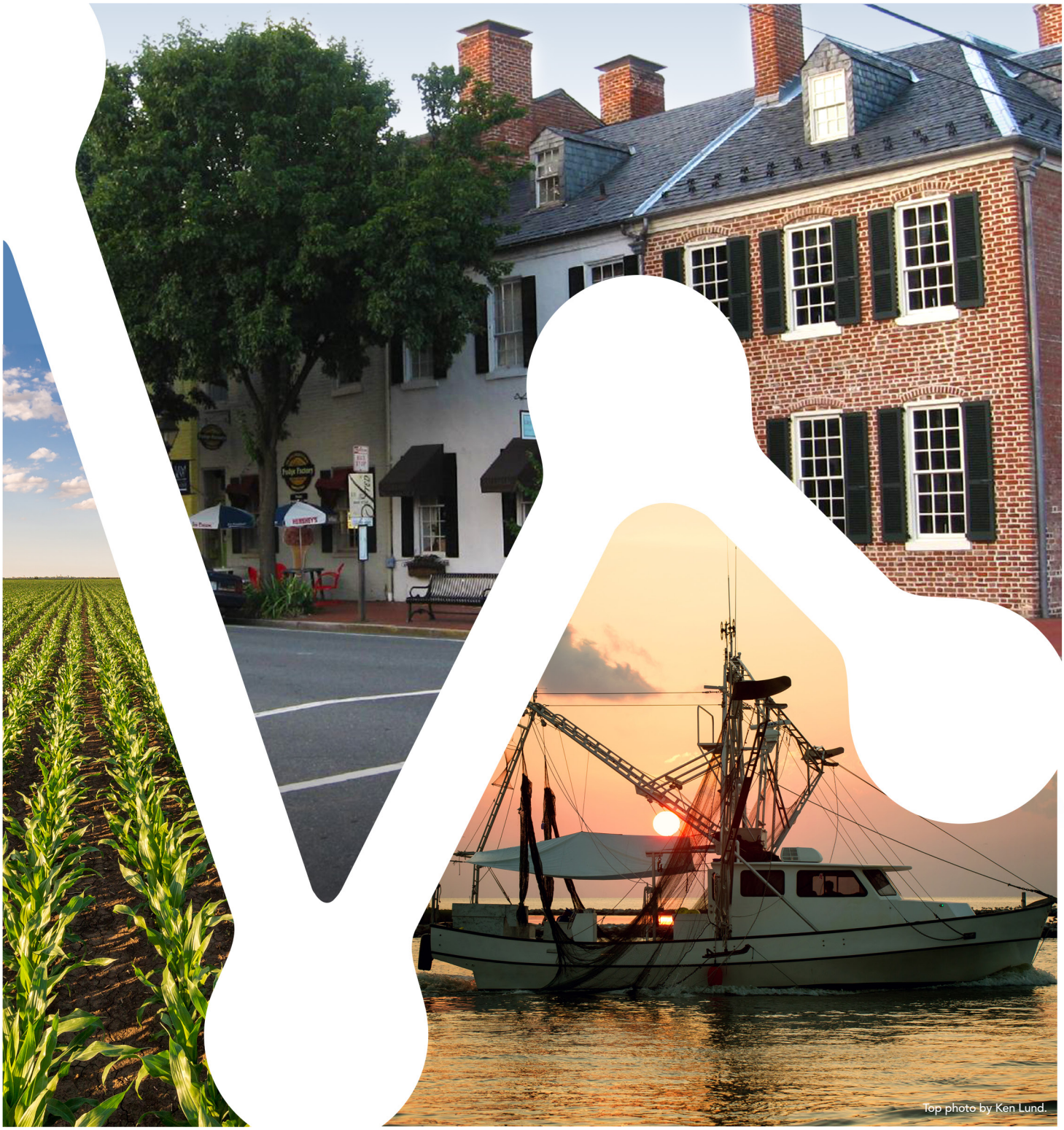
Mary Ball Washington GO Virginia Region 6
Growth Sector Analysis



Top photo by Ken Lund.

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Overview and Introduction

This portion of the planning process analyzes the high-performance industry clusters identified through the empirical analysis of the regional economy and the feedback from stakeholders during the Plan Development Phase.

