568	227.056	228.184	227.974	226.595	225.889	226.229	2.1
2013	226.520	228.677	229.323	228.949	229.399	230.002	230.084	230.359	230.537	229.735	229.133	229.174	229.324	1.4
2014	230.040	230.871	232.560	233.443	234.216	234.702	234.525	234.030	234.170	233.229	231.551	229.909	232.771	1.5
2015	228.294	229.421	231.055	231.520	232.908	233.804	233.806	233.366	232.661	232.373	231.721	230.791	231.810	-0.4
2016	231.061	230.972	232.209	233.438	234.436	235.289	234.771	234.904	235.495	235.732	235.215	235.390	234.076	1.0
2017	236.854	237.477	237.656	238.432	238.609	238.813	238.617	239.448	240.939	240.573	240.666	240.526	239.051	2.1
2018	241.919	242.988	243.463	244.607	245.770	246.196								

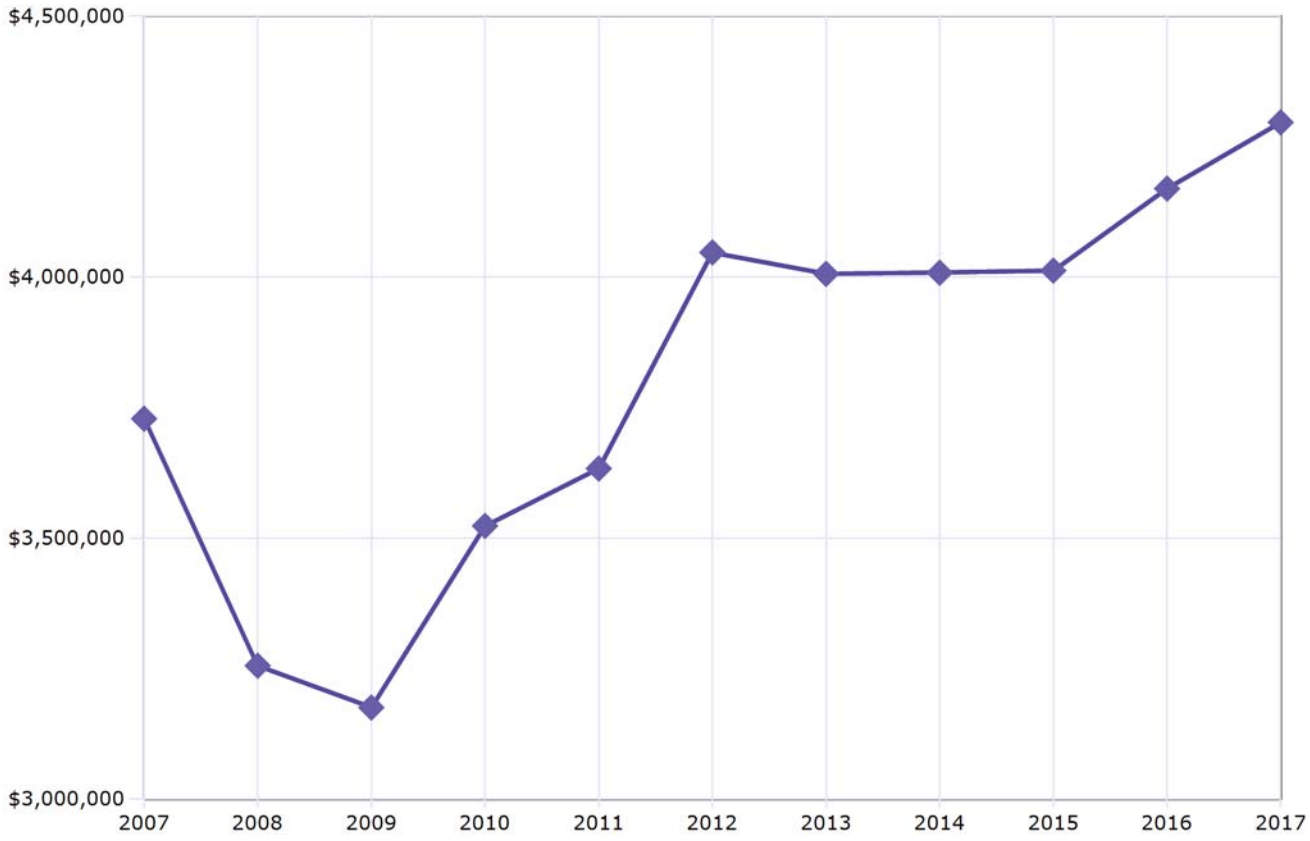
Note: CPI data is for the United States only. No data available for Accomack County.

The CPI-U includes expenditures by urban wage earners and clerical workers, professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees and others not in the labor force. The CPI-W only includes expenditures by those in hourly wage earning or clerical jobs.

Source: Bureau of Labor Statistics,
Consumer Price Indexes (CPI) Program.

Local Option Sales Tax

Trends



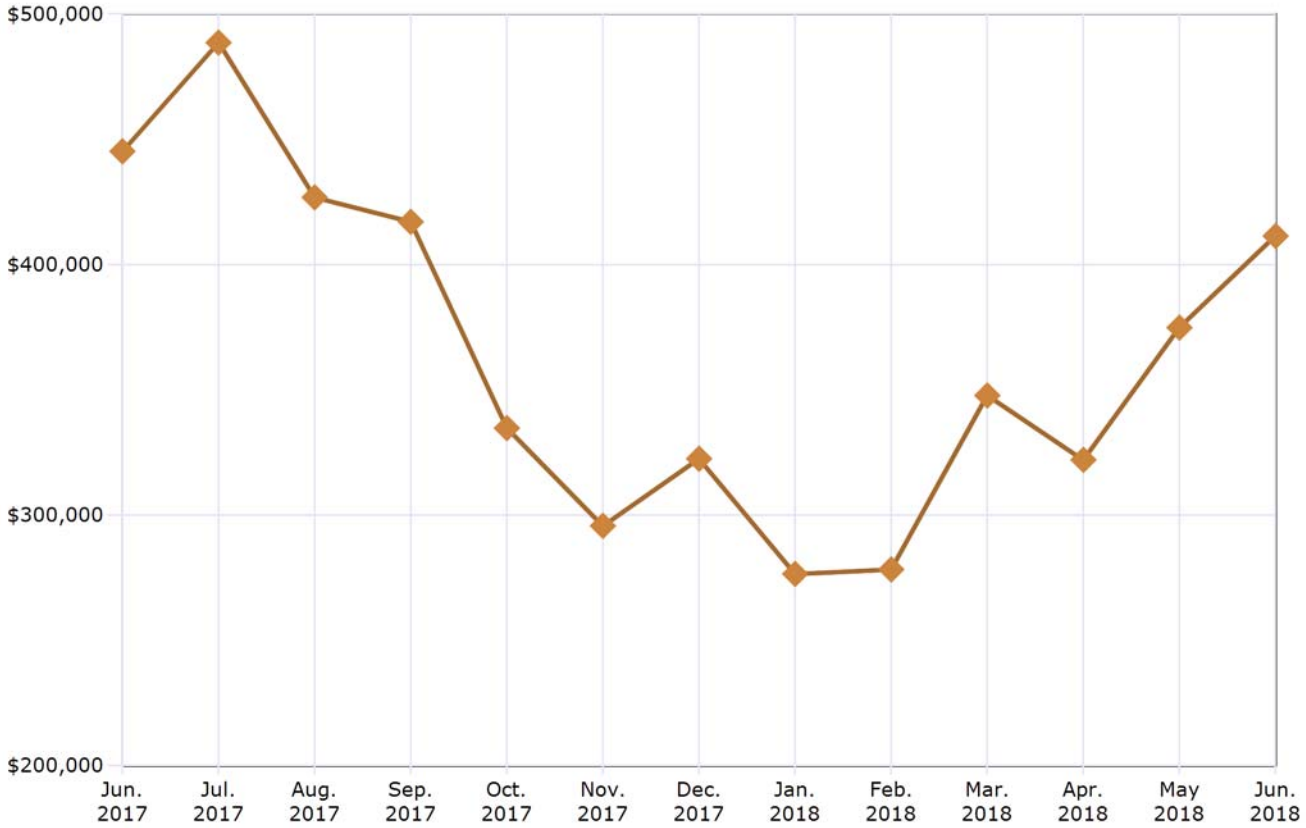
	Accomack County	Virginia
2007	$3,728,573	$1,056,766,678
2008	$3,255,449	$1,032,815,078
2009	$3,175,263	$979,594,664
2010	$3,523,262	$992,820,512
2011	$3,633,147	$1,035,981,229
2012	$4,047,100	$1,080,663,042
2013	$4,005,978	$1,093,292,668
2014	$4,008,223	$1,131,194,860
2015	$4,012,288	$1,179,611,271
2016	$4,169,342	$1,202,257,995
2017	$4,296,271	$1,232,981,515

Note: This data is based on Virginia sales tax revenues deposited, rather than the actual taxable sales figures as reported on a dealer's return.

Source: Virginia Department of Taxation, Revenue Forecasting.

Local Option Sales Tax

Past 12 Months



	Accomack County	Virginia
Jun. 2017	$445,209	$110,673,333
Jul. 2017	$488,570	$100,656,455
Aug. 2017	$426,842	$103,076,183
Sep. 2017	$417,056	$104,708,407
Oct. 2017	$334,746	$101,947,408
Nov. 2017	$295,751	$103,938,560
Dec. 2017	$322,532	$123,193,863
Jan. 2018	$276,569	$90,794,207
Feb. 2018	$278,351	$90,576,093
Mar. 2018	$347,760	$107,834,402
Apr. 2018	$322,100	$102,372,977
May 2018	$374,855	$110,211,496
Jun. 2018	$411,391	$112,529,037

Note: This data is based on Virginia sales tax revenues deposited, rather than the actual taxable sales figures as reported on a dealer's return.

Source: Virginia Department of Taxation, Revenue Forecasting.

IV. Education Profile

Overview

The Education Profile for Accomack County provides an assortment of data collected from the United States Census Bureau and the National Center for Education Statistics (NCES).

Related Terms and Definitions

Associate's degree
An award that normally requires at least two but less than four years of full-time equivalent college work.

Bachelor's degree
An award that normally requires at least four but not more than five years of full-time equivalent college-level work.

Post-baccalaureate certificate
An award that requires completion of an organized program of study equivalent to 18 semester credit hours beyond the bachelor's. It is designed for persons who have completed a bachelor's degree, but do not meet the requirements of a master's degree.

Master's degree
An award that requires the successful completion of a program of study of at least the full-time equivalent of one but not more than two academic years of work beyond the bachelor's degree.

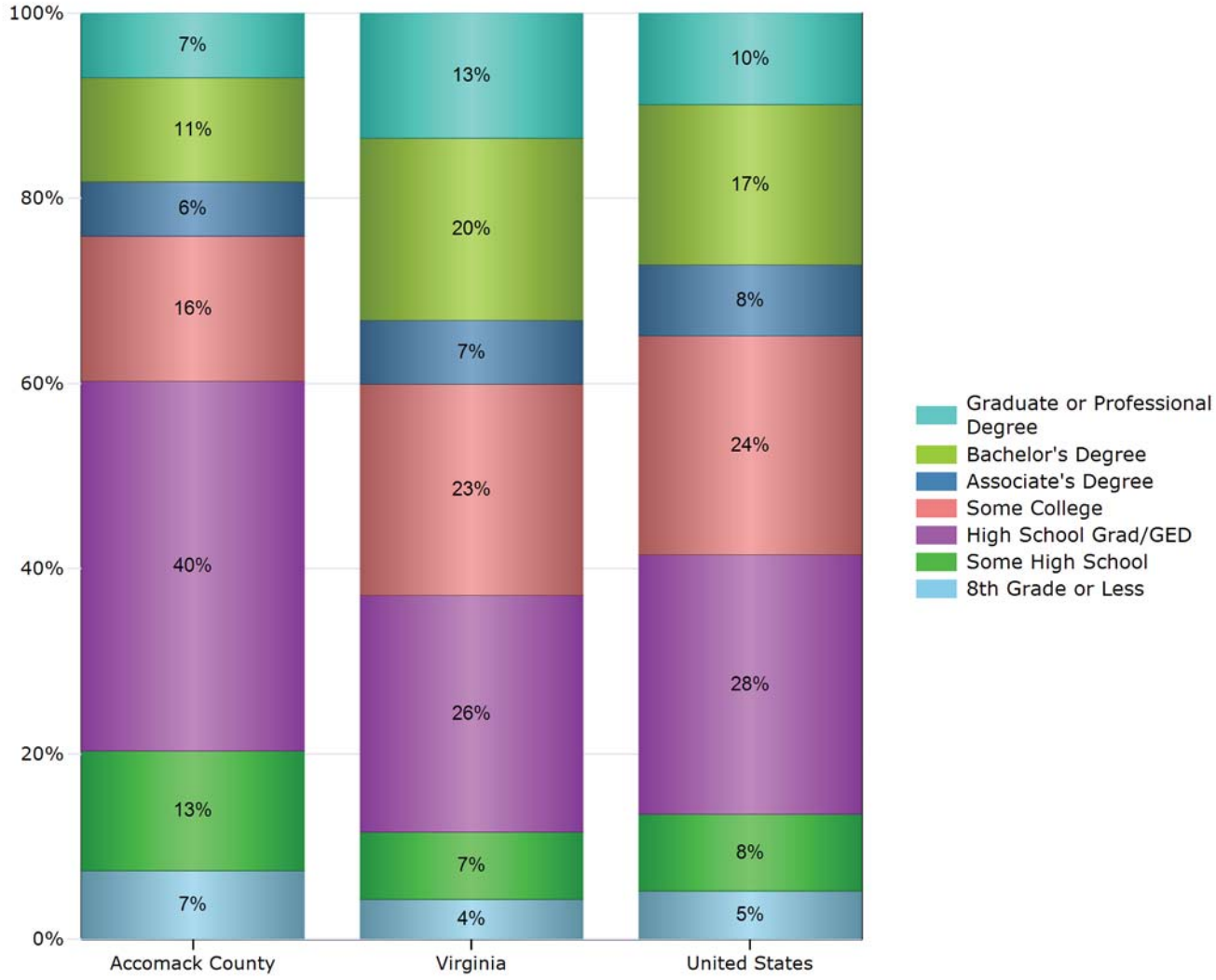
Post-master's certificate
An award that requires completion of an organized program of study equivalent to 24 semester credit hours beyond the master's degree, but does not meet the requirements of academic degrees at the doctor's level.

Doctor's degree
The highest award a student can earn for graduate study.

First-professional degree
An award that requires completion of a program that meets all of the following criteria: (1) completion of the academic requirements to begin practice in the profession; (2) at least two years of college work prior to entering the program; and (3) a total of at least six academic years of college work to complete the degree program, including prior required college work plus the length of the professional program itself.

Educational Attainment

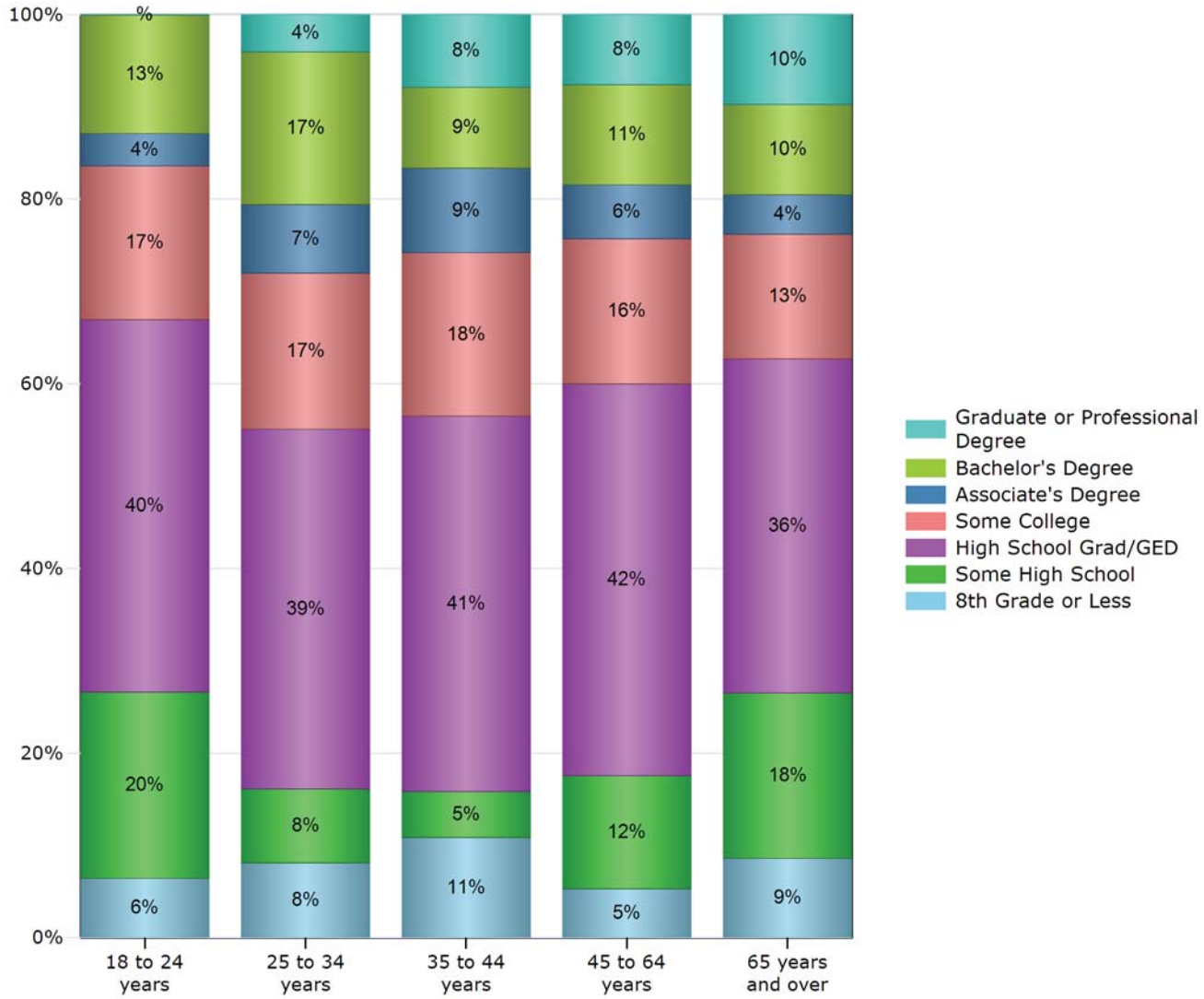
(Population 18 years and over)



	Accomack County	Virginia	United States
8th Grade or Less	1,935	275,329	12,639,425
Some High School	3,387	464,075	20,093,117
High School Grad/GED	10,450	1,633,105	68,044,371
Some College	4,099	1,457,887	57,431,237
Associate's Degree	1,539	440,219	18,586,866
Bachelor's Degree	2,936	1,258,661	42,027,629
Graduate or Professional Degree	1,829	862,686	24,008,551
	26,175	**6,391,962**	**242,831,196**

Source: U.S. Census Bureau
American Community Survey, 2011-2015.

Educational Attainment by Age

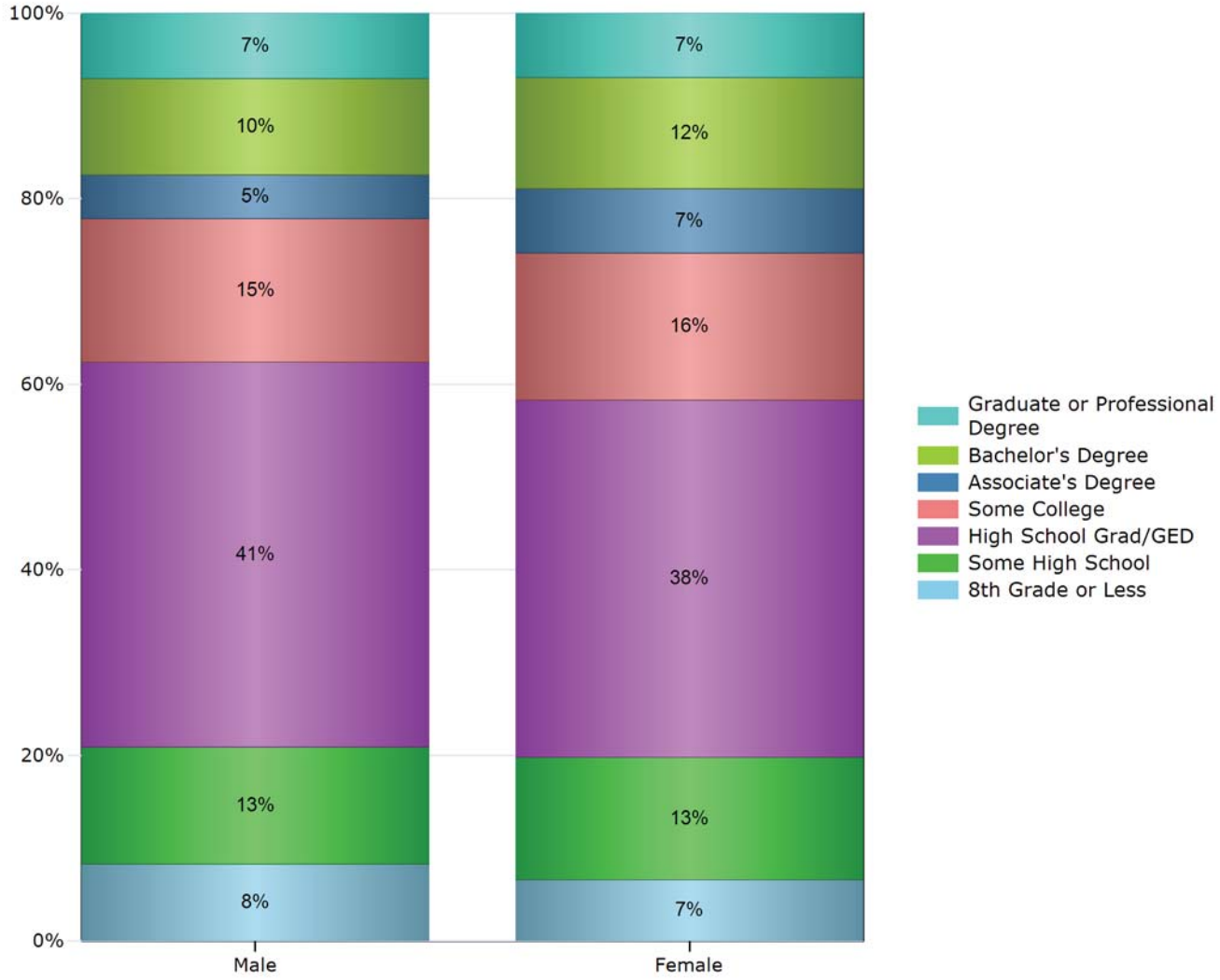


	18 - 24	25 - 34	35 - 44	45 - 64	65+	Total
8th Grade or Less	162	276	391	523	583	**1,935**
Some High School	510	272	179	1,212	1,214	**3,387**
High School Grad/GED	1,019	1,325	1,463	4,189	2,454	**10,450**
Some College	420	575	637	1,553	914	**4,099**
Associate's Degree	89	253	330	576	291	**1,539**
Bachelor's Degree	324	562	315	1,072	663	**2,936**
Graduate or Professional Degree	1	137	283	749	659	**1,829**
	2,525	**3,400**	**3,598**	**9,874**	**6,778**	**26,175**

Source: U.S. Census Bureau
American Community Survey, 2011-2015.

Educational Attainment by Gender

(Population 18 years and over)

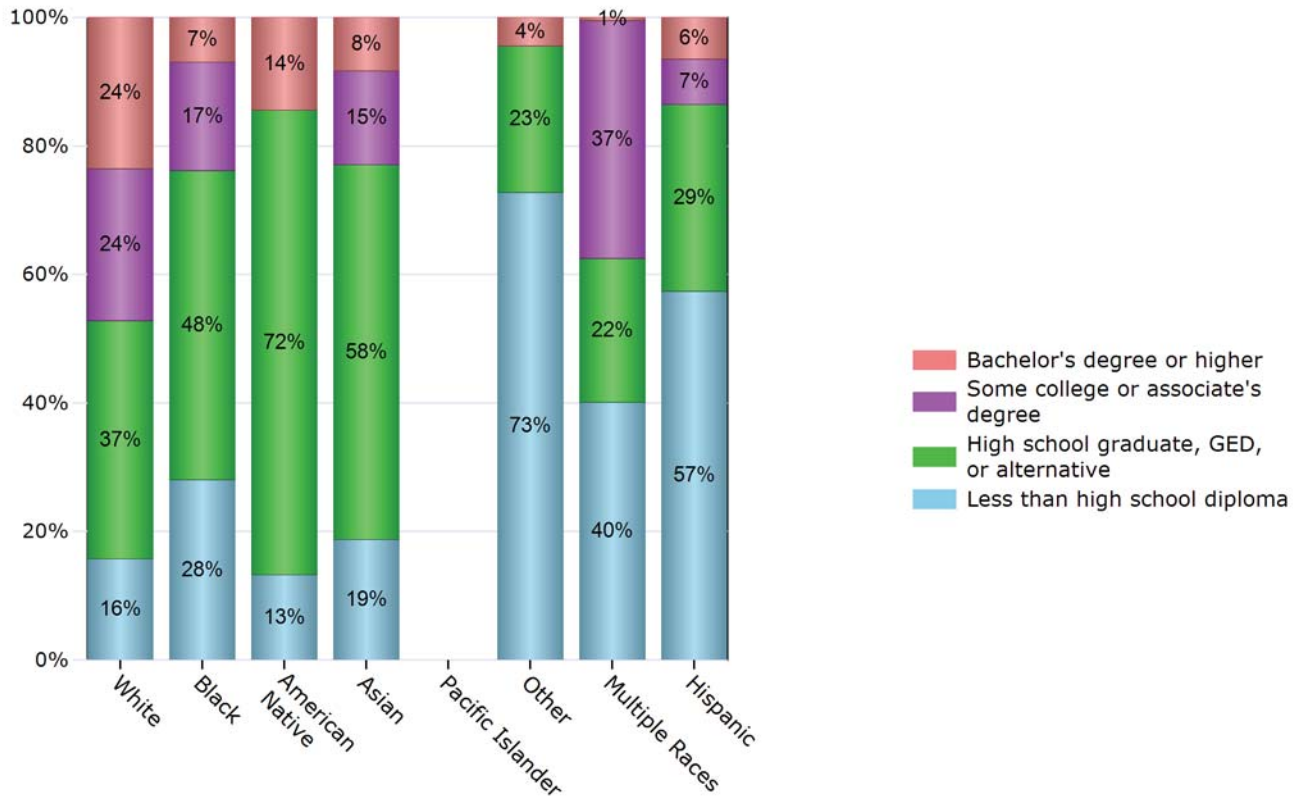


	Male	Female	Total
8th Grade or Less	1,033	902	**1,935**
Some High School	1,577	1,810	**3,387**
High School Grad/GED	5,178	5,272	**10,450**
Some College	1,929	2,170	**4,099**
Associate's Degree	588	951	**1,539**
Bachelor's Degree	1,297	1,639	**2,936**
Graduate or Professional Degree	879	950	**1,829**
	12,481	**13,694**	**26,175**

Source: U.S. Census Bureau
American Community Survey, 2011-2015.

Educational Attainment by Race/Ethnicity

(Population 25 years and over)



	Less than high school diploma	High school grad, GED, or alternative	Some college or associate's degree	Bachelor's degree or higher	Total
Race					
White	2,663	6,264	4,002	3,981	**16,910**
Black or African American	1,743	2,990	1,049	433	**6,215**
American Indian or Alaska Native	11	60	0	12	**83**
Asian	9	28	7	4	**48**
Native Hawaiian/Pacific Islander	0	0	0	0	**0**
Other	147	46	0	9	**202**
Multiple Races	77	43	71	1	**192**
Ethnicity					
Hispanic or Latino (of any race)	804	407	99	91	**1,401**
	5,454	**9,838**	**5,228**	**4,531**	**25,051**

Source: U.S. Census Bureau
American Community Survey, 2011-2015.

Graduate Data Trends

Accomack County

	Cert. <1 yr.	Cert. 1-2 yrs.	Assoc.	Cert. 2-4 yrs.	BA	Cert. Post-BA	MA	Cert. Post-MA	Ph.D.	1st Prof.
2006	37	17	55							
2007	44	7	45							
2008	39	10	46							
2009	33	20	65							
2010	40	42	62							
2011	29	53	75							
2012	41	91	71							
2013	40	64	78							
2016	31	50	33							

Note: This table only reflects degrees completed from institutions within Accomack County

Virginia Statewide

	Cert. <1 yr.	Cert. 1-2 yrs.	Assoc.	Cert. 2-4 yrs.	BA	Cert. Post-BA	MA	Cert. Post-MA	Ph.D.	1st Prof.
2006	4,213	4,298	14,431	102	39,247	608	12,429	225	1,440	2,490
2007	4,478	3,686	15,519	116	40,381	650	12,781	252	1,516	2,626
2008	5,197	3,813	16,207	134	39,160	725	13,802	334	1,080	2,168
2009	6,259	4,587	17,179	85	40,233	756	15,445	300	925	2,064
2010	7,648	8,158	21,014	374	45,361	915	18,889	601	2,100	2,598
2011	6,972	12,557	24,306	473	49,109	1,055	20,697	727	2,329	2,658
2012	8,825	12,801	26,199	620	53,051	1,215	21,516	686	2,095	3,298
2013	8,153	12,179	25,854	484	54,778	1,067	22,782	706	2,230	2,963
2016	8,643	11,912	25,125	608	61,852	2,032	24,717	640	2,328	2,931

Source: U.S. Department of Education,
Institute of Education Sciences (IES).

Did you know...

you can search over 2,300 school listings online provided by the U.S. Department of Education?

For this data and more, visit us on the web at:

www.VirginiaLMI.com

Training Providers

University of Mary Washington

1301 College Ave

Fredericksburg, VA 22401

Phone: (540) 654-1000

http://www.umw.edu

Number of 2016 graduates: 1,271

Career Training Solutions

10304 Spotsylvania Ave, Suite 400

Fredericksburg, VA 22408

Phone: (540) 373-2200 ext. 221

http://www.evcc.edu

Number of 2016 graduates: 119

Eastern Shore Community College

29300 Lankford Hwy

Melfa, VA 23410

Phone: (757) 789-1789

http://www.es.vccs.edu

Number of 2016 graduates: 114

Source: U.S. Department of Education, Institute of Education Sciences (IES), 2016.

APPENDIX B

General County Demographics (US Census Quick Facts)

QuickFacts

Accomack County, Virginia; UNITED STATES

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

ALL TOPICS	Accomack County, Virginia	UNITED STATES
Population estimates, July 1, 2017, (V2017)	**32,545**	**325,719,178**
PEOPLE		
Population		
Population estimates, July 1, 2017, (V2017)	**32,545**	**325,719,178**
Population estimates base, April 1, 2010, (V2017)	33,164	308,758,105
Population, percent change - April 1, 2010 (estimates base) to July 1, 2017, (V2017)	-1.9%	5.5%
Population, Census, April 1, 2010	33,164	308,745,538
Age and Sex		
Persons under 5 years, percent	▲ 5.6%	▲ 6.1%
Persons under 18 years, percent	▲ 20.8%	▲ 22.6%
Persons 65 years and over, percent	▲ 22.7%	▲ 15.6%
Female persons, percent	▲ 51.2%	▲ 50.8%
Race and Hispanic Origin		
White alone, percent (a)	▲ 68.1%	▲ 76.6%
Black or African American alone, percent (a)	▲ 28.6%	▲ 13.4%
American Indian and Alaska Native alone, percent (a)	▲ 0.6%	▲ 1.3%
Asian alone, percent (a)	▲ 0.7%	▲ 5.8%
Native Hawaiian and Other Pacific Islander alone, percent (a)	▲ 0.2%	▲ 0.2%
Two or More Races, percent	▲ 1.7%	▲ 2.7%
Hispanic or Latino, percent (b)	▲ 9.1%	▲ 18.1%
White alone, not Hispanic or Latino, percent	▲ 60.2%	▲ 60.7%
Population Characteristics		
Veterans, 2012-2016	3,138	19,535,341
Foreign born persons, percent, 2012-2016	6.6%	13.2%
Housing		
Housing units, July 1, 2017, (V2017)	21,267	137,403,460
Owner-occupied housing unit rate, 2012-2016	69.5%	63.6%
Median value of owner-occupied housing units, 2012-2016	$151,900	$184,700
Median selected monthly owner costs -with a mortgage, 2012-2016	$1,137	$1,491
Median selected monthly owner costs -without a mortgage, 2012-2016	$360	$462
Median gross rent, 2012-2016	$749	$949
Building permits, 2017	57	1,281,977
Families & Living Arrangements		
Households, 2012-2016	13,819	117,716,237
Persons per household, 2012-2016	2.31	2.64
Living in same house 1 year ago, percent of persons age 1 year+, 2012-2016	93.4%	85.2%
Language other than English spoken at home, percent of persons age 5 years+, 2012-2016	10.6%	21.1%
Education		
High school graduate or higher, percent of persons age 25 years+, 2012-2016	80.5%	87.0%
Bachelor's degree or higher, percent of persons age 25 years+, 2012-2016	18.3%	30.3%
Health		
With a disability, under age 65 years, percent, 2012-2016	7.8%	8.6%
Persons without health insurance, under age 65 years, percent	▲ 17.9%	▲ 10.2%

Economy		
In civilian labor force, total, percent of population age 16 years+, 2012-2016	56.5%	63.1%
In civilian labor force, female, percent of population age 16 years+, 2012-2016	51.1%	58.3%
Total accommodation and food services sales, 2012 ($1,000) (c)	53,568	708,138,598
Total health care and social assistance receipts/revenue, 2012 ($1,000) (c)	62,723	2,040,441,203
Total manufacturers shipments, 2012 ($1,000) (c)	667,932	5,696,729,632
Total merchant wholesaler sales, 2012 ($1,000) (c)	78,932	5,208,023,478
Total retail sales, 2012 ($1,000) (c)	348,195	4,219,821,871
Total retail sales per capita, 2012 (c)	$10,443	$13,443
Transportation		
Mean travel time to work (minutes), workers age 16 years+, 2012-2016	21.3	26.1
Income & Poverty		
Median household income (in 2016 dollars), 2012-2016	$38,503	$55,322
Per capita income in past 12 months (in 2016 dollars), 2012-2016	$23,337	$29,829
Persons in poverty, percent	▲ 20.0%	▲ 12.3%
BUSINESSES		
Businesses		
Total employer establishments, 2016	733	7,757,807
Total employment, 2016	8,679	126,752,238
Total annual payroll, 2016 ($1,000)	247,464	6,435,142,055
Total employment, percent change, 2015-2016	4.0%	2.1%
Total nonemployer establishments, 2016	2,310	24,813,048
All firms, 2012	2,997	27,626,360
Men-owned firms, 2012	1,716	14,844,597
Women-owned firms, 2012	802	9,878,397
Minority-owned firms, 2012	335	7,952,386
Nonminority-owned firms, 2012	2,560	18,987,918
Veteran-owned firms, 2012	212	2,521,682
Nonveteran-owned firms, 2012	2,536	24,070,685
GEOGRAPHY		
Geography		
Population per square mile, 2010	73.8	87.4
Land area in square miles, 2010	449.50	3,531,905.43
FIPS Code	51001	00

Value Notes

Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info icon to the TABLE view to learn about sampling error.

The vintage year (e.g., V2017) refers to the final year of the series (2010 thru 2017). *Different vintage years of estimates are not comparable.*

Fact Notes

- **(a)** Includes persons reporting only one race
- **(b)** Hispanics may be of any race, so also are included in applicable race categories
- **(c)** Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

- **D** Suppressed to avoid disclosure of confidential information
- **F** Fewer than 25 firms
- **FN** Footnote on this item in place of data
- **NA** Not available
- **S** Suppressed; does not meet publication standards
- **X** Not applicable
- **Z** Value greater than zero but less than half unit of measure shown
- **-** Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper ir distribution.

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

APPENDIX C

Disposal Agreement (Northampton and Accomack County)

COUNTY OF ACCOMACK

OFFICE OF THE COUNTY ADMINISTRATOR

23296 COURTHOUSE AVE.
ROOM 203
P. O. BOX 388
ACCOMAC, VIRGINIA 23301
(757) 787-5700
(757) 824-5444
(757) 787-2468 FAX

R. Keith Bull
County Administrator

March 11, 2003

Mr. Lance Metzler, County Administrator
County of Northampton
Post Office Box 66
Eastville, Virginia 23347

Re: Solid Waste Agreement

Dear Lance:

Please find attached an executed copy of the Solid Waste Disposal Agreement between Accomack and Northampton Counties, Virginia. It is my understanding from you that Accomack County can expect to start receiving solid waste from Northampton County on July 1, 2003. If there is any change in the anticipated date for delivering solid waste to Accomack County, please advise me.

Sincerely,

R. Keith Bull
County Administrator

RKB:ssg

Copy to: Michael Freitas, Public Works Director

SOLID WASTE DISPOSAL AGREEMENT
BETWEEN ACCOMACK AND NORTHAMPTON COUNTIES, VIRGINIA

THIS AGREEMENT is made this 20th day of November, 2002, by and between Accomack County, Virginia, a political subdivision of the Commonwealth of Virginia, hereinafter referred to as "County", and Northampton County, Virginia, a political subdivision of the Commonwealth of Virginia, hereinafter referred to as "Contractor".

WITNESSETH:

WHEREAS, the Contractor wishes to transport solid waste to the County's Accomack County Southern Landfill, Permit No. 091, and Accomack County's Sanitary Waste Baling Facility, Permit by Rule, No. 090, for final disposal; and

WHEREAS, County and Contractor desire to enter into a contract whereby Contractor may dispose of Contractor's Acceptable Waste (as defined herein) generated within the political subdivision of Northampton County in said County Landfill;

NOW THEREFORE, FOR AND IN CONSIDERATION of the reciprocal duties and obligations imposed upon the parties, and in further consideration of the benefits inuring to the parties hereunder, County and Contractor hereby covenant and agree as follows:

I.
DEFINITIONS

With the exceptions of definitions listed below, those definitions defined in 9 VAC 20-80-10 et seq., shall apply to solid waste related terms used in this document.

Acceptable Waste – Means Municipal Solid Waste, Construction Waste, Demolition Waste, Industrial Waste, Vegetative Waste, Yard Waste, as defined by 9 VAC 20-80-10 et seq., and special waste (on a case by case basis as approved by County), as defined in this Agreement and generated within the Contractor's Service Area, not specifically prohibited by this Agreement, law, regulation or permit are able to be disposed of at the County Landfill. Specifically excluded from Acceptable Waste are hazardous wastes.

Addenda – Written or graphic instruments issued to clarify, correct or change This Agreement. All such Addenda agreed to by both parties are to be attached hereto and become a part of this Agreement.

Acceptance Date – The date of execution of this Agreement.

County – Accomack County, Virginia.

County Administrator – Accomack County Administrator

Contractor – Northampton County, Virginia

County Landfill – Accomack County Southern Landfill, Permit 091, and Accomack County's Sanitary Waste Baling Facility, Permit by Rule, No. 090.

Landfill Operating Procedures - Written and verbal instructions detailing how daily operations are to be executed.

Service Area – Contractor's Service Area shall be limited to Northampton County, Virginia, and all existing or future incorporated towns therein.

Solid Waste Ordinance – Chapter 70, Solid Waste Ordinance of the Code of the County of Accomack, Virginia, as may be amended from time to time.

Subcontractor – An individual, firm, or corporation having a direct contract with Contractor or with any other Subcontractor to deliver Northampton County solid waste to an Accomack County Landfill.

Tipping Fees – Fees charged, either by weight or per unit item, for disposal of Acceptable Waste in the Landfill.

II.
RESPONSIBLIITY OF THE CONTRACTOR

1. Labor, Materials, Equipment and Subcontractors. The Contractor shall furnish, directly or through subcontractors selected by it, all work, labor, supervision and equipment required to deliver Acceptable Waste to the designated processing/disposal site. The Contractor is solely responsible for the actions of all persons who provide labor, services, equipment or material in connection with transporting Acceptable Waste to the County. The Contractor shall take all action necessary to monitor, supervise or otherwise control persons performing work by or on behalf of the Contractor and its subcontractors to ensure the Contractor's obligations are performed in accordance with this Agreement.

2. Progress Reports and Meetings.

(a) From time to time, upon the request of the County or the Contractor, the Contractor and County shall meet to discuss progress under the Agreement.

(b) On a monthly basis the Contractor shall send representatives, including the Solid Waste Supervisor, for an Operations Meeting with the County. The purpose of the meeting shall be to discuss and resolve any problems encountered during the implementation of this Agreement. The frequency and location of this meeting may change as the situation warrants.

3. Representations and Warranties of the Contractor: Contractor warrants that:

(a) It will not intentionally deliver or cause to be delivered to the County Landfill any waste not meeting the requirements of Acceptable Waste, as defined herein; and

(b) It will comply with all provisions of this Agreement, all rules and regulations of the County regarding the operation of the County Landfill, as well as all applicable federal, state and local laws, regulations and ordinances, as such rules and regulations and ordinances now or hereafter existing.

(c) The contractor shall be responsible for all costs associated with the testing,

removal, handling and disposal of any waste other than Acceptable Waste delivered by the Contractor or caused by the delivered by the Contractor to the County Landfill.

4. Use of Facilities. Subject to the terms and conditions hereof, Contractor agrees that it will cause only Acceptable Waste, as defined herein, from within its political boundaries to be delivered to the County Landfill. Contractor shall provide all labor, equipment and vehicles necessary to transport the Contractor's Acceptable Waste.

5. Landfill Operating Procedures. Contractor shall comply with the Solid Waste Ordinance and landfill operating procedures.

6. Identification of Waste Origin. Section VI, Paragraph 15, Environmental Remediation, subparagraph (e), details the methodology for determining Contractor's Liability with regard to remediation at the County Landfill. That methodology is based on knowing the total waste disposed at the County Landfill originating from the Contractor's Service Area. Therefore, the Contractor will insure commercial haulers hauling solid waste from the Contractor's Service Area to the County Landfill identify the origin upon arrival at the landfill scale house.

III.
RESPONSIBILITY OF COUNTY

1. The County shall provide a permitted facility, governed by applicable regulations and operating procedures, for the disposal of Acceptable Waste from the Contractor.

2. County shall operate and maintain the County Landfill and provide certified scales for the weighing of all Acceptable Waste delivered to the County Landfill for disposal.

3. Usage. The County shall be solely responsible to establish rules and regulations and monitor all usage of the County Landfill to ensure only authorized residents and commercial establishments utilize the County Landfill.

4. Audit. County agrees to maintain all books, records and other documents relative to this Agreement for three (3) years. Contractor and its representatives shall have access to all applicable books and records regarding the services performed hereunder during normal business hours and in the presence of a representative of County.

5. The County will immediately notify the Contractor when it reasonably appears that this agreement will terminate before December 31, 2012 as outlined in Section VI, Special provisions, Paragraph 2, Term and Extensions, Subparagraph (a).

IV.
CHARGES AND PAYMENT FOR SERVICES

1. Tipping Fee. The Tipping Fee to be charged by County to Contractor for disposal of Acceptable Waste in the County Landfill pursuant to this Agreement shall be established in accordance with the County Ordinance and shall include any additional fees that are imposed upon the County by the Commonwealth of Virginia or the Federal Government.

2. Payment. Tipping Fees will be billed to Contractor once per month with invoices and supporting data to the Contractor for the first through the last day of the calendar month.

Payment of any invoice submitted to Contractor shall be due to County forty-five (45) days from receipt of the invoices. Contractor shall pay County interest on the unpaid amount. Unless otherwise provided under the terms of this Agreement, interest shall accrue at the rate of one percent (1%) per month.

Monthly bills shall be submitted to Contractor at the following address;

County Administrator's Office
Post Office Box 66
Eastville, Virginia 23347

Payments shall be submitted to County at the following address:

Accomack County Dept. of Public Works
Post Office Box 52
Tasley, Virginia 23441

V.
TRANSPORTATION

1. Hours of Operation. The County Landfill shall be open for use by Contractor during normal operating hours. The County shall give the Contractor as much advance written notice as possible of change in the operating hours of the Landfill. The County Landfill will be closed Thanksgiving Day and Christmas Day. Contractor shall be notified of Landfill closures due to inclement weather or any other schedule changes as soon as possible

2. Measurement of Waste. Contractor hereby agrees to have Acceptable Waste weighed by the County at the County Landfill to which Contractor transports such Acceptable Waste for disposal and both parties shall rely upon such weight measurement for determination of the amount of Acceptable Waste received and disposed of by Contractor. Only Acceptable Waste shall be transported by Contractor to the County Landfill. A monthly transaction summary of Contractor's activity shall be provided the Contractor as an attachment to each invoice submitted by County to Contractor for payment.

3. Title to Waste. Title to all Acceptable Waste delivered to the County during the term of this Agreement and in accordance with its terms shall vest in the County upon delivery of such Acceptable Waste to the County Landfill and acceptance of such Acceptable Waste by the County. Prior to delivery to the County Landfill, title to and liability for the Acceptable Waste shall be in, and all risks and responsibilities therefore shall be born by Contractor. Provided, however, title to and liability for all waste other than Acceptable Waste shall be in and remain with Contractor at all times, and all risks and responsibilities therefore shall be in and remain with Contractor at all times. If Contractor delivers or causes to be delivered to the County a waste other than Acceptable Waste, County may in its sole discretion or as may be required by applicable law, remove and dispose of any waste other than Acceptable Waste in compliance with applicable law and regulation and charge Contractor for the costs thereof after first notifying and providing Contractor reasonable opportunity to promptly remove and dispose of the waste other than Acceptable Waste in compliance with applicable law and regulation. Notwithstanding anything in this Agreement to the contrary, County has the right to:

(i) reject or refuse to accept any load of solid waste delivered to the County

Landfill if such load includes any waste other than Acceptable Waste or if County reasonably believes Contractor has breached (or is breaching) or is in default of its warranties or agreements hereunder; and

(ii) reject or refuse to accept any load of solid waste delivered to the County Landfill if such load is not delivered in accordance with the Solid Waste Ordinance and Landfill Operating Procedures.