The sixteen high-performance industry clusters that were identified included:

- Agriculture
- Education
- Finance and Insurance
- Information
- Manufacturing -- Computer and Electronic
- Manufacturing -- Fabricated Metal and Machinery
- Manufacturing – Food and Beverage
- Manufacturing – Miscellaneous
- Manufacturing – Plastics, Rubber and Nonmetallic Mineral Products
- Manufacturing -- Wood Product and Paper
- Mining and Quarrying
- Professional, Scientific, Technical and Management of Companies
- Tourism
- Transportation and Warehousing
- Utilities
- Wholesale Trade

For purposes of this analysis, these sixteen industry clusters are regrouped into 12 clusters since several of the clusters share similar characteristics and supply chains. The Agriculture cluster contains aquaculture and commercial fishing which has been combined with seafood processing from the food and beverage manufacturing cluster to form an Aquaculture/Seafood/Commercial Fishing cluster. Logging from the Agriculture cluster is combined with the Wood Products and Paper cluster to form a Forestry, Wood Products and Pulp cluster. The remaining Manufacturing Clusters are grouped together as Manufacturing. The Transportation and Warehousing cluster is

combined with the Wholesale Trade cluster into a Distribution/Logistics cluster. The resulting cluster alignment for this evaluation is:

- Natural Resource Clusters
  - Aquaculture/Seafood/Commercial Fishing
  - Forestry. Wood Products and Pulp
  - Agriculture
- Manufacturing
- Distribution/Logistics
- Information/Data centers
- Professional, Scientific, Technical and Management of Companies
- Finance and Insurance
- Tourism
- Education
- Utilities
- Mining and Quarrying

Each of these industry clusters was analyzed using four broad criteria; 1) Product Availability, 2) Workforce, 3) Cost of Doing Business and 4) Innovation Support.

- *Product* – An analysis of the availability and quality of the product (sites and buildings) to accommodate new or expanding business. The consultant team, including Draper Aden Associates, reviewed the general physical location requirements of the selected high-performance industry sectors. Based on those parameters, the existing supply of sites and buildings listed in the Virginia Economic Development Partnership database, Virginia Scan, were compared against industry requirements and an on-site review of six sites was conducted.

- *Workforce* – An analysis of the types of workers likely to be required to support projected levels of target sector expansion.

- *Cost of Doing Business* – This analysis assessed the factors that impact a business's cost within the region on a short-term and long-term basis. In this analysis, the availability of capital, incentives, regulatory compliance, permitting

compliance, labor costs, lease rates, utility costs, and other factors were analyzed.

- *Institutional Support for Innovation* – This analysis assessed the various institutions that support expansion of the selected high-performance industry sectors. As part of this analysis, the availability of incubators, accelerators, small business assistance, mentoring, commercialization of research, access to university resources, and along with other factors were analyzed.

Draper Aden Associates were solicited to conduct an assessment of sites listed in the VEDP data base Virginia Scan, for suitability for the typical locational criteria of the high-performance industry clusters. Factors of location, access, availability of utilities, developable acreage, natural characteristics, etc. were all considered as a part of this analysis.

Product Summary

An abundant supply of suitable land and buildings able to support future expansion of the high-performance industry clusters is critical for the future growth of these clusters in the region. An analysis of the sites and buildings listed in Virginia Scan was conducted to determine the general distribution and suitability of the available properties for the identified high-performance industry clusters. Virginia Scan listed 88 sites, 32 industrial buildings, 21 flex buildings and 56 office buildings.

A summary analysis of the current supply of sites and buildings revealed a concentration of sites and buildings along the I-95 corridor. 41 of 52 sites greater than 25 acres are located in the George Washington Regional Commission (GWRC) localities with 19 of those located in Caroline County. Of the 61 industrial buildings listed 45 of them are in three GWRC localities, Spotsylvania, Stafford, and Fredericksburg. Of the 21 flex buildings listed 17 are located in Spotsylvania and Stafford Counties. Of the 56 office buildings listed 47 are located in Spotsylvania, Stafford, and Fredericksburg.

The availability of water and sewer service to a business/industrial site is an essential factor in its future development potential. Of the 52 sites listed that are greater than 25 acres only 30 sites are served by sewer and water. The majority of these sites are located in three localities, Caroline, Gloucester and Fredericksburg.

The ability to immediately develop a business site often determines its marketability since most business expansions or locations wish to occupy a site in a compressed timeframe. The Fredericksburg Regional Alliance (FRA) contracted Bowman Consulting to determine what level of investment would be necessary to improve the site readiness rating to "Certified Business Ready" of four large tracts of land. The investment levels of these four sites range from $500,000 to over $1,000,000 and do not include the costs of "hard" on-site infrastructure development. The timeframe for completing this readiness work ranges from 6 months to two years.

Virginia Economic Development Partnership has developed a 5-tier "Business Ready Site Classification System" that helps determine what sites are ready for immediate development and which sites could meet compressed development timeframes. Appendix A of this report describes the VEDP "Business Ready Classification" standards. Not a single site in the region has received a Tier 5 rating. Except for those four sites with site audits, it is uncertain what the readiness level is of any of the existing sites in the VEDP inventory since they have not had independent letters of certification issued. VEDP has initiated a grant program to assist in raising the readiness level of large tracts. Caroline County is now participating in this program.