(iii) periodically off-load any solid waste for inspection in order to determine the presence of any waste other than Acceptable Waste.

VI.
SPECIAL PROVISIONS

1. Insurance.

(a) The Contractor shall maintain insurance sufficient to protect the Contractor, the County and the public, and shall be in levels set forth below. The Contractor shall furnish proof of all insurance to the County by certificates of insurance showing the County as an additional insured. Such certificates shall be kept up to date and show current insurance of the Contractor. They have a minimum cancellation time of thirty (30) days, said time to commence after delivery of said notice to the County at the address shown herein.

(b) The Contractor shall carry insurance with a company authorized to transact business in the Commonwealth of Virginia including all legal requirement from occupational disease.

(c) Insurance in the following amounts shall be required:

I Workers' Compensation with Employers Liability

$1,000,000 Per Accident
$1,000,000 Per Employee – Disease
$1,000,000 Policy Limit – Disease

ii. Commercial General Liability naming the County as additional insured

$2,000,000 General
$2,000,000 Products - Comp/OP
$2,000,000 Personal & ADV Injury
$2,000,000 Each Occurrence
$ 100,000 Fire Damage (Any One Fire)
$ 5,000 Med. Exp. (Any One Person)

iii. Automobile Liability covering any auto (Hazard 1)

$2,000,000 Combined Single Limit – Bodily Injury or Property Damage

* The County reserves the right to review this insurance coverage annually, but will otherwise review it every three (3) years for a possible upward revision which increase the Contractor agrees to provide.

2. Term and Extensions.

(a) This Agreement shall terminate on December 31, 2012 or at such time as the Accomack County Southern Landfill, Permit No. 091, reaches its permitted capacity or upon closure, whichever first occurs.

(b) All funds for payments by the Contractor under this Agreement are subject to the availability of an annual appropriation for this purpose by the Board of Supervisors of Northampton County. In the event of non-appropriation of funds by the Board of Supervisors of Northampton County for the services provided under this Agreement, the Contractor will provide three (3) months' notice prior to the close of the fiscal year, and terminate this Agreement, without termination charge or other liability to the Contractor, on the last day of the then current fiscal year except as set forth herein. If funds are not appropriated within the next fiscal year of the Contractor for the continuation of this Agreement, cancellation will be accepted by the County on three (3) months' prior written notice, but failure to give such notice shall be of no effect and the Board of Supervisors of Northampton County shall not be obligated hereunder beyond the date of termination.

3. Indemnification.

(a) County agrees to protect, indemnify, defend and save harmless Contractor, and its affiliates, if any, its present and future officials, officers, employees, agents, subcontractors, representative and assigns from any loss, claim, damage, liability, penalty, fine, forfeiture demand, cause of action, suit and costs and expenses incidental thereto (including cost of defense, settlement and reasonable attorney's fees), arising out of the negligent acts or omissions or the willful misconduct of County, its present or future officials, officers, employees, agents, subcontractors, representatives and/or assigns in its design, construction, maintenance, condition and operation of the County Landfill , except to the extent such occurrences were caused by or arise out of the negligent acts or omissions or the willful misconduct of Contractor or its present or future officials, officers, employees, contractors, agents, subcontractors, representatives and/or assigns. The indemnification shall survive the termination of this Agreement.

County agrees to protect, indemnify, defend and save harmless Contractor, its present and future officials, officers, employees, agents, subcontractors, representatives and assigns from any environmental or other loss, damage, liability, penalty, fine, forfeiture, demand, cause of action, suit and costs and expenses incidental thereto (including cost of defense, settlement and reasonable attorney's fees), arising out of, related to or associated with the County's delivery of any waste other than Acceptable Waste to the County Landfill, or the County's past, present or future disposal of any waste other than Acceptable Waste at the County Landfill, or arising out of the negligent acts or omissions or the willful misconduct of County or its present or future officials, officers, employees, agents, subcontractors, representatives and/or assigns, except to the extent such occurrences were caused by or arise out of the negligent acts or omissions or the willful misconduct of Contractor, its present or future officials, officers, employees, contractors, agents, subcontractors, representatives and/or assigns. The indemnification shall survive the termination of this Agreement.

(c) Contractor agrees to protect, indemnify, defend and save harmless County, its present and future officials, officers, employees, agents, subcontractors, representatives and assigns from any environmental or other loss, damage, liability, penalty, fine, forfeiture, demand, cause of action, suit and costs and expenses incidental thereto (including cost of defense, settlement and reasonable attorney's fees), arising out of, related to or associated with the delivery of any waste other than Acceptable Waste to the County Landfill, or the disposal of any waste other than Acceptable Waste at the County Landfill, or arising out of the negligent acts or omissions or the willful misconduct of Contractor or its present or future officials, officers, employees, agents, subcontractors, representatives and/or assigns, except to the extent such occurrences were caused by or arise out of the negligent acts or omissions or the willful misconduct of County, its present or future officials, officers, employees, contractors, agents, subcontractors, representatives and/or assigns. The indemnification shall survive the termination of this Agreement.

(d) Nothing in the provisions of paragraphs (b) and (c) above shall be construed to limit the remediation liabilities attributable to Northampton County as defined under Section VI, Paragraph 15, Environmental Remediation, of this Agreement.

4. Employment Discrimination By Contractor Prohibited. During the performance of this Agreement, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, or national origin, except where necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to the employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

(b) The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that the Contractor is an Equal Opportunity Employer.

(c) Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purposes of meeting the requirements of this section.

(d) The Contractor will comply with the provisions of Americans with Disabilities Act of 1990, which prohibits discrimination against individuals with disabilities in employment and mandates their full participation in both publicly and privately provided services and activities.

(e) The Contractor will include the provisions of the foregoing paragraphs in every subcontract or purchase order over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

5. Termination for Cause of Contractor.

(a) This Agreement shall remain in force for the term hereof. However, the County will have the right to terminate this Agreement sooner if the Contractor has failed to perform satisfactorily its obligations as set forth herein. In the event the County decides to terminate this Agreement for failure to perform satisfactorily, the County will give the Contractor forty-five (45) days written notice. Such forty-five (45) day period will begin upon receipt of

written notice by the Contractor from the County. The Contractor shall have the right to cure within the forty-five (45) days specified in the notice. If the Contractor cures the failure to perform within that period or if the default is of such a nature that it cannot be cured within such period but the Contractor is proceeding with all due diligence to effectuate a cure, the termination shall not take effect. If the Contractor fails to cure the default within the forty-five (45) days specified in the notice, this Agreement will be terminated, but the County will be entitled to receive compensation for Tipping Fees incurred by the Contractor and allocable to this Agreement prior to such termination.

(b) Except as otherwise directed, the Contractor shall cease delivery of Acceptable Waste on the date of receipt of notice of the termination or other date specified in the notice.

(c) In the event any termination for default shall be found to be improper or invalid by any court of competent jurisdiction, then such termination shall be deemed to have been a termination for convenience.

6. Termination for Convenience of County. This Agreement may be terminated by the County in whole or in part if the County shall determine that such termination is in the County's best interest or the County shall fail to appropriate funds for service to the Contractor. Any such termination shall be effected by the delivery to the Contractor of a written notice at least six (6) months before the date of termination, specifying to the extent to which performance of the work under the contract is terminated and the date upon which such termination becomes effective. After receipt of a written notice of termination for convenience, the Contractor shall continue to honor the Agreement until the date of termination specified in the notice as directed by the County.

7. Termination for Cause of County. This Agreement shall remain in force for the term hereof. However, the Contractor will have the right to terminate this Agreement sooner if the County has failed to perform satisfactorily its obligations as set forth herein. In the event the Contractor decides to terminate this Agreement for failure to perform satisfactorily, the Contractor will give the County at least forty-five (45) days written notice. Such forty-five (45) day period will begin upon mailing of the written notice by the Contractor. The County shall have the right to cure within the forty-five (45) days specified in the notice. If the County cures the failure to perform within that period or if the default is of such a nature that it cannot be cured within such period but the County is proceeding with all due diligence to effectuate a cure, the termination shall not take effect. If the County fails to cure the default within the forty-five (45) days specified in the notice, this Agreement will be terminated.

8. Termination for Convenience of Contractor. This Agreement may be terminated by the Contractor in whole or in part if the Contractor shall determine that such termination is in the Contractor's best interest. Any such termination shall be effected by the delivery to the County of a written notice at least six (6) months before the date of termination, specifying to the extent to which performance of the work under the contract is terminated and the date upon which such termination becomes effective. After receipt of a written notice of termination for convenience, the County shall continue to honor this Agreement until the date of termination specified in the notice.

9. Prohibition Against Asbestos or Asbestos-Containing Materials. For the purposes of this Agreement, asbestos or material containing asbestos is not an Acceptable Waste. If the Contractor or his subcontractor deposits asbestos or asbestos-containing

materials at the County Landfill in violation of this prohibition, the Contractor shall be responsible for all costs related to the immediate removal and legal disposal of the asbestos or asbestos-containing materials deposited by any of its employees, agents or subcontractors.

10. Safety. The Contractor shall comply with and ensure that the Contractor's personnel and subcontracted personnel comply with all current applicable local, state and federal policies, regulations and standards related to safety and health, including, by way of illustration and not limitation, the standards of the Virginia Occupational Safety and Health Administration for the general industry and for the construction industry.

11. Subcontracting of the Work. Should the Contractor subcontract delivery of Acceptable Waste as defined in the Agreement, all work performed by the Subcontractor shall be coordinated by the Contractor, and the Contractor will be responsible to the County for all work performed by any subcontractor or special consultant.

12. Contractual Claims. The decision of the County Administrator shall be final and conclusive unless the Contractor appeals within six (6) months of the date of the decision on the claim by the County Administrator to the Board of Supervisors in accordance with the requirements of 15.2-1245-1248 of the Virginia Code.

13. Delivery. Contractor shall deliver Acceptable Waste to the County Landfill unless otherwise directed by the County. All costs for handling and transportation charges to the County Landfill shall be borne by the Contractor.

14. Liability. Neither the Contractor nor the County will be held responsible for failure to perform the duties and responsibilities imposed by this Agreement if such failure is due to strikes, fires, "Acts of God," or other causes beyond the control of the Contractor or the County, that make performance impractical, impossible or illegal, unless otherwise specified in this Agreement.

15. Environmental Remediation

(a) The Contractor's maximum liability for remediation shall be based on the percentage of the total waste disposed of at the County Landfill originating from the Contractor.

(b) Contractor shall be liable for a share of any remediation costs commencing ten years after the first waste from the Contractor is accepted at the County Landfill.

(c) The percentage of the liability for any remediation costs increases with each year until the maximum liability is reached.

(d) Contractor will be liable for its proportional share of remediation costs for the life of the remediation.

(e) Addendum #1, "DETAIL OF METHODOLOGY FOR DETERMINING CONTRACTOR'S LIABILITY WITH REGARD TO REMEDIATION AT THE COUNTY LANDFILL (PERMIT 091) WITH EXAMPLE", shall be used in calculating the Contractor's percentage of liability for future environmental remediation.

(f) Early termination of the Agreement does not relieve the Contractor of environmental remediation as addressed herein.

16. Weight Based Fee Exclusion. The Solid Waste Ordinance provides for a weight based fee exclusion. This exclusion does not extend to persons residing within the Contractor's Service Area, nor does it apply to persons operating vehicles bearing the vehicle identification stickers from the Contractor's Service Area.

17. Closure and Post Closure. Funds for closure and post closure are generated as a function of landfill tipping fees. The Contractor is not responsible for costs associated with closure and post closure activities other than environmental remediation as prescribed in Paragraph 15 of Section VI Special Provisions.

18. Environmental Monitoring. Normal environmental monitoring is a part of routine operating activities and therefore covered by tipping fees charged. The Contractor shall share in the additional cost of monitoring associated with remediation activities at the agreed-upon pro-rated percentages. Additional costs are defined as those costs of monitoring associated with any remediation activities that are in excess of normal monitoring activities in place at the time the event triggering the remedial action was discovered.

19. Special Waste. Special Waste may be permitted to be delivered to the County Landfill for disposal upon obtaining prior written approval of the County Administrator of Accomack County and compliance with such rules and regulations of the County and the Virginia Department of Environmental Quality applying to Special Waste. Fees associated with the delivery of Special Waste shall be negotiated and determined on a case-by-case basis by the County and the Contractor, all of which shall occur prior to delivery of Special Waste to the County Landfill.

20. Waste not accepted from the Contractor for disposal at the County Landfill. This shall mean those wastes prohibited or restricted by the Virginia Department of Environmental Quality Regulations including Hazardous, Toxic, Infectious, and Regulated Medical Waste materials or any other materials that could pose an unreasonable threat to human health or the environment or adversely affect the operation of the County Landfill, including but not limited to:

explosives
pathological and/or biological waste
radioactive materials
human remains
animal remains (prearrangement only)
motor vehicles and/or associated parts
agricultural and farm machinery and equipment
agricultural chemicals and/or fertilizers
drums or closed containers (unless washed, both ends removed and crushed prior to acceptance)
liquid wastes
crank case/gear oils
cutting oils
paints
acids or caustics
poisons
fly or bottom ash
harden gears/shafts
noxious materials
hot loads
lead acid batteries
non-compactable objects larger than 4'x4'

21. Sludge Analysis. Persons disposing of sludge in the County Landfill shall provide an analysis of the sludge prior to disposal in the County Landfill and once annually thereafter. Analytical data required in the report shall be determined by the County on a case-by-case basis.

22. Contractor reserves the right to perform or have performed at its expense, a topographical survey, either by ground survey or photogrammetry, of the County Landfill prior to the scheduled acceptance date when the acceptance of Acceptable Waste generated within the Contractor's Service Area is to begin. If the Contractor opts to perform the topographical survey, the Contractor shall, at the Contractor's expense, provide the County with a copy of the topographical survey, which shall be made a part of this Agreement.

23. If, during the term of this Agreement as defined in Section VI herein, the County Landfill is unable to accept all or a portion of the Acceptable Waste stream from the Contractor due to County Landfill equipment or maintenance considerations, the Contractor will at his expense transport such waste to the Accomack County Northern Landfill, Permit No. 461, and/or Accomack County Sanitary Waste Baling Facility, Permit by Rule, No. 112, for disposal. Under such conditions, the terms and conditions required of the Contractor at the County Landfill will be applicable to the Accomack County Northern Landfill, Permit No., 461, and Accomack County Sanitary Waste Baling Facility, Permit by Rule, No. 112.

VII.
GENERAL PROVISIONS

1. Neither party shall assign or transfer, or permit the assignment or transfer of, this Agreement or the rights hereunder without prior written consent of the other party, which consent shall not be unreasonably withheld, delayed or conditioned. The County may assign this Agreement to a duly created Authority provided the County has provided Contractor with appropriate assurances regarding provision of services hereunder.

2. This Agreement constitutes the entire agreement and understanding between the parties hereto, and it shall not be considered modified, altered, changed or amended in any respect unless in writing and signed by each party hereto.

3. This is an Agreement for the performance of specific services described herein. Under no circumstances or conditions shall the transportation services by the Contractor be deemed a public function of the County.

4. If any declared term, clause or provision of this Agreement or the application thereof to any person or circumstances shall, to any extent, be illegal, invalid or unenforceable under present or future laws effective during the term hereof, then it is the intention of the parties hereto that the remainder of this Agreement, or the application of such term cause or provision to persons or circumstances other that those to which it is held illegal, invalid or unenforceable, shall not be affected thereby, and it is also the intention of the parties hereto that in lieu of each term, clause or provision that is illegal, invalid or unenforceable, there be added as part of the Agreement a term, clause or provision as similar in terms to such illegal, invalid or unenforceable term, clause or provision as may be possible and be legal, valid and enforceable.

5. The covenants, terms, conditions and provisions of this Agreement shall extend to and be binding upon the successors and approved assigns of the respected parties.

6. All notices or other communications to be given hereunder shall be in writing and shall be deemed given when mailed by registered or certified United States mail, addressed as follows:

To the County:

County Administrator for Accomack County
Post Office Box 388
Accomac, VA 23301

To the Contractor:

County Administrator for Northampton County
Post Office Box 66
Eastville, VA 23347

Any changes of address by either party shall be effective only if afforded to the other in the same manner as specified above.

7. To the extent definition of specific terms is not provided herein but is nonetheless required by the context, it is the intention of the parties to incorporate herein the definitions as set forth, and amended from time to time, in the Virginia Solid Waste Management Regulations as promulgated by the Virginia Waste Management Board or other customary definitions in effect as of the date hereof, except to the extent subsequent law or regulation shall expressly or implicitly mandate a revised definition.

8. Whenever the consent, approval or cooperation of one party is expressly or implicitly required or necessary by the terms hereof or to effect successful performance of the other party such consent, approval or cooperation shall not be unreasonably withheld, denied or delayed.

IN WITNESS WHEREOF, each party has caused this contract to be executed in its behalf by their respective officers pursuant to authorization contained in duly adopted resolution or ordinances, as the case may be.

ACCOMACK COUNTY, VIRGINIA

By: _____
Chairman of the Board

ATTEST:
_____
County Administrator

NORTHAMPTON COUNTY, VIRGINIA,

By: _____
Chairman of the Board

ATTEST:
_____
County Administrator

ADDENDUM #1

DETAIL OF METHODOLOGY FOR DETERMINING CONTRACTOR'S LIABILITY WITH REGARD TO REMEDIATION AT THE COUNTY LANDFILL - WITH EXAMPLE

1. The Contractor's maximum liability for remediation will be based on the percentage of the total waste disposed of at the County Landfill originating from the Contractor's Service Area.

2. The Contractor will be liable for a share of any remediation costs commencing ten years after the first waste from the Contractor's Service Area is accepted at the County Landfill. This is based on the assumption that any contaminate associated with the waste originating from the Contractor's Service Area would take ten years to migrate vertically through the active cell and laterally to a monitoring well.

3. It is assumed that the possibility of waste originating from the Contractor's Service Area contributing to any problem requiring new remediation increases with time. Therefore the percentage of the liability for any remediation costs increases with each year until the maximum liability is reached.

4. Prior to accepting waste from the Contractor's Service Area, the total existing waste disposed of at the County Landfill will be determined by adding the below listed tonnage:

a. 219,419 tons from pre-scale operations. This tonnage was estimated using the following methodology:

1) Estimation of Land Area

a) The County Landfill Potentiometric Surface Map (attached) was used as a base map for estimating land area. Since both the "Pre-88" and the current active fill areas have been employed using the cut and fill method of solid waste disposal, both are included in the area estimate. (area outlined in yellow on attached map)

b) A grid was superimposed over these areas and the "grid count" method used to estimate area involved. The total estimated area is 2,633, 027 ft^2 or 292,588.56 yd^2.

2) Estimation of Waste Volume

a) A common practice used by operators in a cut and fill operation was to dig a trench to near the groundwater elevation before beginning fill operations. To estimate volume of in-place waste, 2001 groundwater elevations were averaged for the monitoring wells with the exception of monitoring well No. 1S. The average depth to groundwater during this drought year was 7.5 feet. Therefore, 7.5 feet was used for the depth to trash. Accounting for the space left between trenches, an estimated 60% of the area was used for fill operations. With the amount of compaction associated with this method of operation, the estimated weight of 1 yd^3 of waste is 0.5 tons.

b) Calculation

[7.5 ft] x [2,633,027 ft^2] = 19,747,702.5 ft^3

[19,747,702.5 ft^3]/[27 ft^3 per 1 yd^3] = 731,396.39 yd^3

[731,696 yd^3] x [.60] = 438,838 yd^3 of fill volume

[438,838 yd^3] x [0.5 tons per 1 yd^3] = **219,419 tons of waste in-place from cut and fill operation**

b. The total weighed tonnage from the time the scales were installed in 1988 until waste originating from the Contractor's Service Area is first accepted at the County Landfill

5. The Contractor's maximum liability for any remediation will be determined by:

[total tons of waste originating from Contractor's Service Area] x 100
[total tons of waste disposed of at the County Landfill]

6. The total maximum percentage of Contractor liability for any remediation calculated above will be prorated over ten years commencing with the tenth year after solid waste originating from the Contractor's Service Area is first accepted. Thereafter, the Contractor will be liable for the maximum percentage of liability for any remediation.

EXAMPLE

If, the Contractor began disposing of waste at the County Landfill on 1 January 2002

and, the Contractor disposed of 12,000 tons of waste per year until closure in 2012

and, Accomack County disposed of 20,000 tons of waste during the same period

then

the total waste disposed of at the County Landfill on 31 December 2012 is

219,419 tons (Pre-Scale Waste)
\+ 246,548 tons (Weighed Waste from 1988 to 2001)
\+ 132,000 tons (From Contractor's Service Area 2002-2012)
\+ 220,000 tons (From Accomack County 2002-2012)
= **817,967 tons**

therefore
the Contractor's maximum percentage of liability would be:

[[132,000]/[817,967]]*100 = **16.14%**

The Contractor would be liable for any remediation of a problem that is first detected in 2012 or beyond. The percent of liability for any remediation occurring in a given year would be as follows, and increases each year for the life of the remediation:

2012 1.614%
2013 3.228%

2014	4.842%
2015	6.456%
2016	8.070%
2017	9.684%
2018	11.298%
2019	12.912%
2020	14.526%
2021	16.14%
2022	16.14%
.	.
.	.
.	.

In this example, if a problem requiring remediation is first detected in 2014, the Contractor's share of the remediation cost for that problem in 2014 would be 4.842% and increase each year, to a maximum of 16.14%, for the life of the remediation.