Each of the high-performance industry clusters has unique location criteria that are typical for that industry cluster. Draper Aden Associates reviewed the inventory of sites in the VEDP database, greater than 15 acres in size, and provide a general suitability analysis for each industry cluster and select growth industry targets within the cluster. The analysis can be found in Appendix B. Some general observations from this analysis include:

- There are 40 sites within 5 miles of an interstate providing easy access for employees and transportation of goods and services; however, 19 of these sites do not have utilities within close proximity, and many are ungraded.
- Of the parcels over 100 acres, there are approximately 5 that have infrastructure at or adjacent to the site. This will impact the Region's ability to provide large-scale projects sites that can be ready within a short timeframe.
- 38 of the 63 sites had 0 to 1 utilities currently available on or immediately adjacent to the site.
- Availability of fiber is critical to many sectors; only 16 sites currently have fiber available, and of these, only a few have redundant service, which is critical for data centers and selected defense/security services.

- Approximately 11 sites have rail adjacent to the site, but only 5 have existing utility infrastructure.
- Middle Peninsula and Northern Neck sites are not conducive for data centers and selected defense and security services due to a high risk of natural disasters.
- Investments in infrastructure are critical to attracting new or expansion of existing industries and sectors in the Region.

Dominion Energy has developed a certification for data centers. The Quantico Corporate Center has been certified through the Dominion Energy process. No other site in the region has received this certification or any other industry specific certification.

Workforce Summary

The Workforce Gaps Analysis compares the projected demand for trained workers by occupation in Mary Ball Washington Region to graduates from regional post-secondary education programs. According to projections by the Virginia Employment Commission, between 2012 and 2022, the Mary Ball Washington Region will experience approximately 6,785 job openings each year. The regional educational institutions will not be able to provide the graduates necessary to fill these job openings. Many of the occupational gaps identified typically require a bachelor's degree or above. There is only one four-year degree granting post-secondary education institution in May Ball Washington Region, the University of Mary Washington (UMW), which has limited capacity to graduate the type or number of occupational degrees required. Graduates from institutions outside the region will need to be recruited to fill many of these shortfalls.

However, there are instances, in "middle-skill" occupations that require a less than a two-year post-secondary certificate, where local educational institutions could fill the identified gaps. Those occupations identified include:

- Bus and Truck Mechanics and Diesel Engine Specialists
- Electrical Power Line Installers and Repairers
- Electricians
- Emergency Medical Technicians
- Heavy and Tractor Trailer Truck Drivers
- Heating, Air Conditioning, and Refrigeration Mechanics

- Industrial Machinery Mechanics
- Mobile Heavy Equipment Mechanics
- Motorboat Mechanics and Service Technicians

Cost of Doing Business Summary

Most of the "cost of doing business" factors in the Mary Ball Washington Region are either competitive or cost favorable with surrounding metropolitan areas.

Labor costs are lower in the region than in adjacent metropolitan areas. The George Washington Regional Commission (GWRC) average weekly wage is lower than both the Northern Virginia (NOVA) and Richmond (RVA) areas, $921 for GWRC vs. $1475 for NOVA and $1012 for RVA. The average weekly wages for the Northern Neck and Middle Peninsula are even lower at $706 and $694 as compared to RVA at $1012 and Hampton Roads (HR) at $915.

Similarly, the cost of real estate in Region 6 is lower or competitive with the costs in NOVA, RVA, and HR. The cost of real estate varies greatly based upon the location, type of facility and condition of the property.

The costs of utilities and insurance are fairly uniform among all regions in VA since most of the providers serve a good portion or all of northern, eastern and central Virginia.

Two factors that can vary locally are taxes and business incentives. An analysis of local taxes on businesses revealed that the taxes in the region are generally lower or competitive than localities in the surrounding metropolitan areas. Since local taxes vary from one locality to another there are instances where one industry sector is given a tax preference in one locality and not another. An example of this is land use taxation for agriculture, horticulture, and forestry. This method of real estate taxation provides a tax preference to these industries but not all localities in the region have adopted this optional form of real estate taxation. In addition to the variations in local tax policies, the Commissioners of Revenue have latitude in the methods of assessing certain classes of property and these procedures can yield significantly different tax burdens among the localities. Even given these variations in taxing businesses, the overall local tax burden on business is generally lower than the taxes in localities in adjacent metropolitan areas.

The following table illustrates those localities that have adopted incentive programs or policies to encourage business development in that locality. Of the 15 localities in the Mary Ball Washington Region, 5 localities do not have any formal adopted program or policy for providing incentives for business location/expansion. The four Northern Neck localities are designated a Virginia Enterprise Zone and provide local incentives to match the Virginia Enterprise Zone incentives. Essex County has adopted a local enterprise zone incentive program. Four of the five localities in the George Washington Regional Commission have adopted local Technology Zones. Caroline County is the only locality that applies those incentives throughout the whole county. Four localities provide special incentive programs and expedited permitting procedures to encourage business development. These special incentive programs are tailored to encourage a particular type of development or directed at specific business classifications.

US Small Business Administration designation of Historically Underutilized Business Zone (HUB) covering all or a portion of six of the localities gives preference in government contracting to businesses located in those areas HUB Zones. The requirement that at least a majority of the employees of the business live in the Zone limits the benefit of HUB Zone designation.

Mary Ball Washington Region -- Business Incentives							
Locality	VA Enterprise Zone	Local Enterprise Zone	Technology Zone	Tourism Development Zone	HUB Zone	Opportunity or Special Fund	Fast Track Permitting
Caroline			X				
Essex		X					
Gloucester						X	
King and Queen							
King George							
King William							
Lancaster	X	X			X		
Mathews							
Middlesex							
Northumberland	X	X			X		
Richmond	X	X			X		
Spotsylvania			X	X	X	X	X
Stafford			X		X	X	
Westmoreland	X	X					
Fredericksburg			X	X	X	X	

The local incentive policies in this region typically are not as aggressive as some other areas of the Commonwealth. The communities in southern and southwestern Virginia have established institutions and programs that provide greater incentives for location and expansion of industry in those areas. These areas have established these programs to combat the chronic high unemployment levels and extremely low household incomes in their regions. Region 6 localities should consider adjusting their incentive policies and infrastructure investments to clearly address the specific needs of targeted high-performance growth sectors.

Innovation Support Summary

Support facilities and services that help businesses grow are critical in accelerating the growth of the identified high-performance industry clusters. These facilities and services not only help fledgling businesses grow but also help mature industries modernize and expand. Today, Virginia is blessed with a large array of business services that help advance select business sectors or business practices. In addition to a cadre of state sponsored services there are a number of regional institutions that also support business development; Fredericksburg Regional Alliance, Middle Peninsula Regional Alliance (MPA), Northern Neck-Chesapeake Bay Region Partnership, the Northern Neck Tourism Commission, REDCO, UMW Small Business Development Center, UMW Office of Economic Development, UMW EagleWorks Business Incubation Center and Quantico Innovation Center.

The UMW Small Business Development Center (SBDC) has two offices serving the region, Fredericksburg, and Warsaw. Gloucester County is served by Small Business Development Centers located in the Hampton Roads. Much of the Middle Peninsula is either underserved or not served by the existing SBDC network.

The Northern Neck Tourism Commission promotes tourism development on the Northern Neck and the MPA has plans to institute a tourism development program serving the Middle Peninsula but there is not a similar tourism promotional effort serving the four localities along the I-95 corridor. Tourism was identified in each of the stakeholder workshops as a high-performance growth sector with significant potential for expansion throughout the region.

The Quantico Innovation Center, UMW EagleWorks Business Incubation Center and the Northern Neck Enterprise Center all provide incubation/acceleration facilities for start-up and small growing businesses.

The growth of a local business starts with an entrepreneurial spirit. This kind of spirit can be instilled at an early age and nurtured through the efforts of our school systems. The UMW SBDC office in Warsaw has partnered with a couple of school divisions to pilot a youth entrepreneurial program in Northern Neck and is looking to expand these programs to other school divisions throughout the region.

The numerous research facilities in the region and in neighboring regions, Dahlgren, Quantico, VIMS, NASA Langley, all offer opportunities for the research commercialization. These institutions have patents and publicly available research that has the potential for commercial applications. There are not any programs in the region specifically targeted to assist with this commercialization. There are private companies located in Northern Virginia that have expertise in the commercialization of federal government research but those firms have not yet established a foothold in this region.

High-Performance Industry Clusters

Natural Resource

Aquaculture/Seafood Processing/Commercial Fishing

Aquaculture, seafood processing, and commercial fishing are historically one of the foundations to the Northern Neck and Middle Peninsula economy. This industry sector has seen a decline in the number of establishments and employment going back several decades. The industry has suffered from a steady decline in the natural fish and shellfish stock, particularly the oyster. Other commercial species have had regulatory limits placed on harvests to protect them from overharvesting. These conditions have contributed to the historic decline of this industry cluster but the recent introduction of aquaculture practices and disease resistant strains of oysters have resulted in a resurgence of this industry. With these changes in production techniques and expansion of markets, the industry has the potential for significant growth in the future.