ATTACHMENT: Potentiometric Surface Map: 2000, South Landfill, Accomack County, VA, dated 9 February 2001

TENTIOMETRIC SURFACE MAP: 2000

)UTH LANDFILL

)MACK COUNTY, VIRGINIA

APPENDIX D

Economic Profiles (VEDP, Eastern Shore, Virginia)

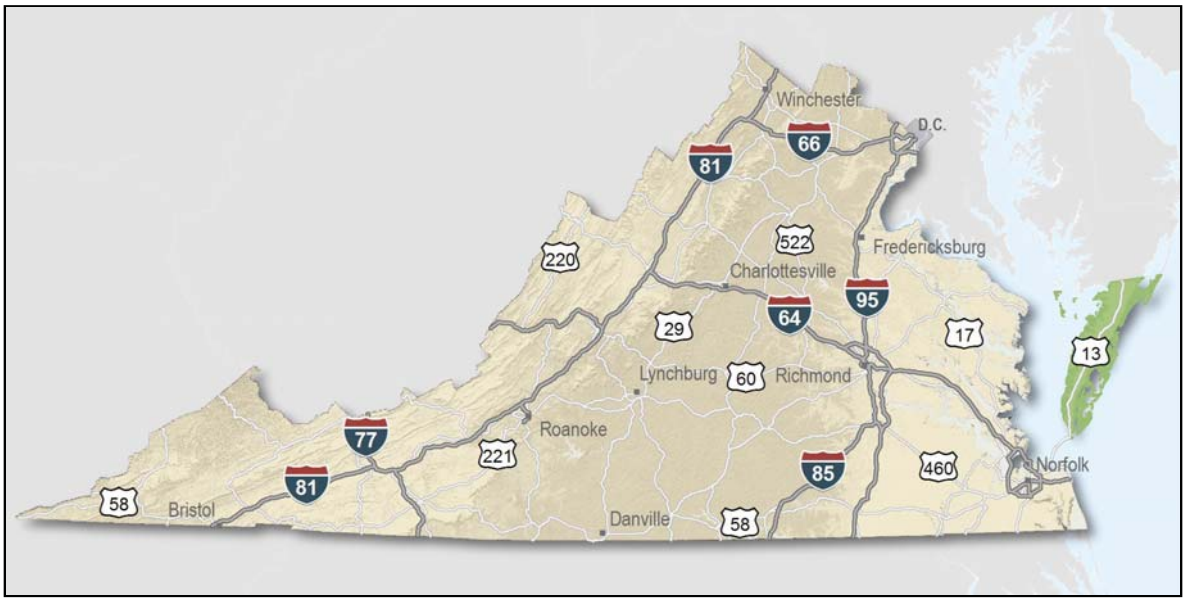
Eastern Shore, Virginia

Overview

Only a few locations can guarantee the right combination of resources that are crucial to your business's success. Virginia's premier location offers excellent domestic and international access. Centrally located on the U.S. East Coast, 40 percent of the U.S. population is within a day's drive, and our integrated transportation system of highways, railroads, airports and seaports ensures that you can reach every one of your markets efficiently. Close proximity to Washington, D.C. facilitates contact with policy makers and the federal government system.

Virginia continues to rank among America's leading states for business by CNBC and Forbes.com. Business-first values, easy access to markets, stable and competitive operating costs, and a talented workforce all drove Virginia to the top. This unique combination of assets has encouraged businesses to prosper here for more than 400 years. Like you, they searched the world over for that convergence of resources that would help ensure their prosperity. For them, their search ended here. Chances are yours will too.

- AAA bond rating- Virginia has maintained a AAA rating since 1938, longer than any other state.
- Right-to-work law allows individuals the right to work regardless of membership in a labor union or organization.
- Corporate income tax rate of 6% has not been increased since 1972.
- Headquarters to 37 Fortune 1000 firms.
- Headquarters to 56 firms each with annual revenue over $1 billion.
- More than 21,400 high-tech establishments operate in Virginia.
- More than 700 internationally-owned businesses from 40 countries are located in Virginia.
- Ranks third among the 50 states as a recipient of federal R&D funds.
- Streamlined permitting process.
- Recruitment training programs to help new businesses become operational faster.
- Programs at little or no cost to help businesses increase international sales.

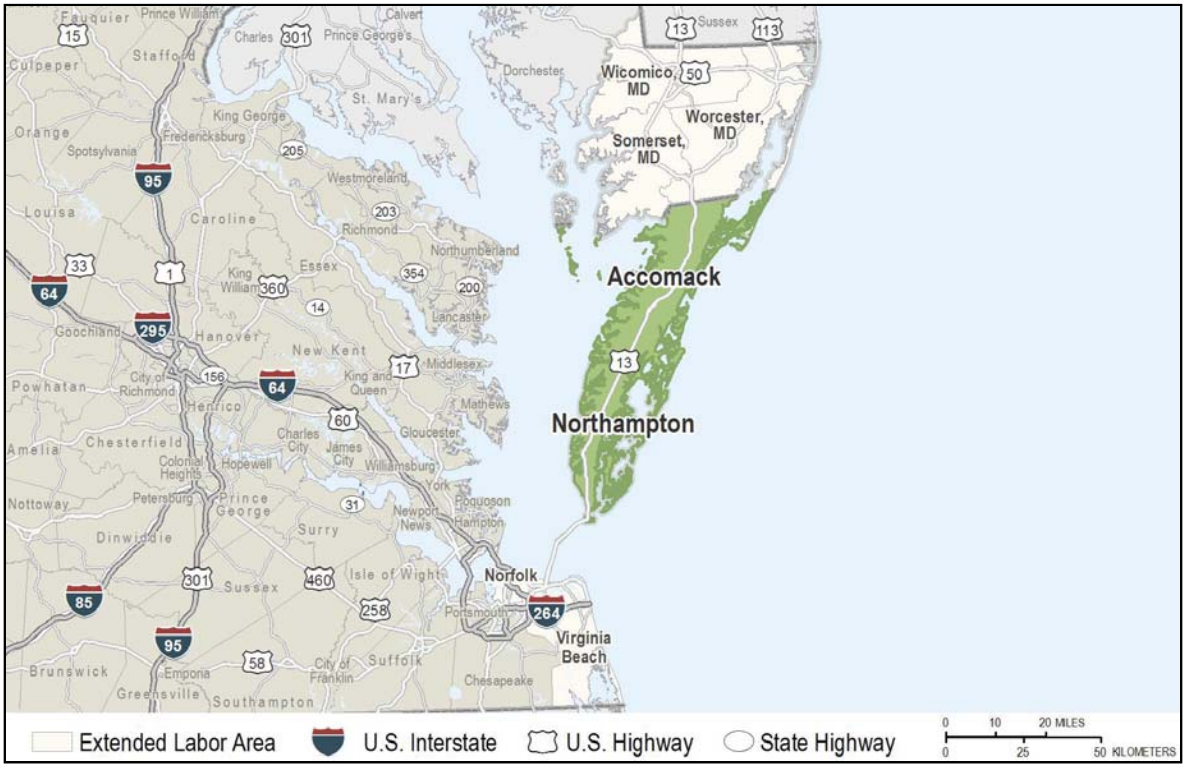


Location

The Eastern Shore is located at the southern tip of the Delmarva Peninsula. This 662-square mile region is bounded on the north by the Maryland state line, on the east by the Atlantic Ocean, and on the south and west by the Chesapeake Bay.

Traditionally known for its extensive agricultural and seafood production, the region is also home to the National Aeronautics and Space Administration's launch facility at Wallops Island. North-south rail service and a four-lane primary highway traversing the peninsula enhance the region's Eastern Seaboard location. The Chesapeake Bay Bridge-Tunnel places the community within easy reach of the Port of Hampton Roads.

The town of Accomac is located 77 miles north of Norfolk; 163 miles east of Richmond, the state capital; 189 miles southeast of Washington, D.C.; and 339 miles south of Philadelphia, Pennsylvania.



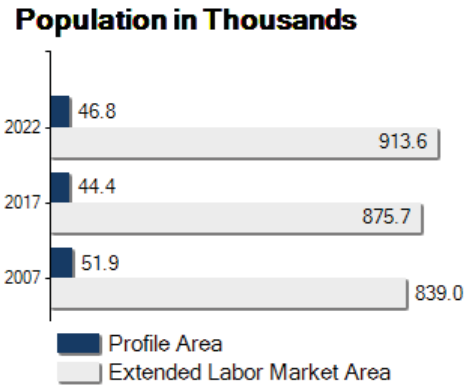
Eastern Shore

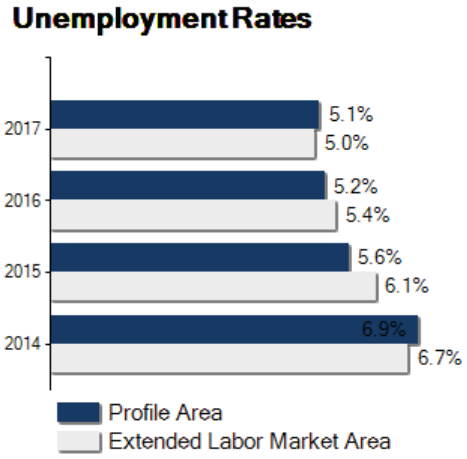
Virginia's Eastern Shore seeks to build its economy by attracting new manufacturing and service industries, diversifying its agriculture and aquaculture sectors, improving its tourism infrastructure, supporting its aerospace and military sector, and growing its entrepreneurial skills by encouraging small businesses. To accomplish these goals both of the Shore's counties support the Eastern Shore of Virginia Economic Development Commission, hold seats on the state-qualified Regional Partnership, and support individual industrial development authorities which manage respective industrial parks.

Credits: NASA/Terry Zapeach

Labor Market

Population		
Gender Distribution (2017)	**Male**	**Female**
Eastern Shore	48.6%	51.4%
Race/Ethnicity (2017)		
Classification	**Profile Area**	**Extended Labor Area**
White	29,472	551,129
Black	13,439	240,385
Two or More	792	32,054
Asian	352	46,218
American Indian or Alaska Native	255	4,387
Pacific Islander	81	1,496
Hispanic (may be of any race)	3,999	64,573
Median Age (2017)		
Accomack		47 years
Northampton		49 years





Labor Market

Civilian Labor Force (2017)	
Eastern Shore	21,351
Extended Labor Market Area	430,843
Total	452,194

Labor Force Participation (2012-2016)	
Eastern Shore	55.1%
Extended Labor Market Area	61.2%

Unemployment	
Unemployment Rate (June 2018)	
Eastern Shore	4.2%
Extended Labor Market Area	3.9%
Statewide	3.3%
Unemployed (2017)	
Eastern Shore	1,085
Extended Labor Market Area	19,320
Total	20,405
Underemployed (2nd Quarter 2018)	
Eastern Shore	2,633
Extended Labor Market Area	52,631
Total	55,264

Labor Market

Commute Time (2012-2016)		
Worked from home	767	4.1%
Under 15 minutes	6,937	38.4%
15-24 minutes	6,068	33.6%
25-34 minutes	2,402	13.3%
35-44 minutes	937	5.2%
45-59 minutes	913	5.1%
Over 60 minutes	820	4.5%
Mean Travel Time to Work (minutes)		
Accomack		21
Northampton		20

Additional Labor Resources	
High School Graduates Not Continuing (2016-2017)	44
Two-Year College Graduates (Spring 2017)	100
Two-Year College Enrollees (Fall 2017)	3,570
Total	3,714

Labor Market

Career Readiness Certificate (06/30/2017-06/30/2018)	
Virginia's Career Readiness Certificate (CRC) assists employers by certifying that a recipient possesses core skills in applied math, reading for information, and locating information. The CRC certification is based on established Workeys ® assessment tests. Virginia uses a three-tiered approach (bronze, silver, gold) to credentialing certificate holders that is based on the recipient's level of development skills.	
Eastern Shore	4
Extended Labor Market Area	1,953
Total	1,957

Educational Attainment	
On-Time Graduation Rate (Class of 2017)	87.5%
Percentage of Eastern Shore population age 25+ who are high school graduates (2012-2016)	80.2%
Percentage of Eastern Shore population age 25+ who have earned a Bachelor's Degree or higher (2012-2016)	19.2%

Labor Market

Employment by Sector* (1st Qtr. 2018)		
Agriculture Forestry Fishing and Hunting	788	4.7%
Mining Quarrying and Oil and Gas Extraction	0	0
Utilities	N.D.	N.D.
Construction	465	2.8%
Manufacturing	3,601	21.4%
Wholesale Trade	274	1.6%
Retail Trade	1,627	9.6%
Transportation and Warehousing	130	0.8%
Information	84	0.5%
Finance and Insurance	221	1.3%
Real Estate and Rental and Leasing	126	0.7%
Professional Scientific and Technical Services	1,023	6.1%
Management of Companies and Enterprises	72	0.4%
Administrative and Support and Waste Management	232	1.4%
Educational Services	106	0.6%
Health Care and Social Assistance	2,065	12.2%
Arts Entertainment and Recreation	139	0.8%
Accomodation and Food Services	1,445	8.6%
Other Services	541	3.2%
Total Government	3,788	22.5%
Federal Government	674	4.0%
State Government	462	2.7%
Local Government	2,652	15.7%
Unclassified	N.D.	N.D.
Total	16,864	100.0%

N.D. - Not Disclosed

*By Business Establishment

Labor Market

Major Employers	
Manufacturing	
Company	**Product/Service**
Bayshore Concrete Products Corp.	Prestressed structural components
New Ravenna	Mosaic art tile
Perdue Farms, Inc.	Poultry processing
Tysons Farms Inc.	Poultry processing
NonManufacturing	
Company	**Product/Service**
Chesapeake Bay Bridge Tunnel Authority	Bridge tunnel operations
Eastern Shore Community College	Higher education
NASA - Wallops Flight Facility	Rocket launch & support services
Shore Memorial Hospital	Health care

Labor Market

Closings, Reductions, Layoffs (1/2015 to date)				
Date	**Type**	**Company**	**Product/Service**	**Employees Affected**
10/1/2016	Reduction	Lockheed Martin	Engineering services	123
11/27/2017	Layoff	Bayshore Concrete*	Pre-cast concrete products	100

*Internationally-owned

Union Activity (8/1/2015 - 8/1/2018)	
Petitions filed for decertification	0
Petitions filed for representation	0
Petitions filed for raid	0
Elections won by union	0
Elections won by company	0

Labor Market

Estimated Earnings (May 2017)				
Occupation	**Median Wage (US$)**	**Mean Wage (US$)**	**Median Salary (US$)**	**Mean Salary (US$)**
Laborers and Freight, Stock, and Material Movers, Hand	11.99	12.33	24,941	25,661
Industrial Truck and Tractor Operators	14.65	15.41	30,457	32,048
Heavy and Tractor-Trailer Truck Drivers	21.52	23.67	44,761	49,227
Inspectors, Testers, Sorters, Samplers, and Weighers	14.31	17.16	29,772	35,710
First-Line Supervisors of Production and Operating Workers	25.44	26.37	52,913	54,841
Maintenance and Repair Workers, General	15.60	16.06	32,452	33,396
Bus and Truck Mechanics and Diesel Engine Specialists	15.73	15.77	32,723	32,807
Office Clerks, General	13.71	14.60	28,506	30,363
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	15.64	16.71	32,540	34,743
Receptionists and Information Clerks	11.47	11.64	23,873	24,213
Customer Service Representatives	11.79	12.64	24,528	26,286
Bookkeeping, Accounting, and Auditing Clerks	17.37	17.19	36,131	35,738
First-Line Supervisors of Office and Administrative Support Workers	21.96	22.87	45,677	47,558
Electrical and Electronic Engineering Technicians	35.28	36.21	73,375	75,316
Mechanical Engineers	48.01	48.50	99,872	100,873
Computer Occupations, All Other	45.80	43.22	95,262	89,903
Computer Systems Analysts	37.21	37.06	77,390	77,084
Accountants and Auditors	19.91	26.30	41,410	54,716
Management Analysts	45.79	47.39	95,263	98,572
Human Resources Specialists	26.43	28.67	54,972	59,628

Per Capita Personal Income (2016)
$39,364

Median Family Income (2012-2016)	
Accomack	$48,841
Northampton	$52,706

Education

Public School Enrollment (Fall 2017)		
Level	**Number**	**Enrollment**
Elementary	7	3,396
Combined	2	346
Middle	3	1,287
High School	3	1,824

Student Teacher Ratio (FY 2017)	
Elementary	12:1
Secondary	12:1

Per Pupil Expenditure (FY 2017) (US$)
11,371.38

On-Time Graduation Rate (Class of 2017)
87.5%

High School Graduates Continuing Education (2016-2017)
88.8%

Advanced Programs (2016-2017)	
Students taking 1 or more Advanced Placement (AP) Courses	71
Students taking 1 or more AP Exams	17
Students taking 1 or more Dual Enrollment Courses	268

Education

Workforce Development Facilities	
Facility	**Type**
Badger Technical Center North	Career and Technical Center
Badger Technical Center South	Career and Technical Center
Eastern Shore Workforce Center	Satellite Center
ESCC Business Development & Workforce Training Center	Career and Technical Center
Fredericksburg Workforce Center	Comprehensive Center
Job Assistance Center	Satellite Center
Warsaw Workforce Center	Satellite Center

Higher Education Facilities — Fall 2017	
Facility	**Enrollment**
Stratford University - Virginia Beach Campus	2,926‡
Eastern Shore Community College	644

‡ Enrollment figures are for all campuses.

Transportation

Interstates	
Name	**Distance**
I-264	16.4 miles (26.4 km.)
I-64	18.3 miles (29.4 km.)
I-564	19.9 miles (32.1 km.)
I-664	22.4 miles (36.0 km.)
I-464	24.5 miles (39.4 km.)

Note: Measured from border of locality/region.

Highways				
Highway 13	Highway 175	Highway 176	Highway 178	Highway 180
Highway 181	Highway 183	Highway 184	Highway 187	Highway 316

Commercial Air Service		
Norfolk International Airport, Norfolk -- 44.2 miles (71.1 km.)		
American Airlines	American Eagle	Delta Air Lines
Southwest Airlines	United Express	
Salisbury-Ocean City-Wicomico Regional Airport, Salisbury, MD -- 55.6 miles (89.4 km.)		
American Airlines	American Eagle	
Newport News-Williamsburg International Airport, Newport News -- 69.8 miles (112.3 km.)		
American Airlines	Delta Air Lines	

Note: Within a 75-mile drive of the center of the locality.

Transportation

General Aviation Service	
Name	**Runway Length**
Accomack County Airport, Melfa	5,000 ft (1,524 m)
Tangier Island Airport, Tangier	2,426 ft (739 m)

Freight Rail Service
Eastern Shore RR

Seaports	
Name	**Distance**
Port of Virginia (Virginia International Gateway)	53.0 miles (85.3 km)
Port of Virginia (Norfolk International Terminals)	60.0 miles (96.6 km)
Port of Virginia (Portsmouth Marine Terminal)	61.0 miles (98.2 km)
Port of Virginia (Newport News Marine Terminals)	74.0 miles (119.1 km)

Note: Driving distance from the center of the locality to Port of Virginia and any other seaports within 100 miles.

Other Ports of Entry	
Name	**Distance**
Norfolk	44.2 miles (71.1 km)
Newport News	69.8 miles (112.3 km)
Port of Washington - Dulles	207.5 miles (333.9 km)

Note: Driving distance from the center of the locality to Port of Washington - Dulles and any other port of entry within 100 miles.

Utilities

Utilities	
Electric	A & N Electric Cooperative
Natural Gas	Not Available
Telecommunications	Verizon-Virginia
Water	Town of Onancock
Water	Town of Cape Charles
Water	Town of Eastville
Water	Town of Melfa
Water	Accomack County Industrial Development Authority
Water	Town of Exmore
Water	Town of Parksley
Water	NASA-Wallops Flight Facility
Waste Water Treatment	Town of Onancock
Waste Water Treatment	Town of Cape Charles
Waste Water Treatment	Town of Exmore
Waste Water Treatment	Shore Health Services
Waste Water Treatment	NASA-Wallops Flight Facility

Financial Institutions

Financial Institutions — 1st Qtr 2018 Assets	
Bank	**Assets (US$ Millions)**
PNC Bank, N.A.	368,067.1
Branch Banking and Trust Company	215,012.0
SunTrust Bank	199,970.2
Union Bank & Trust Co.	13,118.0
Taylor Bank	509.2

Government and Taxes

Government

Accomack County has a County Administrator and a nine-member Board of Supervisors. Northampton County has a County Administrator and a six-member Board of Supervisors.

Both counties have a comprehensive plan and zoning and subdivision ordinances.

The town of Accomac is the county seat for Accomack County. Other incorporated towns include Belle Haven, Bloxom, Chincoteague, Hallwood, Keller, Melfa, Onancock, Onley, Painter, Parksley, Saxis, Tangier, and Wachapreague. Eastville is the county seat of Northampton County. Other incorporated towns are Cape Charles, Cheriton, Exmore, and Nassawadox.

Taxes

Localities in Virginia collect a 1% sales tax. They do not tax other items taxed at the State level.

Counties and cities in Virginia are separate taxing entities. Therefore, a company pays taxes to either a county or to a city.

If a company is located in a town, it pays town and county taxes except for utility taxes which are paid only to the town and the license tax which is paid only to the town unless town law permits the additional collection of a county tax.

Manufacturers pay real estate, machinery and tools, truck and automobile, utility, and sales taxes.

Nonmanufacturers pay real estate, tangible personal property, truck and automobile, utility, and sales taxes. They also may pay either a merchants' capital or a license tax.

Manufacturer's Tax Profile (Accomack) pdf
Non-Manufacturer's Tax Profile (Accomack) pdf

Manufacturer's Tax Profile (Northampton) pdf
Non-Manufacturer's Tax Profile (Northampton) pdf

Community Facilities

Riverside Shore Memorial Hospital is a modern 143-bed full-service hospital. Services include a 24-hour emergency room, CAT scan, coronary care unit, ultrasound and mammography screening, and a staff of physicians encompassing most specialties. Public health centers and five private medical centers provide additional services throughout the region.

Forty physicians and 19 dentists practice on the Eastern Shore.

Four nursing homes are available in the community and provide extended care service for 280 residents.

The Eastern Shore has 110 Protestant and three Catholic churches. Jewish synagogues are located in both Norfolk and Salisbury, Maryland.

The Eastern Shore Public Library is based in the town of Accomac and has a collection of 129,966 volumes and circulates 153,230 items per year.

Area residents shopping needs are easily met at six shopping centers. The largest centers are located in the town of Onley and on U.S. Route 13 and are anchored by major department stores complemented by numerous specialty shops. Additionally, the community offers a number of small shops, which specialize in products indigenous to the Eastern Shore including crafts, decoys, original art-works, and locally produced wines and seafood.

Lifestyle

The Chesapeake Bay and Atlantic Ocean surroundings contribute to a unique and pleasurable lifestyle. Outdoor recreation possibilities are numerous and varied. Activities enjoyed by natives and visitors alike include boating, swimming, hiking, biking, camping, crabbing, fishing, or simply observing wildlife in its natural setting. Miles of unspoiled ocean beaches are available on the barrier islands that line the coast. Both Accomack and Northampton Counties offer public parks and athletic facilities. Organized athletics and team sports for youth and adults are offered through the local public recreation and parks department. Collectively, the Eastern Shore has 16 tennis courts, 52 ball fields, two public beaches, and numerous playgrounds. Three private-membership golf courses are available within the community.

The 9,000-acre Chincoteague National Wildlife Refuge is in northern Accomack County. This refuge is administered by the U.S. Fish and Wildlife Service that permits swimming, hiking, fishing, bird watching, and provides narrated tours. The annual penning and auctioning of wild ponies in the area is a major event for the community. Typically, as many as 50,000 persons are drawn to the area for the week long celebration and carnival associated with the pony penning.

The Nature Conservatory and state and federal governments maintain a 45-mile stretch of oceanside barrier islands in their natural state. The public can access most of these islands. They are renowned for their expansive beaches, surrounding lush salt marshes, and great concentrations of shorebirds, seabirds, and migrating water fowl. The Virginia Coast Reserve, Long-Term Ecological Research (VCR/LTER) program maintains a laboratory facility in Oyster, Virginia. Administered through the University of Virginia, VCR/LTER aims to develop an understanding of the effects of long-term environmental changes and short-term disturbances on coastal barrier landscapes. The National Science Foundation established the LTER program in 1980 to support research on long-term ecological phenomena in the United States. There are currently 26 LTER sites nationwide representing diverse ecosystems.