The aquaculture, seafood processing, and commercial fishing industry cluster is a major industry in the Northern Neck and Middle Peninsula that is traditionally under represented in economic statistics. Over 9,000 commercial fishing and fish processing licenses issued by the Virginia Marine Resources Commission illustrate this situation. While one firm often holds more than one license, the number of establishments far exceeds the 34 reported in the statistical data. This underreporting can be attributed to a large number of very small independent watermen that are not required to report to the Virginia Employment Commission and a number of firms that may be reported in other industry categories.

Product – Availability of Sites, Buildings, and Water

Aquaculture, seafood processing, and commercial fishing, because of the nature of the industry, requires direct access to commercial fishing waters. Traditional working waterfronts that dotted Tidewater Virginia for centuries provided this access. These land-based commercial fishing ports have diminished over the years as commercial fishing declined and key waterfront facilities were converted to higher value land uses, typically residential use. With the residential development of our waterfronts come conflicts between the residential use and the commercial fishing operations. These use conflicts have now expanded out into the adjacent waterways as aquaculture operations have been established in front of high-value waterfront homes. The typical practice of local government to zone working waterfront areas for non-conforming uses limits the expansion ability of commercial fishing facilities. The permitting procedures of VMRC also limit the access of aquaculture operators to state-owned bottom for new aquaculture growing areas. In addition, working waterfront facilities are prone to the impacts coastal flooding, impacts of major storms, erosion from rising sea levels and channel siltation placing. These threats place working waterfronts a high risk of destruction or damage.

Some Tidewater Virginia localities have developed ports and water access points that provide access to the commercial fishing waters. While these efforts have been invaluable in support of commercial fishermen there is neither the number nor the distribution of these facilities to meet current demand.

Workforce

The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher will need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside of the region. For all other occupations, there are a sufficient number of skilled workers to meet projected levels of employment with the possible exception of the "middle-skill" occupation Motorboat Mechanics and Service Technicians. The seafood processing industry is heavily dependent upon immigrant H-2B workers. The future supply of these workers depends upon federal policies that are currently under debate.

Cost of Doing Business

The costs of compliance with the multiple federal and state regulations have a significant impact on the industry. The restrictions on the types, amounts, and

characteristics of fish that can be harvested will determine the future of the industry. If natural fish and shellfish stocks do not rebound, the limits on many of the commercial fisheries will continue to be heavily regulated. Storm water and Chesapeake Bay Regulation have an impact on the ability of existing working waterfront properties to expand. In some cases, compliance with current regulations prohibits future expansion options.

Innovation Support

The Virginia Institute of Marine Science (VIMS) along with several other Virginia public universities play a major roll in assisting this industry in adopting new technologies and practices. VIMS, a world renown marine research institution, conducts research and provides advice on new innovations in the industry. Current research on the harvesting of Blue Catfish, scallop aquaculture, marine sensors and shoreline resiliency measures all show promise for future commercial applications.

Forestry, Wood Products, and Pulp Manufacture

The forestry, wood products, and paper manufacture industry cluster has a major presence in each Planning District. Sawmills are scattered all across the region. A full range of wood processing facilities are represented throughout the region and include: wood preserving, veneer mill, planing mills, truss and panel manufacturing, mulch manufacturing, window and door manufacture, millwork, cabinet manufacturing, and a paper mill. The number of establishments and total number of employees are understated because of suppression of the WestRock paper mill statistics and the number of small firms that are not required to report to the Virginia Employment commission. Even given this situation the cluster represents over 60 firms and over 1,000 employees.

This cluster is one of the higher paying clusters in the region with an average weekly wage between $765 and $875.

The future of this industry cluster is in expanded markets and product diversification. Some of the firms in this industry cluster already export product internationally but additional firms could take advantage of this opportunity and there is the possibility of adding more countries for those companies that currently export overseas. A number of existing firms have the potential of adding new or related products to their current product line. Many of the existing wood products manufactures could increase

production through automation. While increasing the demand for higher skilled workers, automation could also reduce total employment levels by replacing lower skilled workers.

Product

Most of the existing wood products companies are located in rural areas within easy access to their raw material, trees from the forest. Transportation access to four-lane highways is important since most of the raw material and finished product is shipped by truck. Most of the firms in this cluster do not require large sources of water except for the one paper mill. Most firms have the ability to expand existing operations at their existing location. Since central utility service is not a major location requirement, there are a number of existing sites listed in the Virginia Scan database that could potentially accommodate new firms wishing to locate to or expand within the region.

Workforce

The estimated labor pool to employment ratio in the wood products and paper manufacturing sector is 67. That ratio appears to be sufficient to meet the future expansion needs of the cluster but specific occupational shortages may occur. The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher will need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. For all other occupations, there are sufficient skilled workers to fill projected levels of employment with the possible exception of the "middle-skill" occupation, Industrial Machinery Mechanics.

Cost of Doing Business

Environmental regulations and best practices continue to be a challenge for the industry. Since these issues are not unique to this region, the region is competitive with other areas for expansion within this industry cluster.

Innovation Support

The Virginia Department of Forestry, VA Tech and private forestry consultants provide most of the industry support for advances in this industry cluster. VA tech has pioneered research in forest product development and use of industry byproducts. The Department of Forestry not only advises landowners on best management practices but

also advises wood products manufacturers on emerging markets and new practices within the industry.

Halifax County Virginia has been a leader in programs and research to advance their wood products industry. Their youth programs, the Institute that is a part of the Southern Virginia Higher Education Center and their Southern Virginia Product Advancement Center all contribute to a culture of innovation in the wood products industry.

Agriculture

Commodity grain production (corn, wheat, and soybeans) dominates agriculture production in Region 6. While commodity grain production out-strips any other form of agriculture it only employs approximately 162 workers. Over the years, farms have merged and gotten larger in order to remain profitable. Through leases with adjacent landowners, the acreage that a farmer manages has grown even larger. With larger farms comes more automation requiring fewer workers.

In recent years, nursery operations have expanded throughout the region. These operations have supplied plant material to the growing suburbs in the mid-Atlantic region.

Vegetable production is a significant crop in select areas of the region. In addition, niche farms are producing unique agriculture products such as berries, pumpkins, flowers, grapes, etc. These farms tend to serve a local market but have the potential to expand.

The Agriculture industry has an extensive array of suppliers and auxiliary service providers that support the industry.

Potential expansion opportunities include continued introduction of technology into agriculture practices, export of products overseas, diversification of types of products, and expansion of markets.

Product

Agriculture operations cover most of the region's rural landscape. There are not any unique physical requirements necessary to support most agriculture practices. Most firms have the ability to expand existing operations at their current location.

Workforce

The estimated labor pool to employment ratio in the agriculture sector is 29. This ratio is low but sufficient to meet the future needs of this industry cluster. The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher will need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. For all other occupations, there are sufficient skilled workers to fill projected levels of employment with the possible exception of the "middle-skill" occupation, Industrial Machinery Mechanics.

Cost of Doing Business

Environmental regulations and best practices continue to be a challenge for the industry. Since these issues are not unique to this region, the region is competitive with other areas for expansion within this industry cluster.

Innovation Support

Virginia Cooperative Extension Service, VA Tech, Virginia Department of Agriculture and Consumer Services and private consultants all provide a wealth of advice, research, and innovation to this sector. There is an agricultural research center located in the region to advance new crop research.

Manufacturing

The Cluster analysis identified; 1) Fabricated Metal and Machinery Products, 2) Plastics, Rubber and Nonmetallic Mineral Products, 3) Computer and Electronic Products, and 4) Miscellaneous Manufacturing as the specific industries that make up the high performance manufacturing cluster. This cluster is more prevalent in the George Washington and Middle Peninsula areas but there are firms that operate out of the Northern Neck as well. The attributes of the region that contribute to the high performance of these specific industries can be used to nurture or attract other types of manufacturing to the region. The future of this cluster depends on the localities being able to provide the necessary facilities allowing for location or expansion of manufacturing. The supply of sites and buildings that have the required utility serves will be discussed in the following section.

Product

The raw number of sites and buildings that are available for potential use for manufacturing appears adequate but a closer analysis indicates a shortage of suitable properties.

Typically, manufacturing facilities require large sites, 25 acres or greater, with water and sewer service. With the low cost of energy provided by natural gas, many manufacturers now only consider sites that can be served by natural gas. If you consider only the sites that have these essential utilities the number of suitable manufacturing sites region-wide drops from 88 to 17 and there is only one site with these utilities in all of the Northern Neck and Middle Peninsula.

Of these 17 sites with utilities available only 4 have rail access.

There is not a single site in the region that has been certified as Tier 5 “Business Ready” under the VEDP Business Ready Site Classification System.

While there is a large number of industrial sites that could potentially be suitable and ready for a manufacturer, there are a scant few that have the necessary infrastructure and are “Business Ready”.