Lifestyle

(continued)

Residents can take advantage of a regular schedule of dramatic performances by local theater groups on the Eastern Shore. Norfolk, an hour's drive away, affords a tremendous variety of cultural and entertainment options including drama, concerts, museums, and sporting events.

Seasonal festivals and special events such as the Annual Seafood Festival, the Harvest Fest, and the Eastern Shore Birding Festival continue to attract thousands of patrons from surrounding areas to celebrate the amenities and lifestyle found on Virginia's Eastern Shore.

APPENDIX E

Recycling Rate Mandate (VDEQ)

Electronics Recycling
State Agency Recycling
Forms
Frequently Asked Questions
General Informational Links
Household Hazardous Waste Management
Mandatory Recycling Rates
Virginia Regional Litter Prevention and Recycling
Litter Prevention and Recycling Grant Programs
Recycling
Tax Credits
Used Oil, Oil Filters and Antifreeze
Virginia Recycling and Litter Prevention Contacts

Virginia Department of Environmental Quality
Mailing Address:
P.O. Box 1105
Richmond, VA 23218

Street Address:
1111 East Main St., Suite 1400
Richmond, VA 23219

Contact Us:
1-(804) 698-4000
1-800-592-5482 (Toll Free in VA)

View Department of Environmental Quality Expenses

Mandatory Recycling Rates for Localities

recycling logo

The Virginia General Assembly has adopted legislation which set the following recycling rates for communities:

Each county, city, town or regional authority was required to establish recycling programs that would meet or exceed a recycling goal of 25% of its municipal solid waste generation.The statutory recycling rate of 25 percent continues today for many Virginia localities, but legislation introduced in 2006 provides for a two-tiered recycling mandate - 15% and 25%. Localities or regions (called Solid Waste Planning Units or SWPUs) with population densities less than 100 persons per square mile or with an unemployment rate 50% higher than the statewide average now qualify for a 15% mandated recycling level, with all others remaining at the 25% recycling mandated level.

SWPUs that meet the 15% mandated recycling rate criteria for annual reporting are identified here.

Regulations for the Development of Solid Waste Management Plans (9 VAC 20-130-10 et seq.) require that Regions as well as each city, county, and town not part of a designated Region in the Commonwealth develop and maintain solid waste management plans. Section 9 VAC 20-130-120 B& C of the Regulations requires that a minimum recycling rate of 25% of the total municipal solid waste generated annually in each city, county, town, or Region be maintained. Note that with the 2006 legislation, the regulations were revised to include the 15% mandated recycling level for qualifying SWPUs. It also requires that the plan describe how this rate shall be met or exceeded and requires that the calculation methodology be included in the plan. Section 9VAC 20-130-165 D establishes that every city, county, and town in the Commonwealth, or solid waste management planning region (now SWPUs) *with populations in excess of 100,000 (17 of the 71 SWPUs)* shall annually submit to the Department of Environmental Quality by April 30 of each year the data and calculations required in 9 VAC 20-130-120 B&C for the preceding calendar year. Guidance on how to complete the recycling rate report form is available here.

Effective after CY 2012, each city, county, and town in the Commonwealth, or solid waste management planning region (now SWPUs) *with populations of 100,000 or below* shall only be required to submit to the Department of Environmental Quality *every four years* the data and calculations required in 9 VAC 20-130-120 B&C. The next required reporting will be for CY 2016.

These submittals are the basis for establishing the state Recycling Rate in Virginia each year. Recycling Action Plans, or RAPs, may be a required part of the solid waste management plan if the SWPU falls below its mandated recycling rate.

The calendar year 2016 Annual Recycling Rate Report established a recycling rate for Virginia of 42.6 %, which included credits for solid waste reused, non-MSW recycled, recycling residues, and source reduction programs. This rate was based on the data submitted by 70 of the 71 SWPUs required to report for 2016. Most of the highest recycling rates historically were experienced by programs in the urban areas of Virginia.

Historical Recycling Rate Data (1991 - 2017)

- 2016 - 42.6%
- 2015 - 44.2%
- 2014 - 42.5%
- 2013 - 41.2%
- 2012 - 41.5%
- 2011 - 43.5%
- 2010 - 40.5%
- 2009 - 38.6%
- 2008 - 38.5%
- 2007 - 38.5%
- 2006 - 38.4%
- 2005 - 32.2%

- 2004 - 29.8%
- 2003 - 30.3%
- 2002 - 36.8%
- 2001 - 37.8%
- 2000 - 32.9%*
- 1995 - 35.0%
- 1993 - 33.4%
- 1991 - 19.7%

**Voluntary Report - Recycling Rate reporting was not required in Virginia from CY 1996 until CY 2001.*

Virginia Department of
Environmental Quality
P.O. Box 1105
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(804) 698-4000

APPENDIX F

USEPA Advancing Sustainable Materials Management 2015 Fact Sheet

Advancing Sustainable Materials Management: 2015 Fact Sheet

Assessing Trends in Material Generation, Recycling, Composting, Combustion with Energy Recovery and Landfilling in the United States

July 2018

Introduction

The U.S. Environmental Protection Agency (EPA) has collected and reported data on the generation and disposition of municipal solid waste (MSW) in the United States for more than 30 years. This information is used to measure the success of materials management programs across the country and to characterize the national waste stream. These facts and figures are based on the most recent information, which is from calendar year 2015.

In 2015, in the United States, approximately 262 million tons (U.S. short tons unless specified) of MSW were generated (*See* Figure 1). Of the MSW generated, approximately 68 million tons of MSW were recycled and 23 million tons of MSW were composted. Together, more than 91 million tons of MSW were recycled and composted, equivalent to a 34.7 percent recycling and composting rate (*See* Figure 2). In addition, more than 33 million tons of MSW (12.8 percent) were combusted with energy recovery. Finally, more than 137 million tons of MSW (52.5 percent) were landfilled (*See* Figure 3 and Table 1).

Information about waste generation and disposal is an important foundation for managing materials. Sustainably managing materials requires thinking beyond waste and instead focusing on the life cycle of a product, from the time it is produced, used, reused and ultimately recycled or discarded. This is known as Sustainable Materials Management (SMM). SMM refers to the use and reuse of materials in the most productive and sustainable way across their entire life cycle. SMM conserves resources, reduces waste and minimizes adverse environmental impacts from materials.

This report analyzes MSW trends in generation and management, materials and products, and economic indicators affecting MSW. It also includes a section on the generation of construction and demolition (C&D) debris, which is not a part of MSW, but comprises a significant portion of the non-hazardous solid waste stream.

Figure 1. MSW Generation Rates, 1960 to 2015

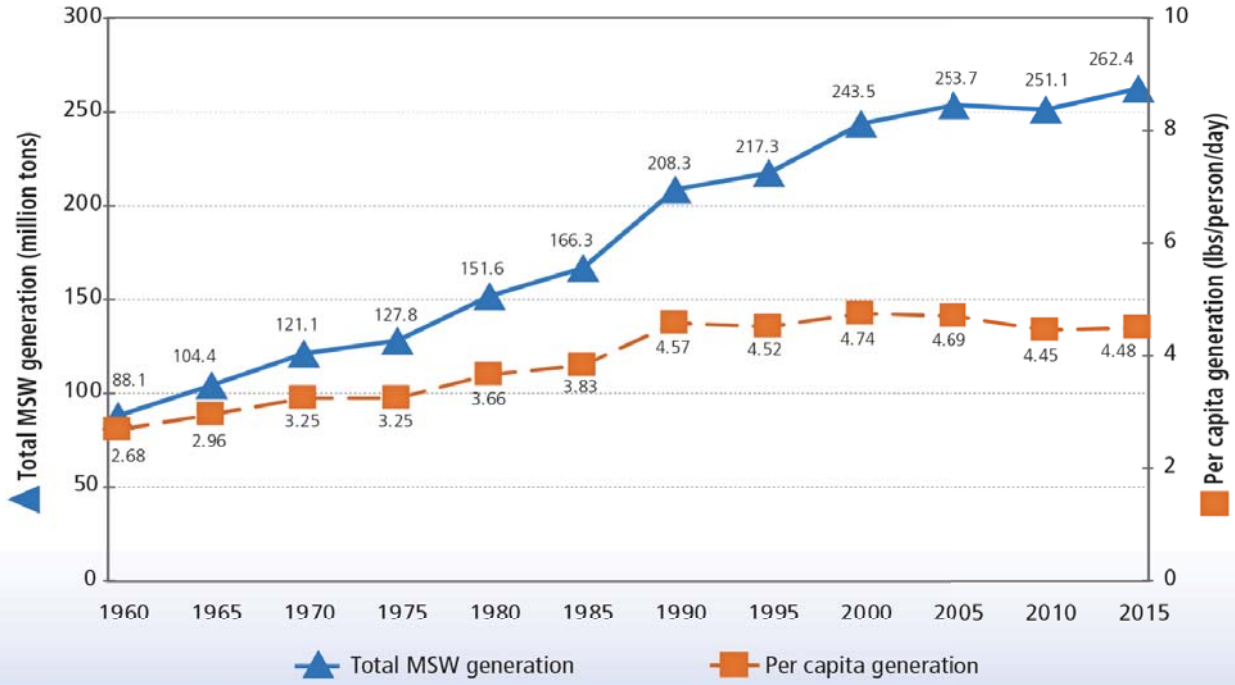


Figure 2. MSW Recycling and Composting Rates, 1960 to 2015

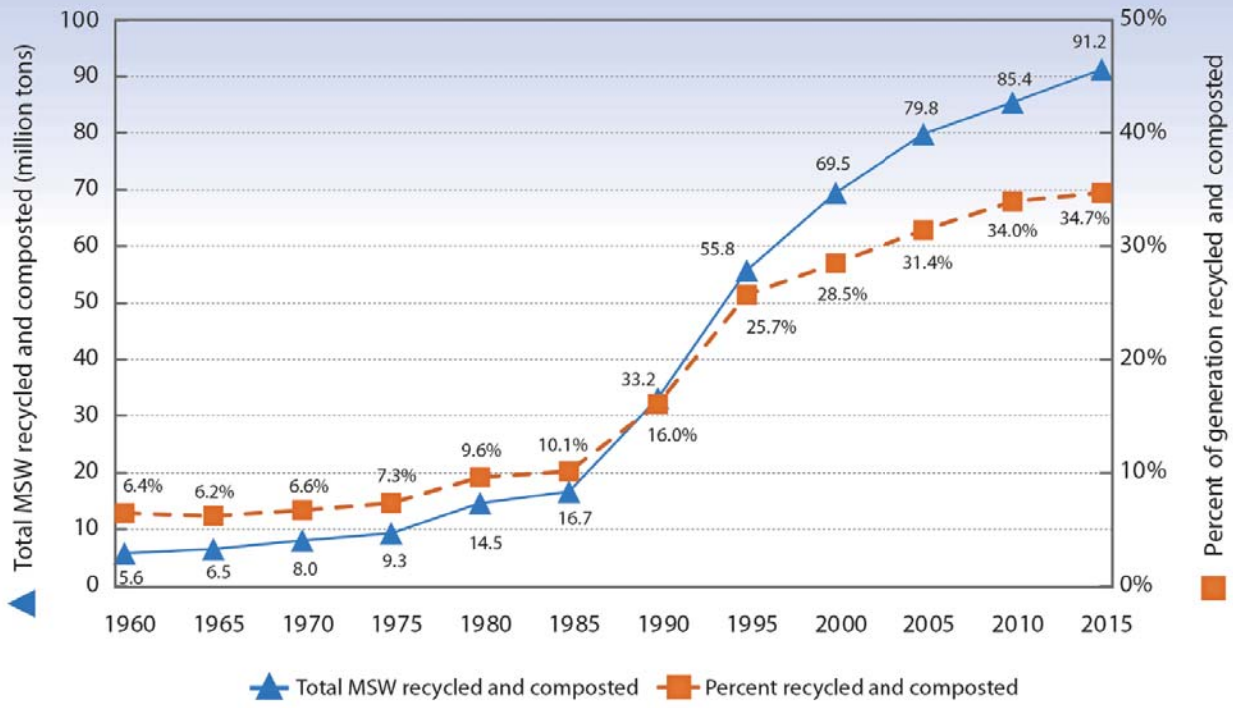


Figure 3. Management of MSW in the United States, 2015

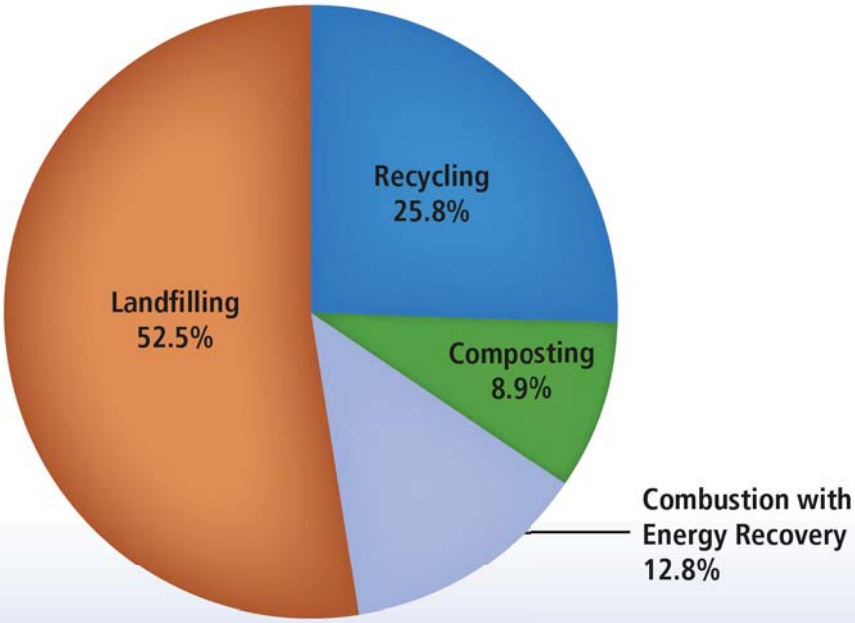


Table 1. Generation, Recycling, Composting, Combustion with Energy Recovery and Landfilling of Materials in MSW, 2015*
(in millions of tons and percent of generation of each material)

Material	Weight Generated	Weight Recycled	Weight Composted	Weight Combusted with Energy Recovery	Weight Landfilled	Recycling as Percent of Generation	Composting as Percent of Generation	Combustion as Percent of Generation	Landfilling as Percent of Generation
Paper and paperboard	68.05	45.32	-	4.45	18.28	66.6%	-	6.5%	26.9%
Glass	11.47	3.03	-	1.47	6.97	26.4%	-	12.8%	60.8%
Metals									
Steel	18.17	6.06	-	2.14	9.97	33.3%	-	11.8%	54.9%
Aluminum	3.61	0.67	-	0.50	2.44	18.5%	-	13.9%	67.6%
Other nonferrous metals†	2.22	1.50	-	0.06	0.66	67.6%	-	2.7%	29.7%
Total metals	**24.00**	**8.23**	-	**2.70**	**13.07**	**34.3%**	-	11.2%	54.5%
Plastics	34.50	3.14	-	5.35	26.01	9.1%	-	15.5%	75.4%
Rubber and leather	8.48	1.51	-	2.49	4.48	17.8%	-	29.4%	52.8%
Textiles	16.03	2.45	-	3.05	10.53	15.3%	-	19.0%	65.7%
Wood	16.30	2.66	-	2.58	11.06	16.3%	-	15.8%	67.9%
Other materials	5.16	1.43	-	0.69	3.04	27.7%	-	13.4%	58.9%
Total materials in products	**183.99**	**67.77**	-	**22.78**	**93.44**	**36.8%**	-	**12.4%**	**50.8%**
Other wastes									
Food, other‡	39.73	-	2.10	7.38	30.25	-	5.3%	18.6%	76.1%
Yard trimmings	34.72	-	21.29	2.63	10.80	-	61.3%	7.6%	31.1%
Miscellaneous inorganic wastes	3.99	-	-	0.78	3.21	-	-	19.5%	80.5%
Total other wastes	**78.44**	-	**23.39**	**10.79**	**44.26**	-	**29.8%**	**13.8%**	**56.4%**
Total municipal solid waste	**262.43**	**67.77**	**23.39**	**33.57**	**137.70**	**25.8%**	**8.9%**	**12.8%**	**52.5%**

* Includes waste from residential, commercial and institutional sources.

† Includes lead from lead-acid batteries.

‡ Includes collection of other MSW organics for composting.

Details might not add to totals due to rounding.

Negligible = Less than 5,000 tons or 0.05 percent.
A dash in the table means that data are not available.

Trends in Municipal Solid Waste

Our trash, or MSW, is comprised of various items consumers throw away. These items include packaging, food, yard trimmings, furniture, electronics, tires and appliances. MSW does not include industrial, hazardous or C&D waste. Sources of MSW include residential waste (including waste from multi-family housing) and waste from commercial and institutional locations, such as businesses, schools and hospitals.

Over the last few decades, the generation, recycling, composting, combustion with energy recovery and landfilling of MSW have changed substantially. Solid waste generation peaked at 4.74 pounds per person per day in 2000. However, the rate of 4.48 pounds per person per day in 2015 is slightly higher than the 2014 rate, which was 4.45 pounds per person per day (*See* Figure 1).

The combined recycling and composting rate increased from less than 10 percent of generated MSW in 1980 to 34.7 percent in 2015 (*See* Figure 2). Without including composting, recycling alone rose from 14.5 million tons (9.6 percent of MSW) in 1980 to 67.8 million tons (25.8 percent) in 2015. Composting was negligible in 1980, and it rose to 23.4 million tons in 2015 (8.9 percent; *see* Figure 3 and Table 2 for details).

Food

Nationally, the composting of food rose from 1.94 million tons in 2014 (5 percent of food) to 2.10 million tons in 2015 (5.3 percent of food).

Combustion with energy recovery was less than 2 percent of generation in 1980 (2.8 million tons). In 2015, more than 33.5 million tons (12.8 percent of MSW generated) were combusted with energy recovery (*See* Table 2).

Since 1990, the total amount of MSW going to landfills dropped by 7.6 million tons, from 145.3 million to 137.7 million tons in 2015 (*See* Table 2). The net per capita 2015 landfilling rate was 2.3 pounds per day, which was lower than the 3.2 per capita rate in 1990 (*See* Table 3).

Table 2. Generation, Recycling, Composting, Combustion with Energy Recovery and Landfilling of MSW, 1960 to 2015 (in millions of tons)

Activity	1960	1970	1980	1990	2000	2005	2010	2014	2015
Generation	88.1	121.1	151.6	208.3	243.5	253.7	251.1	259.0	262.4
Recycling	5.6	8.0	14.5	29.0	53.0	59.2	65.3	66.6	67.8
Composting*	neg.	neg.	neg.	4.2	16.5	20.6	20.2	23.0	23.4
Combustion with energy recovery†	0.0	0.5	2.8	29.8	33.7	31.7	29.3	33.2	33.5
Landfilling and other disposal‡	82.5	112.6	134.3	145.3	140.3	142.2	136.3	136.2	137.7

* Composting of yard trimmings, food and other MSW organic material. Does not include backyard composting.

† Includes combustion of MSW in mass burn or refuse-derived fuel form, and combustion with energy recovery of source separated materials in MSW (e.g., wood pallets, tire-derived fuel).

‡ Landfilling after recycling, composting and combustion with energy recovery. Includes combustion without energy recovery.

Details might not add to totals due to rounding.

neg. Negligible = less than 5,000 tons or 0.05 percent.

Table 3. Generation, Recycling, Composting, Combustion with Energy Recovery and Landfilling of MSW, 1960 to 2015 (in pounds per person per day)

Activity	1960	1970	1980	1990	2000	2005	2010	2014	2015
Generation	2.7	3.3	3.7	4.6	4.7	4.7	4.4	4.4	4.5
Recycling	0.2	0.2	0.4	0.6	1.0	1.1	1.1	1.1	1.2
Composting*	neg.	neg.	neg.	0.1	0.3	0.4	0.4	0.4	0.4
Combustion with energy recovery†	0.0	neg.	0.1	0.7	0.7	0.6	0.5	0.6	0.6
Landfilling and other disposal‡	2.5	3.1	3.2	3.2	2.7	2.6	2.4	2.3	2.3
Population (In millions)	180.0	204.0	227.3	249.9	281.4	296.4	309.1	318.9	320.9

* Composting of yard trimmings, food, and other MSW organic material. Does not include backyard composting.

† Includes combustion of MSW in mass burn or refuse-derived fuel form, and combustion with energy recovery of source separated materials in MSW (e.g., wood pallets, tire-derived fuel).

‡ Landfilling after recycling, composting, and combustion with energy recovery. Includes combustion without energy recovery.

Details might not add to totals due to rounding.

neg. Negligible = less than 5,000 tons or 0.05 percent.

Analyzing MSW

EPA analyzes MSW by breaking down the data in two ways: by material or by product. Materials are made into products, which are ultimately reprocessed through recycling or composting, or managed by sending them to combustion with energy recovery facilities or landfills. Examples of materials that EPA tracks include paper and paperboard, plastics, metals, glass, rubber, leather, textiles, wood, food and yard trimmings. For a full list of materials, *see* Table 1.

Products are what people buy and handle, and they are manufactured out of the types of materials listed above. Product categories include containers and packaging, nondurable goods, durable goods, food and yard trimmings. Containers and packaging, such as milk cartons and plastic wrap, are assumed to be in use for a year or less; nondurable goods like newspaper and clothing are assumed to be in use for less than three years; and durable goods, such as furniture, are assumed to be in use for three or more years. Some products, such as appliances, may be made of more than one material. Information about products shows how consumers are using and discarding materials and offers strategies on how to maximize source reduction, recycling and composting of materials.

Materials in MSW

Table 1 and the following figures provide specific information about materials in municipal solid waste. Table 1 shows generation, recycling, composting, combustion with energy recovery and landfilling by material, by weight and percent of generation.

Figure 4 below provides the breakdown of MSW generation by material. Paper and paperboard, and food continued to be the largest components of MSW generated. Paper and paperboard accounted for about 26 percent, while food accounted for 15 percent. Yard trimmings and plastics comprised about 13 percent each. The remaining amount of MSW generated consisted of rubber, leather, and textiles; metals; wood; glass and other materials.

Composting Collection Programs [1,2]

- About 3,860 community composting programs were documented in 2015—an increase from 3,227 in 2002.
- Food composting curbside collection programs served 3.8 million households in 2015. About 5.4 million households had access to drop-off food collection programs that year.

Figure 5 provides the breakdown of MSW recycling by material. Paper and paperboard was the largest component of MSW recycling, representing nearly 67 percent. Metals made up 12 percent of MSW recycled. The remaining amount of MSW recycled consisted of rubber, leather, and textiles; plastics; glass; wood and other materials.

Figure 6 provides the breakdown of MSW composting by material. Yard trimmings made up 91 percent of MSW composted. Food made up the remaining 9 percent of material composted.

Figure 7 provides the breakdown of MSW combustion with energy recovery.

Figure 8 provides the breakdown of MSW landfilling.

Figure 4. Total MSW Generation (by material), 2015
262 Million Tons

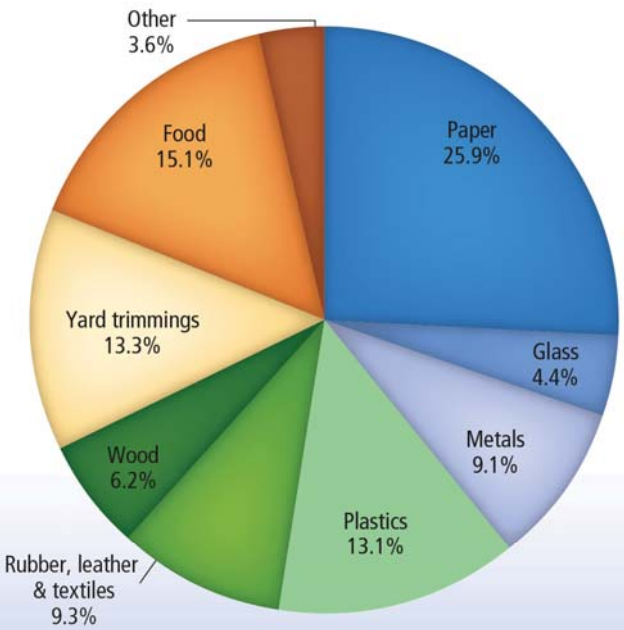


Figure 5. Total MSW Recycling (by material), 2015
68 Million Tons

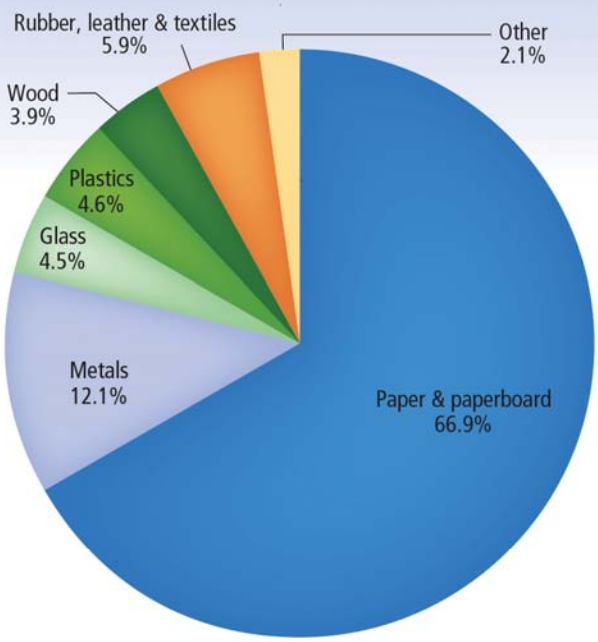


Figure 6. Total MSW Composting (by material), 2015
23 Million Tons

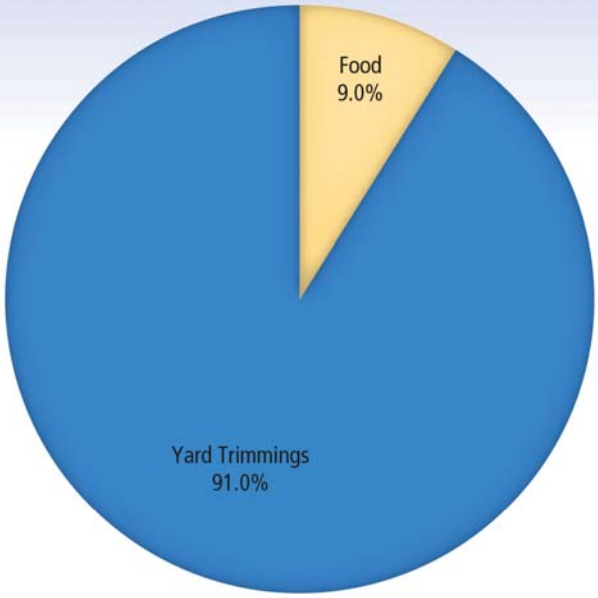


Figure 7. Total MSW Combusted with Energy Recovery (by material), 2015 34 Million Tons

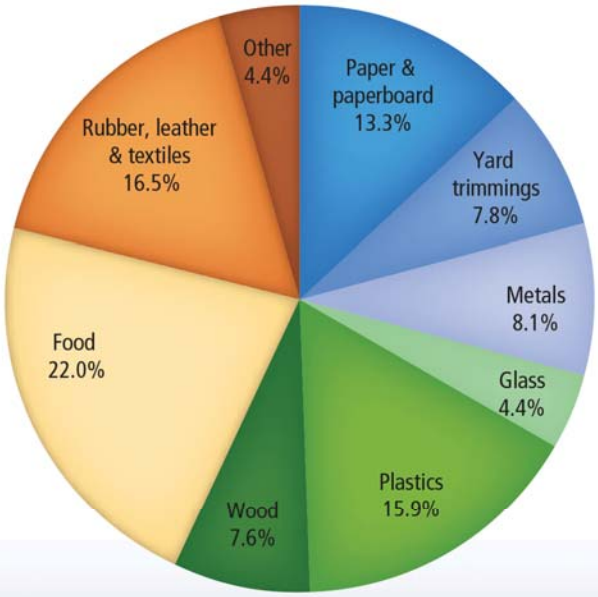
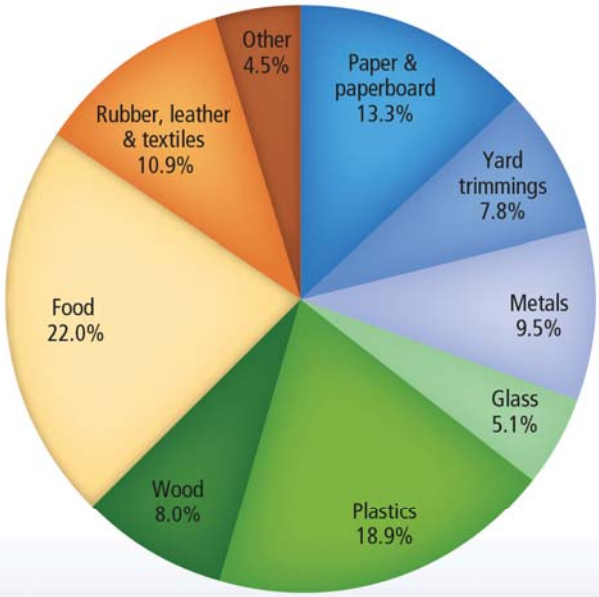


Figure 8. Total MSW Landfilled (by material), 2015
138 Million Tons



Products in MSW

The following information provides the details of the products found in municipal solid waste. Table 4 shows generation, recycling, composting, combustion with energy recovery and landfilling by product category, weight and percent of generation. Figure 9 displays selected products with high recycling and composting rates.

Containers and packaging made up the largest portion of MSW generated at almost 78 million tons (29.7 percent). Nondurable and durable goods were more than 50 million tons each (about 20 percent for each). Food was 39.7 million tons (15.1 percent), yard trimmings were 34.7 million tons (13.2 percent), and other wastes were about four million tons (1.5 percent).

Containers and packaging was the product category with the highest recycling rate with approximately 53 percent of the generated materials recycled. Paper products, steel and aluminum were the most recycled materials by percentage in this category. The recycling of nondurable goods was approximately 31 percent. Paper products such as newspapers/mechanical papers were the most recycled nondurable goods. Newspapers/mechanical papers include newspapers, directories, inserts, as well as some advertisement and direct mail printing. Overall, about 19 percent of durable goods were recycled. With a 99 percent recycling rate, lead-acid batteries continued to be one of the most recycled products.

Yard trimmings was the product category with the highest composting rate at 61.3 percent. Food in MSW was composted at a rate of 5.3 percent.

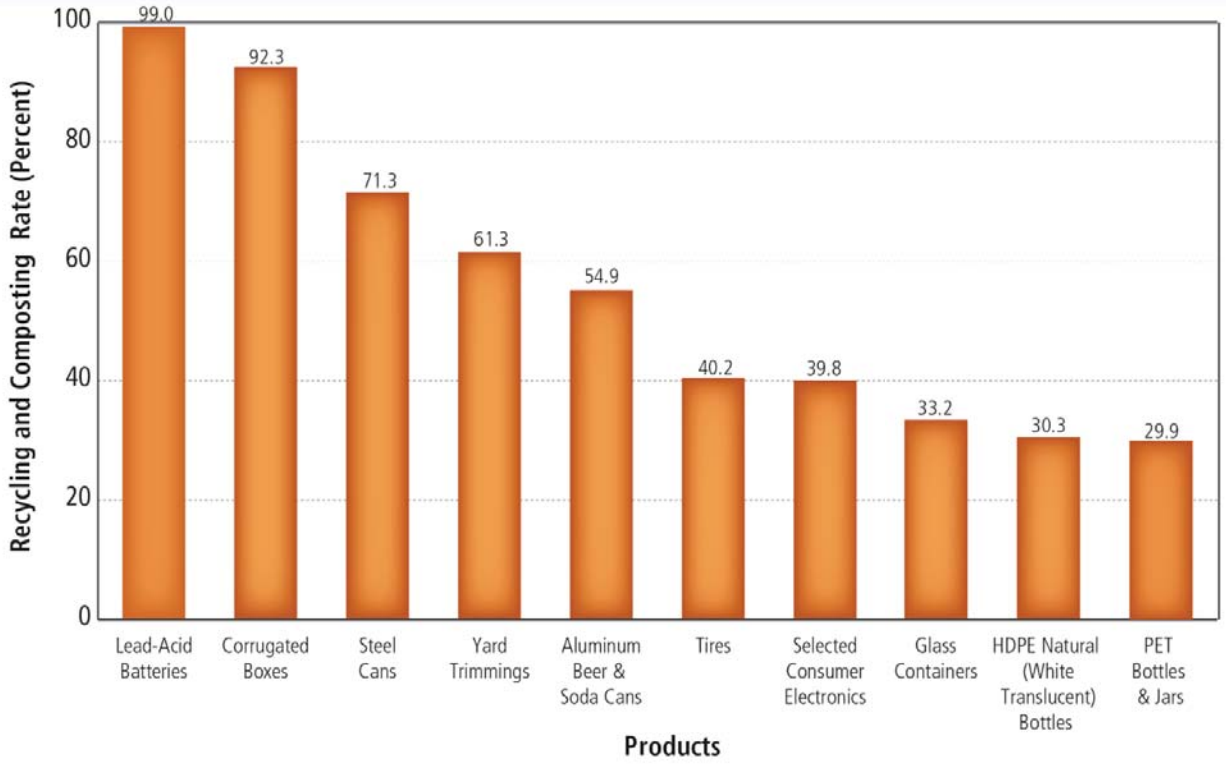
Food was the product category with the highest rate of combustion with energy recovery with a rate of nearly 19 percent. Durable goods were combusted at a rate of nearly 16 percent and nondurables at a rate of nearly 14 percent. Containers and packaging, and yard trimmings were combusted at rates below 10 percent.

Food was the product category with the highest landfill rate at 76 percent. Durable goods followed with a landfill rate of 65 percent. Nondurable goods had the third highest landfill rate at 55 percent. Containers and packaging, and yard trimmings were the product categories with the lowest landfill rates at 38 percent and 31 percent, respectively.

Recycling Rates

Measured by percentage of generation, products with the highest recycling rates in 2015 were lead-acid batteries (99 percent), corrugated boxes (92.3 percent), steel cans (71.3 percent), newspapers/mechanical papers (71.2 percent), major appliances (61.7 percent), aluminum cans (54.9 percent), mixed paper (43.6 percent), tires (40.2 percent) and selected consumer electronics (39.8 percent). The 2015 composting rate for yard trimmings was 61.3 percent (*See* 2015 data tables).

Figure 9. Selected Products with High Recycling and Composting Rates, 2015*



*Does not include combustion with energy recovery.

Table 4. Generation, Recycling, Composting, Combustion with Energy Recovery and Landfilling of Products in MSW, 2015*
(in millions of tons and percent of generation of each product)

Products	Weight Generated	Weight Recycled	Weight Composted	Weight Combusted with Energy Recovery	Weight Landfilled	Recycling as Percent of Generation	Composting as Percent of Generation	Combustion as Percent of Generation	Landfilling as Percent of Generation
Durable goods									
Steel	15.95	4.44	-	2.02	9.49	27.8%	-	12.7%	59.5%
Aluminum	1.55	-	-	0.22	1.33	-	-	14.2%	85.8%
Other nonferrous metals†	2.22	1.50	-	0.06	0.66	67.6%	-	2.7%	29.7%
Glass	2.35	Negligible	-	0.27	2.08	Negligible	-	11.5%	88.5%
Plastics	12.50	0.83	-	1.49	10.18	6.6%	-	11.9%	81.5%
Rubber and leather	7.35	1.51	-	2.27	3.57	20.5%	-	30.9%	48.6%
Wood	6.48	Negligible	-	1.18	5.30	Negligible	-	18.2%	81.8%
Textiles	3.94	0.54	-	1.06	2.34	13.7%	-	26.9%	59.4%
Other materials	1.81	1.43	-	0.03	0.35	79.0%	-	1.7%	19.3%
Total durable goods	**54.15**	**10.25**	**-**	**8.60**	**35.30**	**18.9%**	**-**	**15.9%**	**65.2%**
Nondurable goods									
Paper and paperboard	28.12	14.12	-	2.74	11.26	50.2%	-	9.8%	40.0%
Plastics	7.32	0.16	-	1.40	5.76	2.2%	-	19.1%	78.7%
Rubber and leather	1.13	Negligible	-	0.22	0.91	Negligible	-	19.5%	80.5%
Textiles	11.77	1.91	-	1.93	7.93	16.2%	-	16.4%	67.4%
Other materials	3.58	Negligible	-	0.70	2.88	Negligible	-	19.6%	80.4%
Total nondurable goods	**51.92**	**16.19**	**-**	**6.99**	**28.74**	**31.2%**	**-**	**13.5%**	**55.3%**

(Continued on next page)

Table 4. Generation, Recycling, Composting, Combustion with Energy Recovery and Landfilling of Products in MSW, 2015*
(in millions of tons and percent of generation of each product)

Products	Weight Generated	Weight Recycled	Weight Composted	Weight Combusted with Energy Recovery	Weight Landfilled	Recycling as Percent of Generation	Composting as Percent of Generation	Combustion as Percent of Generation	Landfilling as Percent of Generation
Containers and packaging									
Steel	2.22	1.62	-	0.12	0.48	73.0%	-	5.4%	21.6%
Aluminum	1.84	0.67	-	0.24	0.93	36.4%	-	13.0%	50.6%
Glass	9.12	3.03	-	1.20	4.89	33.2%	-	13.2%	53.6%
Paper and paperboard	39.92	31.20	-	1.71	7.01	78.2%	-	4.3%	17.5%
Plastics	14.68	2.15	-	2.46	10.07	14.6%	-	16.8%	68.6%
Wood	9.82	2.66	-	1.40	5.76	27.1%	-	14.3%	58.6%
Other materials	0.32	Negligible	-	0.06	0.26	Negligible	-	18.8%	81.2%
Total containers and packaging	**77.92**	**41.33**	**-**	**7.19**	**29.40**	**53.1%**	**-**	**9.2%**	**37.7%**
Other wastes									
Food, other‡	39.73	-	2.10	7.38	30.25	-	5.3%	18.6%	76.1%
Yard trimmings	34.72	-	21.29	2.63	10.80	-	61.3%	7.6%	31.1%
Miscellaneous inorganic wastes	3.99	-	-	0.78	3.21	-	-	19.5%	80.5%
Total other wastes	**78.44**	**-**	**23.39**	**10.79**	**44.26**	**-**	**29.8%**	**13.8%**	**56.4%**
Total municipal solid waste	**262.43**	**67.77**	**23.39**	**33.57**	**137.70**	**25.8%**	**8.9%**	**12.8%**	**52.5%**

* Includes waste from residential, commercial and institutional sources.

† Includes lead from lead-acid batteries.

‡ Includes collection of other MSW organics for composting.

Details might not add to totals due to rounding.

Negligible = less than 5,000 tons or 0.05 percent.
A dash in the table means that data are not available.

Economic Indicators

The Benefits of Recycling

How our nation uses materials is fundamental to our economic and environmental future. Global competition for finite resources is expected to continue to increase. A more productive and less impactful use of materials helps our society remain economically competitive, contributes to our prosperity and protects the environment. By using waste materials as valuable raw materials, recycling creates jobs, builds more competitive manufacturing industries and significantly contributes to the U.S. economy.

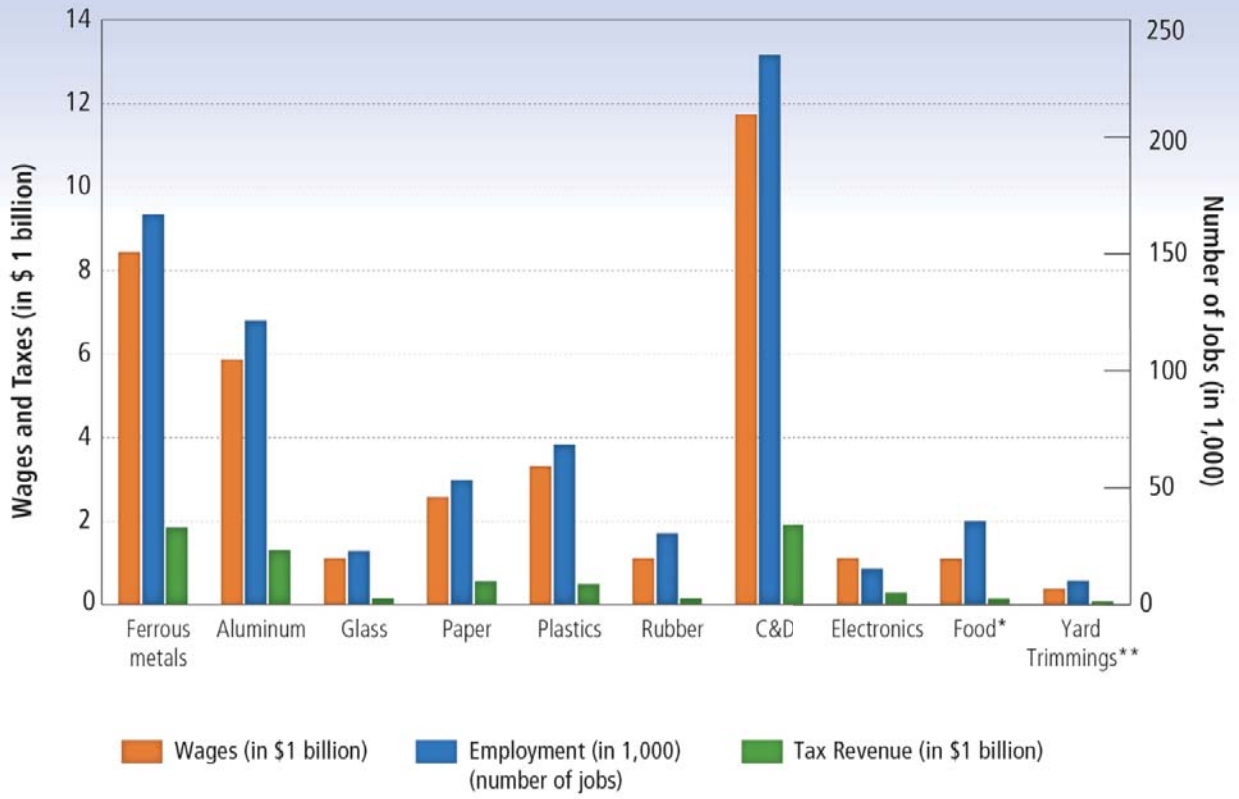
EPA's 2001 Recycling Economic Information (REI) Study evaluated the number of recycling jobs, wages and tax revenue. The Agency updated the study with a 2016 REI Report[3] to increase the understanding of the economic implications of material reuse and recycling. The 2016 REI Report included updated information about the number of recycling jobs, wages and tax revenue (*See* Figure 10). The report showed that the recycling and reuse of materials creates jobs while also generating local and state tax revenues. The data from the most recent year available (2007) showed that in 2007, recycling and reuse activities in the United States accounted for:

- 757,000 jobs;
- $36.6 billion in wages; and
- $6.7 billion in tax revenues.

This equates to 1.57 jobs for every 1,000 tons of materials recycled. Construction and demolition debris provided the largest contribution to all three categories (jobs, wages and tax revenue), followed by ferrous metals and nonferrous metals, such as aluminum.

The 2016 REI Report used an updated analytical framework and a new Waste Input-Output methodology, which focused on the life cycle of materials. These refinements offered significant improvements over the original 2001 REI Study by providing a better definition of recycling and addressing double counting. This new methodology assists decision makers and researchers in more accurately estimating the economic benefits of recycling, and it creates a foundation upon which additional studies can be built.