GO Virginia Region 6									
Business/Industrial Site Analysis									
	Industrial Sites		Sewer		Water		Gas		
Locality	Total	25 + acres	Total	25 + acres	Total	25 + acres	Total	25 + acres	Enterprise Zone
Caroline	29	19	17	11	22	13	12	8	0
Essex	0	0	0	0	0	0	0	0	0
Gloucester	14	3	7	1	8	1	0	0	0
King and Queen	1	1	1	1	1	1	0	0	0
King George	5	3	3	1	3	1	0	0	0
King William	7	5	2	1	2	1	1	1	0
Lancaster	1	1	1	1	1	1	0	0	1
Mathews	0	0	0	0	0	0	0	0	0
Middlesex	0	0	0	0	0	0	0	0	0
Northumberland	0	0	0	0	0	0	0	0	0
Richmond	6	1	6	1	6	1	0	0	5
Spotsylvania	15	11	10	5	11	7	5	2	0
Stafford	5	3	5	3	5	3	3	3	0
Westmoreland	0	0	0	0	0	0	0	0	0
Fredericksburg	5	5	5	5	5	5	3	3	0
Total	88	52	40	30	64	34	24	17	5

While the largest number of sites suitable for manufacturing are in Caroline County the majority of industrial buildings suitable for manufacturing are located in Spotsylvania, Stafford, and Fredericksburg. Of the 61 industrial buildings listed in the Virginia Scan database, 45 are in these three localities. Of the 61 buildings, only 20 have natural gas service and only 7 of those are for sale. It is hard to evaluate the quality of the existing building inventory without a more detailed analysis of the buildings against typical manufacturing location criteria.

Again from this cursory review of building inventory; it is evident that the supply of quality industrial buildings at strategic locations is insufficient to support a significant expansion of the manufacturing cluster.

GO Virginia Region 6						
Industrial Building Analysis						
Locality	**Industrial Buildings**	**For Sale**	**Lease**	**Single Tenant**	**Gas**	**Enterprise Zone**
Caroline	1	1	0	1	0	0
Essex	0	0	0	0	0	0
Gloucester	5	1	5	4	0	0
King and Queen	0	0	0	0	0	0
King George	1	1	0	1	0	0
King William	2	2	1	1	0	0
Lancaster	0	0	0	0	0	0
Mathews	0	0	0	0	0	0
Middlesex	2	2	0	0	0	0
Northumberland	0	0	0	0	0	0
Richmond	2	2	1	2	0	2
Spotsylvania	26	10	24	6	17	0
Stafford	9	1	9	0	2	0
Westmoreland	3	3	0	3	0	2
Fredericksburg	10	2	9	1	1	0
Total	61	25	49	19	20	4

Flex buildings are buildings that have an open production type space in the rear of the building accessed by dock doors with office space in the front. These buildings are typically divided for multi-tenant occupancy where a tenant can lease one or more bays for their use. Small companies use these types of space for a variety of uses but small manufacturers can use these buildings to grow their businesses.

Of the 21 flex buildings in the VEDP database 17 are located in Spotsylvania and Stafford Counties.

GO Virginia Region 6						
Flex Building Analysis						
Locality	**Flex Buildings**	**For Sale**	**Lease**	**Single Tenant**	**Gas**	**Enterprise Zone**
Caroline	0	0	0	0	0	0
Essex	0	0	0	0	0	0
Gloucester	1	0	1	0	0	0
King and Queen	0	0	0	0	0	0
King George	0	0	0	0	0	0
King William	0	0	0	0	0	0
Lancaster	0	0	0	0	0	0
Mathews	0	0	0	0	0	0
Middlesex	0	0	0	0	0	0
Northumberland	0	0	0	0	0	0
Richmond	2	2	1	2	0	2
Spotsylvania	8	4	7	0	5	0
Stafford	9	1	9	0	2	0
Westmoreland	1	1	0	1	0	0
Fredericksburg	0	0	0	0	0	0
Total	21	8	18	3	7	2

Workforce

The estimated labor pool to employment ratio in the Manufacturing sector is 129. This high ratio indicates that there is a sufficient pool to meet the projected needs of the Manufacturing cluster. The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher will need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. The workforce gaps analysis indicates that additional training programs may be needed to fill three "middle-skill" occupational categories: Industrial Machinery Mechanics, Electricians, and Air Conditioning and Refrigeration Mechanics.

Cost of Doing Business

Most of the cost factors for manufacturers in the region are favorable as compared to surrounding metropolitan areas. When competing with other areas of the Virginia or

other states, the Mary Ball Washington region has a locational advantage but may not be as competitive on the incentives that the localities are able and willing to offer. For larger manufacturing facilities, the region's localities and the state must be willing to make major investments in infrastructure and incentives to compete in the national and global marketplace.

Innovation Support

Those localities with full-time or part-time economic development programs have established existing "Business Retention and Expansion" (BRE) programs. These programs can vary in the types and amount of contact and consultation that is provided to their existing manufacturers. In most all cases a more robust BRE program would help facilitate the expansion of the existing manufacturing base.

Distribution/Logistics

The Distribution/Logistics cluster is composed of truck and water transportation, sightseeing activities, messengers, warehousing, and wholesale trade. The Distribution/Logistics cluster includes over 600 different companies in the region and employs 7,500 people.The average weekly wage for this cluster is $945, which exceeds the average weekly wage for the region.