Figure 10. Wages, Taxes and Jobs Attributed to Recycling



*Food category includes animal feed, meal, meat, fat, oils and tallow, as well as community food service
**Yard Trimmings category includes biodiesel, biogas, compost, mulch and wood chips

Recycled Commodity Values

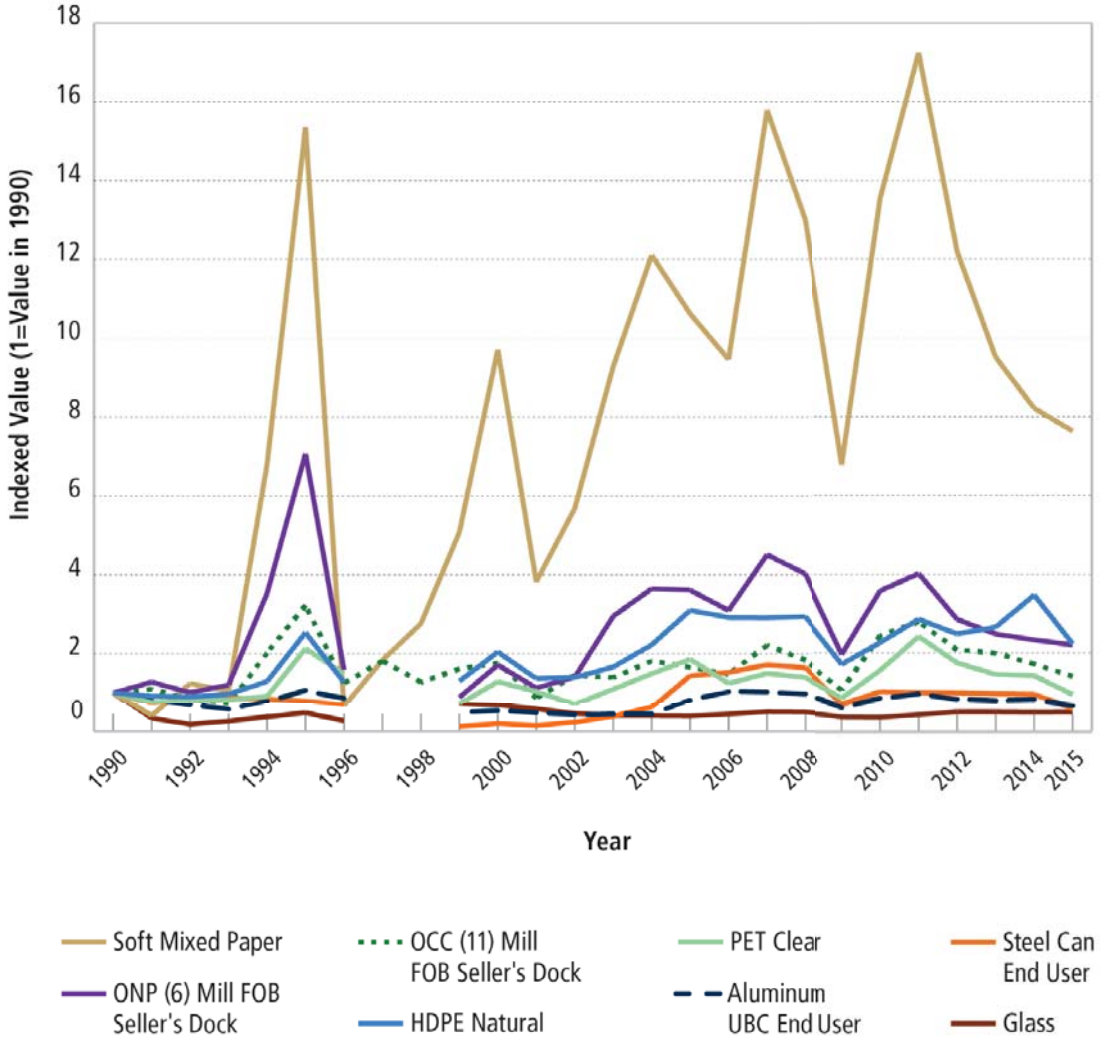
Normalized to 2015, using the Consumer Price Index (CPI) from the Bureau of Labor Statistics to account for inflation, Figure 11 depicts the commodity values for high-density polyethylene (HDPE) natural bottles; polyethylene terephthalate (PET) clear bottles; aluminum used beverage cans (UBC); steel cans; old newspaper (ONP) (grade 6); old corrugated containers (OCC) (grade 11); paper stock (PS) (grade 1) soft mixed paper; and glass containers from 1990 to 2015.

Data were not available for ONP, metals, plastics and glass in 1997 and 1998. For plastics, glass and metals, there was a transition in data sources between 1996 and 1999 and between 2004 and 2005, so some of the change between years could be due to the methodology of the data source for capturing data.

Figure 11 shows the indexed values by year for the recycled commodities. It is indexed to allow commodity values with different metrics, such as dollars per ton, dollars per gross ton and dollars per short ton, to be shown on the same graph and to compare their relative rates of change. The indexed value indicates the change in value of the data since 1990, where one is equal to the value in 1990. For example, if for a given year the indexed value were two, then the commodity value for that year would be two times the 1990 value. In this case, if the 1990 value were 400, then the resulting year's value would be 800.

Figure 11 shows similar trends across all commodities for indexed values. For example, values for plastics and papers spiked in 1995, and values for most commodities dipped in 2009 relative to their values in 1990. Additionally, many commodities, such as plastics and papers, also experienced a price spike in 2000, 2007 and 2011. In contrast, the indexed lines for glass (which represent an average of flint, amber and green glass container values), aluminum and steel cans appear to fluctuate less frequently.

Figure 11. Indexed Recycled Commodity Values by Year



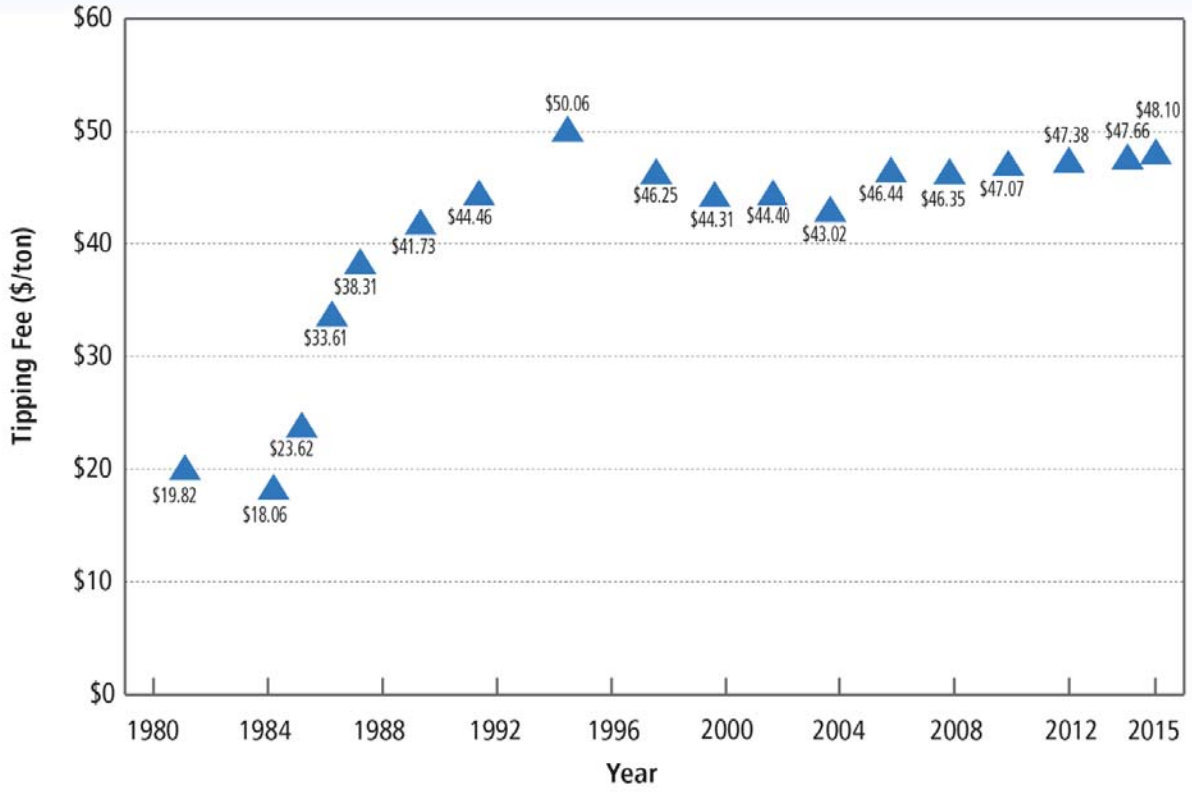
National mean annual commodity values were normalized to constant $2015 using the Consumer Price Index (CPI) from the Bureau of Labor Statistics to allow meaningful comparisons. 1990 has an indexed value of 1. Soft mixed paper consists of a clean, sorted mixture of various qualities of paper not limited as to type of fiber content. Prohibitive Materials may not exceed 1 percent. There are specific limits on the percent of contaminants allowed in soft mixed paper.

Source: Pulp & Paper Global Fact & Price Book, 2003-2004. Page 128. Paperloop, Inc. 2004.
Secondary Materials Pricing and Secondary Fiber Pricing. 2003-2015. Released September 2017. Available at http://www.recyclingmarkets.net/. Accessed September 2017.
1970 to 2004 historical data tabulated from weekly or monthly industry publications and averaged annually during the time periods shown. Publications included Waste Age Recycling Times, Waste News, Paper Recycler, Miller Freeman, Inc.

Landfill Tipping Fees

From 1985 to 1995 there was a rapid rise in national landfill tipping fees, followed by a steady decrease from 1995 to 2004. Since 2004, there has been a slow and steady average increase of about one percent per year in landfill tipping fees (*See* Figure 12). The tipping fees are expressed in constant 2015 dollars.

Figure 12. National Landfill Tipping Fees, 1982-2015 ($2015 per ton)



National mean annual landfill tipping fees were normalized to constant $2015 using the Consumer Price Index (CPI) from the Bureau of Labor Statistics to allow meaningful comparisons. This figure shows an average increase from 1985 to 1995 of $3.20 per year followed by a steady decrease of $0.78 per year followed by an increase of $0.46 per year from 2004 to 2015.

Source: National Solid Wastes Management Association (NSWMA) Municipal Solid Waste Landfill Facts. October 2011 (Data from 1985 to 2008). Waste Business Journal. "The Cost to Landfill MSW Continues to Rise Despite Soft Demand." July 11, 2017 (Data for 2010 to 2015).

MSW Generation and Household Spending

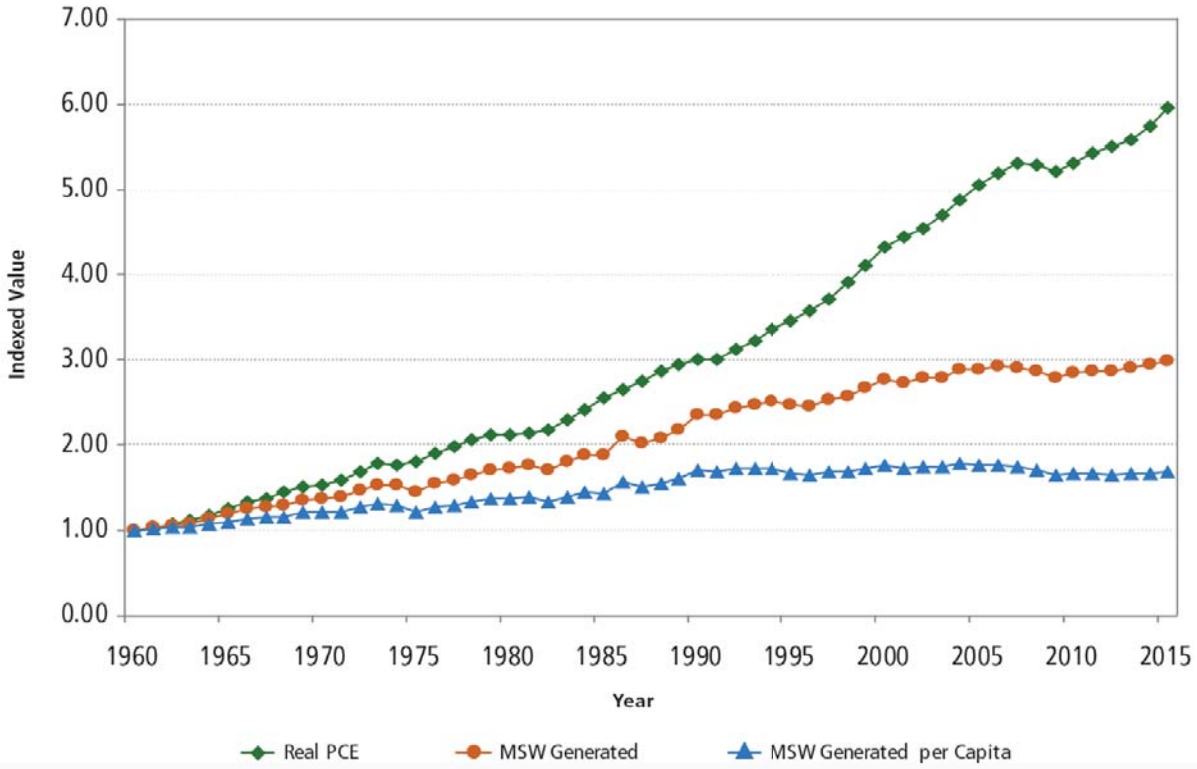
In the U.S., the change in the amount of MSW generated typically mirrors trends in how much money households spent on goods and services. Personal Consumer Expenditures (PCE) measure household spending on goods and services such as food, clothing, vehicles and recreation services. PCE is one of the four components of economic growth, along with government spending, private investments and net exports. As PCE is an indicator of the household consumption of goods and services, which make up nearly 70 percent of the gross domestic product (GDP), PCE has a stronger conceptual tie to MSW generation than the other three GDP components. PCE adjusted for inflation is referred to as real PCE. This metric is more useful in making comparisons over time because it normalizes the value of a dollar by considering how much a dollar could

purchase in the past versus today. Figure 13 explores the relationship between MSW generated and real PCE since 1960.

Figure 13 is an indexed graph showing the relative changes in real PCE, MSW generated and MSW generated per capita over time. It is indexed to allow all three of these metrics to be shown on the same graph and to compare their relative rates of change since 1960. The indexed value indicates the change in the value of the data since 1960. For example, if for a given year the value were three, then the data value for that year would be three times the 1960 value. In this case, if the 1960 value were 200, then the resulting year's value would be 600. The 2015 MSW per capita generation indexed value is 1.7, which means MSW per capita generation has increased by 70 percent since 1960.

Figure 13 shows that real PCE has increased at a faster rate than MSW generation, and the disparity has become even more distinct since the mid-1990s. This metric indicates the amount of MSW generated per dollar spent is falling. In other words, the U.S. economy has been able to enjoy dramatic increases in household spending on consumer goods and services without the societal impact of similarly increasing MSW generation rates. This figure also shows that the MSW generated per capita leveled off in the early-to-mid 2000s.

Figure 13. Indexed MSW Generated and Real PCE over Time (1960-2015)



MSW Methodology

The data summarized in this fact sheet characterizes the MSW stream as a whole by using a materials flow methodology that relies on a mass balance approach. EPA recognizes that there are several approaches to measuring material flows, such as by volume. To be consistent, EPA reports the quantities of materials in tons in the current fact sheet but will continue to explore options for alternative measurement quantifications to describe materials management in the United States.

EPA has consistently used materials flow analysis to allow for the comparison of data over the last three decades. EPA recognizes that this methodology differs from other methodologies that also estimate the generation of MSW and other waste data. EPA will continue to work with stakeholders to identify methodologies and additional publicly available data to improve our national understanding of materials flow in the United States.

Using data gathered from industry associations, businesses and government sources, such as the U.S. Department of Commerce and the U.S. Census Bureau, we estimate the weight in tons of all MSW materials and products generated, recycled, composted, combusted with energy recovery and landfilled. Other sources of data, such as waste characterizations and research reports performed by governments, industry or the press, supplement these data.

Construction and Demolition (C&D) Debris Generation Results

C&D debris is a type of waste that is not included in MSW. Materials included in C&D debris are steel, wood products, drywall and plaster, brick and clay tile, asphalt shingles, concrete and asphalt concrete. These materials are used in buildings, roads and bridges and other structures. The generation estimate represents C&D debris amounts from construction, renovation and demolition activities for buildings, roads and bridges and other structures.

In 2015, 548 million tons of C&D debris were generated. Figure 14 shows the 2015 generation composition for C&D debris. C&D concrete was the largest portion at 70 percent, followed by asphalt concrete at 15 percent. C&D wood products made up 7 percent, and the other products accounted for 8 percent combined. The 2015 generation estimates are presented in more detail in Table 5. As shown in Figure 15, demolition represented over 90 percent of total C&D debris generation. Construction, on the other hand, represented under 10 percent.

Figure 14. C&D Generation Composition by Material (before processing), 2015
548 Million Tons

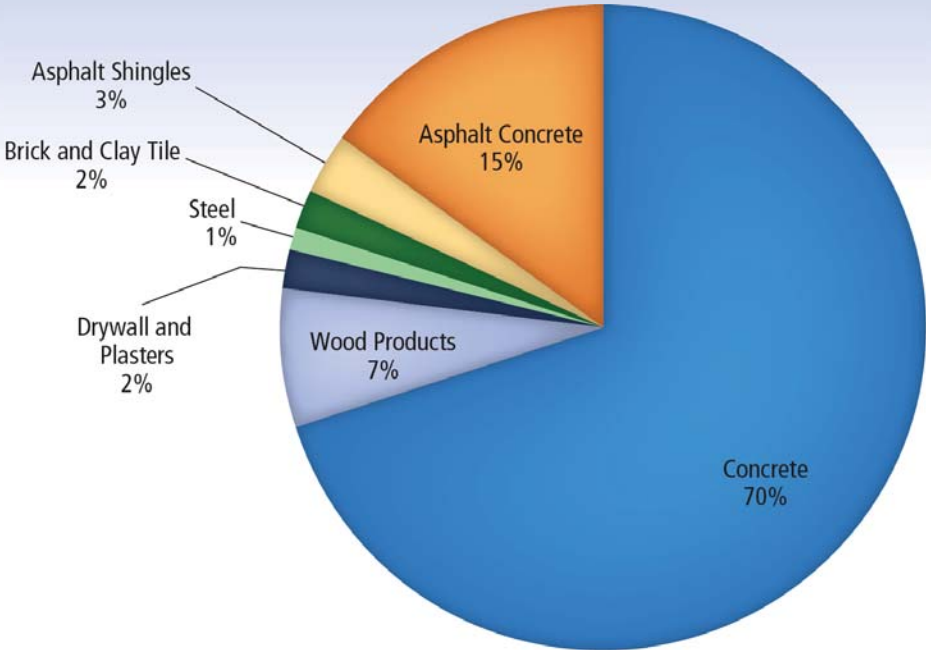


Table 5. C&D Debris Generation by Material and Activity, 2015 (in millions of tons)

	Waste During Construction	Demolition Debris	Total C&D Debris
Concrete	23.1	358.7	381.8
Wood Products[1]	2.8	36.1	38.9
Drywall and Plasters	2.5	10.5	13.0
Steel[2]	0.0	4.5	4.5
Brick and Clay Tile	0.3	11.9	12.2
Asphalt Shingles	0.9	12.6	13.5
Asphalt Concrete	0.0	83.9	83.9
Total	**29.6**	**518.2**	**547.8**

[1] Wood consumption in buildings also includes some lumber consumed for the construction of other structures. Data were not available to allocate lumber consumption for non-residential and unspecified uses between buildings and other structures except for railroad ties. Since non-residential buildings such as barns, warehouses and small commercial buildings are assumed to consume a greater amount of lumber than other structures, the amount of lumber for construction remaining after the amount for railroad ties is split out is included in the buildings source category.

[2] Steel consumption in buildings also includes steel consumed for the construction of roads and bridges. Data were not available to allocate steel consumption across different sources, but buildings are assumed to consume the largest portion of steel for construction.

Figure 15. Contribution of Construction and Demolition Phases to Total 2015 C&D Debris Generation

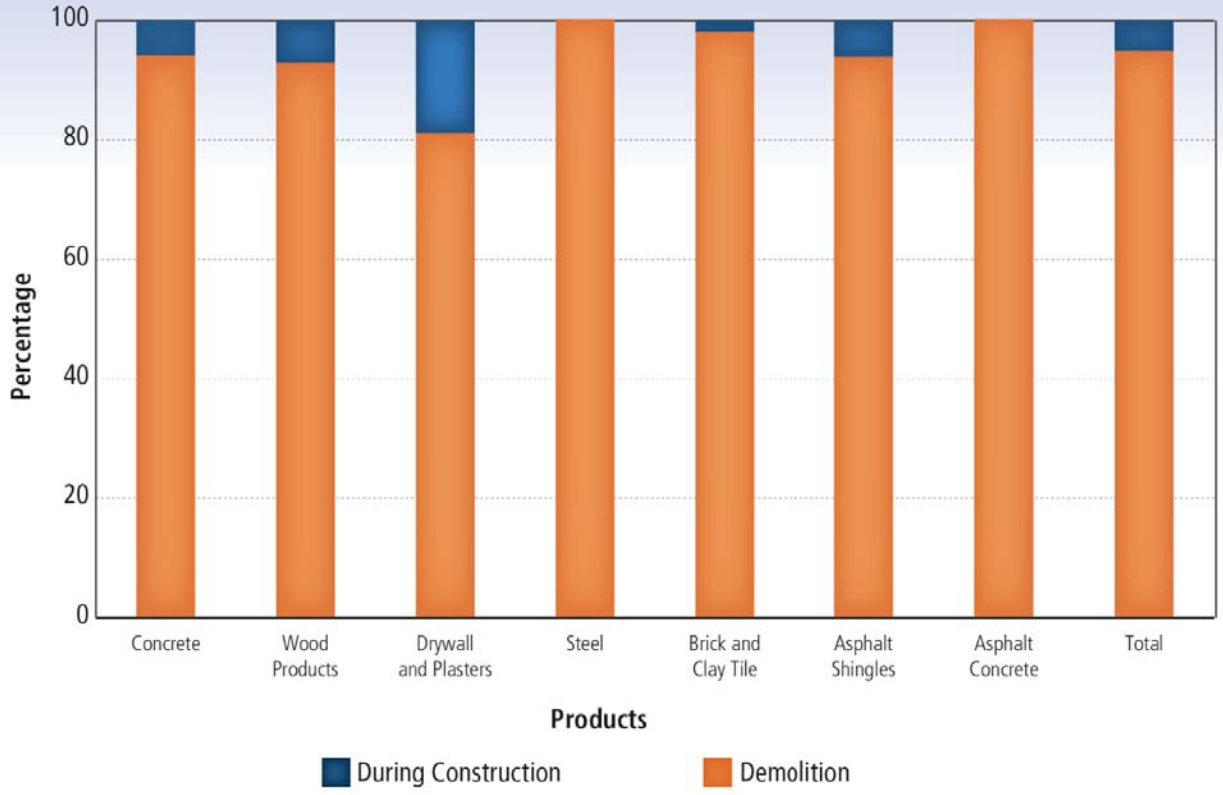


Table 6 displays the amount of C&D debris generation from buildings, roads and bridges and other structures for each material. The “other structures” category includes C&D debris generation estimates from communication, power, transportation, sewer and waste disposal, water supply, conservation and development and the manufacturing infrastructure. In 2015, roads and bridges contributed significantly more to C&D debris generation than buildings and other structures, and concrete made up the largest share of C&D debris generation for all three categories.

Table 6. C&D Debris Generation by Source, 2015 (in millions of tons)

	Buildings	Roads and Bridges	Other
Concrete	88.4	158.4	135.0
Wood Products[1]	37.6	-	1.4
Drywall and Plasters	13.0	-	-
Steel[2]	4.5	-	-
Brick and Clay Tile	12.1	-	-
Asphalt Shingles	13.5	-	-
Asphalt Concrete	-	83.9	-
Total	**169.1**	**242.3**	**136.4**

[1] Wood consumption in buildings also includes some lumber consumed for the construction of other structures. Data were not available to allocate lumber consumption for non-residential and unspecified uses between buildings and other structures except for railroad ties. Since non-residential buildings such as barns, warehouses and small commercial buildings are assumed to consume a greater amount of lumber than other structures, the amount of lumber for construction remaining after the amount for railroad ties is split out is included in the buildings source category.

[2] Steel consumption in buildings also includes steel consumed for the construction of roads and bridges. Data were not available to allocate steel consumption across different sources, but buildings are assumed to consume the largest portion of steel for construction.

A dash in the table means that data are not available.

Thinking Beyond Waste

Measuring and understanding the data on MSW generation, recycling, composting, combustion with energy recovery and landfilling is an important foundation for knowing where these valuable resources are going. It is a starting point to figure out trends and ways to more efficiently use these resources and how to keep them in use. EPA is helping change the way our society views the materials and resources in solid waste by thinking beyond recycling, composting, combustion and landfilling. By going beyond the concept of "Reduce, Reuse, Recycle," EPA is employing a systemic approach to reduce material use and associated environmental impacts over the entire life cycle of materials through a process called Sustainable Materials Management (SMM). This process starts with the extraction of natural resources and material processing through product design and manufacturing, followed by the product use stage, then collection/processing, and lastly, end-of-life management. By examining how materials are used throughout their life cycle, an SMM approach seeks to use materials in the most productive way with an emphasis on using fewer materials and products, and reducing environmental impacts throughout the life cycle of a material. See https://www.epa.gov/smm for more information.

Resources

The 2015 data tables and the summary of the MSW characterization methodology are available on the EPA website, along with information about waste reduction, recycling and sustainable materials management.

Please visit:

https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling

https://www.epa.gov/recycle

https://www.epa.gov/smm

Endnotes

1. Source for 2002 community composting program data: "The State of Garbage In America." Simmons, Phil, Scott M. Kaufman, and Nickolas J. Themelis. *BioCycle* 47, no. 4, p. 26 (2006). Source for 2015 data: Goldstein, N. 2017, "The State of Organics." *BioCycle*, October, p. 5, Table 2. Facilities composting yard trimmings, yard trimmings and food, and mixed organics. Excludes 740 facilities composting manure, biosolids, mixed MSW or not defined.
2. Sources for food composting collection programs: Streeter, V.; Platt B. 2017. Residential Food Waste Collection Access in the U.S. *BioCycle* December. Programs included are programs with startup dates in 2015 or earlier. Programs started in 2016 and 2017 are excluded. Programs with no startup date provided in the source document or identified through internet searches are also excluded.
3. US EPA. 2016. "Recycling Economic Information Report" (2016). https://www.epa.gov/smm/recycling-economic-information-rei-report.

EPA
United States
Environmental Protection
Agency

United States Environmental Protection Agency
Office of Land and Emergency Management (5306P)
Washington, DC 20460

Official Business
Penalty for Private Use $300

EPA530-F-18-004

July 2018

APPENDIX G

Accomack County Recycling Reports (2015-2017)

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Commonwealth of Virginia Locality Recycling Rate Report For Calendar Year 2015

Contact Information

Reporting Solid Waste Planning Unit: County of Accomack, VA

Person Completing This Form: Chontese M. Ridley

Title: Recycling & Litter Control Coordinator

Address: P.O. Box 52 (Street/P.O. Box) Tasley (City) Virginia (State) 23441 (Zip)

Phone #: (757) 787-1468 **Fax #:** (757) 789-3629

Email Address: cridley@co.accomack.va.us

Member Governments (The local governments identified in your regional solid waste management plan and whose data is included in this report):

County of Accomack, Towns of Accomac, Belle Haven, Bloxom, Chincoteague, Hallwood, Keller, Melfa, Onancock, Onley, Painter, Parksley, Saxis, Tangier, and Wachapreague.

Due to the complexity and difficulty in obtaining data, this report reflects the best efforts of the solid waste planning unit to represent its recycling efforts for **CY 2015**. Data in this report was collected from our recycling and solid waste facilities, and from other recycling sources, including non-governmental entities. I certify that I have personally examined and am familiar with the information submitted in this form and any attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. These records will be made available for auditing purposes, if requested.

Authorized Signature — Public Works Director (Title) — 4/29/16 (Date)

Return completed form by April 30, 2016 to: Virginia DEQ, Attn: Recycling Rates, P.O. Box 1105, Richmond, VA 23218.

Locality Recycling Rate Report

For Calendar Year 2015

PART A: Recycling Rate Calculation - Using the formulae provided below and the information reported on Pages 3, 4 and 5 to calculate your recycling rates.

Step 1: [(PRMs) / (PRMs + MSW Disposed)] X 100 = Base Recycling Rate %

16617	/	16617	+	23325	X 100 =	41.6	%
TONS		TONS		TONS			

Step 2: CREDITS calculation

a. Total Recycling Residue	0	tons
b. Total Solid Waste Reused	0	tons
c. Total Non-MSW Recycled		tons
CREDITS	0	tons

Step 3: [(PRMs + CREDITS) / (PRMs + CREDITS + MSW Disposed)] X 100 = Adjusted Recycling Rate #1*

16617	+	0	/	16617	+	0	+	23325	X 100 =	41.6	%
TONS		TONS		TONS		TONS		TONS			

Step 4: [X] **Source Reduction Credit does not apply; or**

[ ] **Adjusted Recycling Rate #1 + 2% SRP Credit = Adjusted Recycling Rate #2***

0	%	+ 2%	=	0	%

Step 5: Final Recycling Rate* for Solid Waste Planning Unit = 41.6 **%**

*** Total credits resulting from Steps 3 and 4 may not exceed 5 percentage points above the Base Recycling Rate achieved by the Solid Waste Planning Unit.**

Locality Recycling Rate Report
PART B: DATA

For Calendar Year 2015

Part I: Principal Recyclable Materials (PRMs): Report only PRM material generated within the reporting SWPU and recycled, NOT imported PRMs for recycling.

PRM TYPE	RECYCLED AMOUNT (TONS)
Paper	1604
Metal	6707
Plastic	280
Glass	0
Commingled (also known as Single Stream)	4829
Yard Waste (composted or mulched)	0
Waste wood (chipped or mulched)	131
Textiles	48
Tires	400
Used Oil	426
Used Oil Filters	0
Used Antifreeze	2
Batteries	1035
Electronics	11
Inoperative Motor Vehicles (see guidance)	0
Other (specify: Cooking Oil)	21
Other (specify: Wood Pallets)	967
Other - Organics - 88 Other - Drums/Totes - 67 Other - Lamps - 1	**TOTAL PRMs** 16617 (PRMs)

(no decimals please, round to whole tons)

(Enter Total on Page 2, Step 1)

Listing of sources for PRM data ***(consider only Virginia generated waste material)***

1. Permitted solid waste facilities from which MSW disposed/recycled data was collected:
   a. North Landfill
   b. South Transfer Station
   c.
   d.
   e.
   f.
   g.
   h.
   i.

(Example: Permit# 112, County landfill)

2. Other facilities/operations (not included in #1 above) from which MSW disposed/recycled data was collected:
   a. Walmart
   b. TFC Recycling
   c. Crystal Clean
   d. Davis Disposal
   e. A&B Salvage
   f. Verizon
   g. Perdue Farms
   h. Pasco
   i. Family Dollar

(Example: Walmart/Target)

(This area is not intended to be all-inclusive, but representative. Example: scrap dealers, retail grocers, paper shredding firm, etc. Other example: Materials Recycling Facility (name).)

Part II: Credits by Category (see Credits Worksheet, Page 5)

A. Recycling Residue – "Recycling residue" means the (i) nonmetallic substances, including but not limited to plastic, rubber, and insulation, which remain after a shredder has separated for purposes of recycling the ferrous and nonferrous metal from a motor vehicle, appliance, or other discarded metallic item and (ii) organic waste remaining after removal of metals, glass, plastics and paper which are to be recycled as part of a resource recovery process for municipal solid waste resulting in the production of a refuse derived fuel. (§ 10.1-1400 of the *Code of Virginia*) (use only SWPU generation)

MATERIAL DESCRIPTION		FACILITY/OPERATION	(no decimals please, round to whole tons) TONS OF MATERIAL
N/A	from		
N/A	from		
N/A	from		

TOTAL RECYCLING RESIDUE _____

(Enter Total on Page 2, Step 2 a)

B. Solid Waste Re-Used

MATERIAL DESCRIPTION	REUSE METHOD	(no decimals please, round to whole tons) TONS OF MATERIAL
N/A		
N/A		
N/A		
N/A		
N/A		
N/A		

TOTAL SOLID WASTE REUSED _____

(Enter Total on Page 2, Step 2 b)

C. Non-Municipal Solid Waste (MSW) Recycled

MATERIAL DESCRIPTION	RECYCLING METHOD	(no decimals please, round to whole tons) TONS OF MATERIAL
N/A		
N/A		
N/A		
N/A		

TOTAL NON-MSW RECYCLED _____

(Enter Total on Page 2, Step 2 c)

D: A credit of two (2) percentage points may be added to the Adjusted Recycling Rate #1 if the Solid Waste Planning Unit has implemented a Source Reduction Program (SRP). Examples of SRPs include Grass-cycling, Home Composting, Clothing Reuse, Office Paper Reduction (duplexing), Multi-Use Pallets, or Paper Towel Reduction. The SRP must be included in the Solid Waste Management Plan on file with the Department:

SRP description: _____

SRP description: _____

SRP description: _____

(Certify on Page 2, Step 4)

Exclusions: For the purposes of this report, the following materials are not considered solid wastes, and should not be included in any of the data categories utilized in calculating the recycling rate.

1. **Biosolids –industrial sludge, animal manures; or, sewage sludge (unless composted)**
2. **Automobiles – unless part of the Inoperable Vehicle Program (DMV)**
3. **Leachate**
4. **Soils – contaminated soils, soil material from road maintenance**
5. **Household hazardous waste**
6. **Hazardous waste**
7. **Medical waste**
8. **Rocks or stone**
9. **Woody waste derived from land clearing for development, VDOT or easement tree trimming/clearing.**

Part III: Total Municipal Solid Waste (MSW) Disposed** - Report only MSW generated within the reporting jurisdiction(s). NOT imported wastes or industrial wastes.

MSW TYPE	TOTAL AMOUNT of MSW DISPOSED (TONS)
Household	14782 (no decimals please,
Commercial	8543 round to whole tons)
Institutional	0
Other (DO NOT INCLUDE INDUSTRIAL WASTES)	0
TOTAL MSW DISPOSED	23,325

(Enter Total on Page 2, Step 1 and Step 3)

*Note: **MSW DISPOSED** for the purpose of this report means delivered to a permitted sanitary landfill, delivered to a waste-to-energy facility, or managed at a transfer station for transport to a landfill or waste-to-energy facility.*

Credits Worksheet

I. Reuse of any Solid Waste

√		Material description	Tons
___	PRM	_____	_____ (no decimals please, round to whole tons)
___	PRM	_____	_____
___	PRM	_____	_____
___	Industrial	_____	_____
___	Construction	_____	_____
___	Demolition	_____	_____
___	Debris	_____	_____
___	Other	_____	_____
___	Other	_____	_____
___	Other	_____	_____
		TOTAL TONS	_____ **(enter data on Page 4, Solid Waste Re-Used)**

II. Recycling of any Non-Municipal Solid Waste

√		Material description	Tons
___	Industrial	_____	_____ (no decimals please, round to whole tons)
___	Construction	_____	_____
___	Demolition	_____	_____
___	Debris	_____	_____
___	Other	_____	_____
___	Other	_____	_____
___	Other	_____	_____
		TOTAL TONS	_____ **(enter data on Page 4, Non-MSW Recycled)**

III. Inoperable Vehicles Removed and Demolished – include number of vehicles that the localities received reimbursement from DMV under §46.2-1207 of the Code of Virginia.

# of vehicles removed/reimbursement received	0	
Average tonnage per vehicle	X 1 Ton each	
Total Tons	0	**(enter data on Page 3, PRMs, Inoperative Motor Vehicle Program)**

NOTE: Check "Exclusions" on Page 5 to avoid listing of those materials on this worksheet and/or in the data fields of this report.

Commonwealth of Virginia
Locality Recycling Rate Report
Calendar Year 2016

DEQ Form 50-30 (Revised December 2016)

Email completed form to: virginia.butler@deq.virginia.gov

Solid Waste Planning Unit Information (Enter in Rows 4 - 14.)

Solid Waste Planning Unit	Accomack County
Preparer's Name	Linda Mrozinski
Preparer's Title	Recycling/Litter Control Specialist Interim
Address Line 1	24420 Lankford Highway
Address Line 2	P.O. Box 52
Address Line 3	Tasley, VA 23441
Phone Number	(757) 787-1468
Email address	Lmrozinski@co.accomack.va.us
Date	4/17/2017

Total Population for SWPU	33,165	**Population Density for SWPU**	84
Mandated Recycling Rate (15% or 25% will auto calculate)	15%	**Reporting Frequency**	Every 4 years

Enter tons (whole numbers only) in the yellow highlighted boxes for PRMs and MSW Disposed.
Totals will auto calculate.

Principal Recyclable Materials (PRM)

PRM Material	Tons recycled
Paper	1,680
Metal	1,300
Plastic	1,100
Glass	1,800
Commingled	6,185
Yard Waste	1,396
Waste Wood	1,620
Textiles	68
Waste Tires	1,828
Used Oil	2,976
Used Oil Filters	0
Used Antifreeze	8
Batteries	1,600
Electronics	270
Inoperative Motor Vehicles	0
Other - County Comingled	275
Other - Wood Pallets	1,168
Total PRM in Tons	**23,274**

MSW Disposed	
Household Waste	16,391
Commercial Waste	5,202
Institutional Waste	4,188
Other	
Total MSW	**25,781**

Enter facility information and material in columns A and B. Enter tons (whole numbers only) in the yellow highlighted boxes. Totals will auto calculate.

Credits Recycling Residue

Facility/Operation	Material	Tons
Total		0

Credits Solid Waste Reused

Reuse Method	Material	Tons
Total		0

Credits Non-MSW recycled

Recycling Method	Material	Tons
Household	Mixed	18,380
Commerical	Mixed	15,202
Industrial	Mixed	8,188
Total		41,770
CREDITS TOTAL		41,770

Credit for Source Reduction Program (SRP) **SRP does not apply enter "0"** **SRP does apply enter "2"**	2%

Recycling rates auto calculate.

Base Recycling Rate	**47.4%**	Base Rate
Adjusted Recycling Rate	**71.6%**	Rate with credits
Adjusted Recycling Rate + SRP	**73.6%**	Credits + SRP
Credit Max Allowed Base +5	##################	
Final Recycle Rate	**52.4%**	Final Recycle Rate

Sources for PRM Data *Example: Permit #112, County Landfill*	North Landfill Permit #461, South Transfer Station permit # 091
Other Sources for collected data *Example: Walmart/Target*	TFC Recycling, Perdue, Sharp Engery, Helena Chemical, SPCA-ES, NASA, NOAA, Rent-A Center, Boggs Water& Sewage,ESCC, Deep Creek Marina, Marine Science.
Comments:	
Additional Contacts:	

Commonwealth of Virginia
Locality Recycling Rate Report
Calendar Year 2017

DEQ Form 50-30 (Revised September 2017)

Email completed form to:
virginia.butler@deq.virginia.gov

Date Submitted 4/23/18

Solid Waste Planning Unit **Accomack County**
Click on the adjacent cell for drop down menu

SWPU Web Page

	Contact 1	Contact 2
Name	Linda Mrozinski	Greg Duncan
Title	Recycling/Litter Control Specialist	Deputy Director Public Works
Address Line 1	24401 Joynes Neck Road	24401 Joynes Neck Road
Address Line 2	P.O. Box 476	P.O. Box 476
Address Line 3	Accomac, VA 23301	Accomac, VA
Phone Number	757-787-1468	757-787-1468
Email address	lmrozinski@co.accomack.va.us	gduncan@co.accomack.va.us

Total Population for SWPU	33,165	**SWPU Population Density**	84
Mandated Recycling Rate (% will auto calculate)	15%	**Reporting Frequency** (Will auto calculate)	Every 4 years
Sources for PRM Data *Example: Permit #112, County Landfill*	Permit #464 County North Landfill Permit #091 South Transfer Station		
Other Sources for collected data *Example: Walmart/Target*	TFC Recycling, Davis Disposal, NASA, US Coast Guard, Verizon, Dollar General, Family Dollar, Hill Sand & Gravel Construction Recycling.		
Comments:			

Enter tons (whole numbers only) in the yellow highlighted boxes for PRMs and MSW Disposed.
Totals will auto calculate.

Principal Recyclable Materials (PRM)	
PRM Material	**Tons recycled**
Paper	3,443
Metal	2,013
Plastic	1,245
Glass	2,146
Commingled	8,359
Yard Waste	2,125
Waste Wood	3,017
Textiles	1,863
Waste Tires	1,908
Used Oil	4,075
Used Oil Filters	0
Used Antifreeze	0
Batteries	3,009
Electronics	445
Inoperative Motor Vehicles	0
Other Total (Specify Material and tonnage on Rows 24 - 39 to the right.)	6,972
Total PRM in Tons	**40,620**

Specify Other PRMs for Row 39	
PRM Material	**Tons recycled**
Concrete, Brick, Block	4500
Mulch	2,472
Other Total	6,972

MSW Disposed	
Household Waste	28,145
Commercial Waste	5,755
Institutional Waste	2,436
Other	
Total MSW	**36,336**

Credit for Source Reduction Program
SRP does not apply enter "0"
SRP does apply enter "2"
2%

Enter facility information and material in columns A and B. Enter tons (whole numbers only) in the yellow highlighted boxes. Totals will auto calculate.

Credits Recycling Residue

Facility/Operation	Material	Tons
Total		0

Credits Solid Waste Reused

Reuse Method	Material	Tons
Total		0

Credits Non-MSW recycled

Recycling Method	Material	Tons
Total		0
CREDITS TOTAL		0

Recycling rates auto calculate.

Base Recycling Rate	52.8%
Adjusted Recycling Rate	52.8%
Adjusted Recycling Rate + SRP	54.8%
Credit Max Allowed Base +5	57.8%
Final Recycle Rate	54.8%

APPENDIX H

Public Participation Documentation

APPENDIX I

Capacity and Remaining Life

Table 4 – Capacity and Remaining Life for MSW (Sanitary) Landfills – 2017

	Facility Name	Permit	Capacity in Tons as of 12/2017	Landfilled in 2017 Tons	Expected Remaining Permitted Life (Years)	Region
1	Accomack County Northern Landfill	SWP461	1,030,199.00	36,577.19	41	TRO
2	Amherst County Landfill Permit Number 563	SWP563	353,092.35	30,351.48	13.96	BRRO
3	Atlantic Waste Disposal Inc	SWP562	46,506,369.50	998,072.13	73.8	PRO
4	Augusta Regional Landfill	SWP585	4,445,960.00	135,351.56	35.6	VRO
5	Battle Creek Landfill	SWP579	2,718,702.50	48,618.87	59.5	VRO
6	Bedford County - Sanitary Landfill	SWP560	124,476.50	52,868.00	3.5	BRRO
7	Bedford Town - Hylton Site	SWP569	6,900.00	39.28	1	BRRO
8	BFI Old Dominion Landfill	SWP553	8,515,132.00	492,823.38	34.5	PRO
9	Blue Ridge Resource Authority	SWP075	2,126,911.10	42,035.65	60	VRO
10	Botetourt County Landfill	SWP582	22,257.50	970.00	7	BRRO
11	Bristol Integrated Solid Waste Management Facility	SWP498	0	0	0	SWRO
12	Bristol Integrated Solid Waste Management Facility	SWP588	2,142,920.00	138,905.05	27	SWRO
13	Brunswick Waste Management Facility LLC	SWP583	10,204,424.50	198,960.66	103	PRO
14	Carroll Grayson Galax Regional Landfill 2	SWP605	1,285,584.00	37,584.39	52.7	SWRO
15	Charles City County Landfill	SWP531	12,950,409.50	649,482.06	38.7	PRO
16	Covington City - Peters Mountain Landfill	SWP594	354,348.78	12,850.87	27.57	BRRO
17	Disposal and Recycling Services of Lunenburg	SWP544	806,500.00	96,816.96	4.5	PRO
18	Fauquier County Solid Waste Management Facility	SWP149	0	0	0	NRO
19	Fauquier County Solid Waste Management Facility	SWP575	323,640.00	7,903.21	36.5	NRO
20	Franklin County - Sanitary Landfill	SWP072	10,000.00	46,678.00	1	BRRO
21	Franklin County - Sanitary Landfill	SWP577	1,743,585.00	2,697.00	32	BRRO
22	Frederick County Landfill	SWP529	6,253,207.00	121,801.08	28	VRO
23	Greensville County Landfill	SWP405	313,810.50	24,338.35	16	PRO
24	Interstate 95 Landfill	SWP103	3,764,071.50	100,564.31	41.8	NRO
25	King and Queen Sanitary Landfill	SWP554	6,679,280.00	709,993.41	22	PRO
26	King George Landfill & Recycling Center	SWP586	17,857,162.50	1,727,161.93	30.9	NRO
27	Loudoun County Sanitary Landfill	SWP001	11,239,283.50	147,078.62	65	NRO
28	Louisa County Sanitary Landfill	SWP194	0	0	0	NRO
29	Louisa County Sanitary Landfill	SWP567	335,788.50	19,645.92	22.2	NRO
30	Maplewood Recycling and Waste Disposal	SWP540	16,415,215.50	393,153.94	149.7	PRO
31	Middle Peninsula Landfill and Recycling Facility	SWP572	13,832,216.00	517,590.53	49.7	PRO

32	New River Resource Authority Solid Waste Facility	SWP548	522,369.50	104,817.00	3.7	BRRO
33	Nottoway County Sanitary Landfill - Blackstone	SWP304	294,944.00	19,253.05	18	PRO
34	Orange County Sanitary Landfill	SWP566	1,692,940.00	22,124.65	34	NRO
35	Pittsylvania Co - Sanitary Landfill	SWP571	215,169.93	40,655.50	18	BRRO
36	Prince Edward County Sanitary Landfill	SWP584	197,588.00	25,075.71	7.5	PRO
37	Prince William County Sanitary Landfill	SWP029	5,716,564.00	488,567.00	13	NRO
	Rappahannock Regional Solid Waste Management Board	SWP589	6,395,440.50	206,693.89	39	NRO
38	Region 2000 Regional Landfill - Livestock Rd Fac	SWP610	1,651,292.00	187,550.05	12.2	BRRO
39	Region 2000 Services Authority - Concord Turnpike	SWP558	0	0	0	BRRO
40	Rockingham County Landfill	SWP062	232,095.50	124,912.11	2.1	VRO
41	Shenandoah County Landfill - Edinburg	SWP469	1,865,281.00	47,161.00	29.4	VRO
42	Shoosmith Sanitary Landfill	SWP587	20,550,000.00	1,192,705.00	31	PRO
43	Smith Gap Regional Landfill	SWP555	4,672,241.50	234,079.03	24.2	BRRO
44	Spotsylvania County Livingston Sanitary Landfill	SWP547	588,067.50	127,890.16	6.0	NRO
45	SPSA - Regional Landfill	SWP417	1,976,000.00	34,078.50	7	TRO
46	SRPSA - Butcher Creek Sanitary Landfill	SWP598	2,620,895.11	69,913.27	29	PRO
47	Tazewell County Landfill	SWP564	360,312.91	40,768.90	8.41	SWRO
48	Tri City Regional Disposal and Recycling Services	SWP228	762,500.00	278,492.76	3.5	PRO
49	USA Waste of Virginia Landfills - Bethel	SWP580	22,803,788.50	617,977.82	91.9	TRO
50	Virginia Beach City - Landfill No 2	SWP398	1,805,100.00	21,826.00	74	TRO
51	Wise County Sanitary Landfill	SWP513	515,880.84	41,835.86	10	SWRO
	MSW Landfill Total for 2017		**247,799,918.01**	**10,717,291.08**	**23.1**	
	MSW Landfill Total for 2016		258,682,077.84	10,737,875.29	24.1