The local economic development directors indicate that they have seen interest from out-of-state companies in locating facilities in the region, particularly along the I-95 corridor.

Product

Distribution facilities typically require large sites and large buildings, upwards of 1,000,000 sq. ft. and 50 acres, with immediate access to an Interstate Highway. These locational criteria eliminate most of the region's available properties in the VEDP database from consideration. Caroline County has the largest number of sites that would meet the typical criteria for location of new distribution/logistics facilities. Smaller distribution facilities serving a more local/regional market may be attracted to locations along the main four-lane routes traversing the Middle Peninsula and Northern Neck. Distribution facilities typically hire a large number of employees, but the wage rates are lower than those in the manufacturing or professional services industry sectors.

Some localities have constructed a shell buildings specifically designed to attract distribution tenants. Experience indicates that distribution facilities require very compressed timelines for becoming operational. Thus, any actions that a locality can take to prepare the site for these types of facilities, the more competitive they will be.

Workforce

The estimated labor pool to employment ratio in the distribution/logistics sector is 16. This ratio is low and may raise questions concerning the ability of the labor market to supply a sufficient number of skilled workers to meet the future needs of this industry cluster. The workforce gaps analysis indicates that workers in occupations that require a bachelor's degree or higher will need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. The workforce gaps analysis also indicates that additional training programs may be needed to fill four "middle-skill" occupations: Mobile Heavy Equipment Mechanics, Electricians, Motorboat Mechanics and Service Technicians, and Air Conditioning and Refrigeration Mechanics.

Cost of Doing Business

Labor and transportation are two of the biggest cost factors for distribution facilities. Ensuring that a distribution facility can be operational within a given time line is often critical. Meeting holiday delivery schedules and the opening of retail locations is often an important factor in location decisions. Fast track permitting and other methods of expediting the construction timeline are important factors to consider when seeking the location or expansion of distribution facilities.

Innovation Support

CCALS is the Commonwealth Center for Advanced Logistics Systems, a unique collaboration between industry, government, and universities designed to deliver transformational improvements to logistics systems.

CCALS is an applied research center that bridges the gap between fundamental research that is typically performed at universities, and product development that is routinely performed by companies. Its goal is to accelerate the transition of technologies from fundamental developments through proof of concept and on to commercialization.

University members of CCALS bring outstanding capabilities and research depth in logistics-related disciplines. They also provide access to the best and brightest engineering, business and IT students who will comprise tomorrow's logistics workforce.

CCALS' Central Virginia location provides its members unique access to the talent at the US Army Logistics University, Amazon distribution centers, and significant UPS and FedEx operations.

One of the regional economic development organizations or one of the region's distribution companies may wish to join CCAL. Participation in this organization could provide an important linkage to some of Virginia's finest talent in the logistics and provide a conduit for advances in distribution technologies.

Information/Data Centers

The Information Cluster includes a variety of types of publishing from newspapers to online publishing. The businesses in this cluster are present in all three sub-regions but the wages appear to significantly higher in the George Washington area than the Northern Neck or Middle Peninsula. The shift from print media to digital media has brought significant changes to this cluster over the recent years. Digital media has gained in prominence and print media has diminished. These trends are likely to continue.

During discussions with the local economic development directors, data centers were identified as an industry within this sector that has shown considerable interest in establishing a presence in the region. The local economic development organizations are actively recruiting this industry. With the higher and increasing costs of real estate for data centers in northern Virginia, potential locations in the George Washington area have become very competitive and attractive.

Data centers make huge capital investments in a community but are not large employers. The workers that are employed are highly skilled and demand high wages.

Product

Large data centers have very specific location requirements for their facilities. They require large and redundant power supplies, access to significant quantizes of cooling water, access to redundant backbone fiber and a secure location. Because these

facilities need to operate 24-7 without any interruption they avoid locations that are prone to major coastal storms that could disrupt service. Because of these requirements, the Northern Neck and Middle Peninsula are not likely candidates for data center location. Dominion Energy has certified one site, Quantico Corporate Center, for data center location and several other sites in the Fredericksburg area are well suited for data center locations as well.

Workforce

The estimated labor pool to employment ratio in the Information cluster is 100. This high ratio indicates that there is a sufficient labor pool to meet the future needs of the Information cluster. The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher will need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. For all other occupations, there is a sufficient number of skilled workers to fill projected levels of employment with the possible exception of the "middle-skill" occupation, Technical Writers.

Cost of Doing Business

The cost of electricity and water are significant factors in the operation of data centers. Dominion Energy and Rappahannock Electric have proven to have competitive rates to be able to support the large concentration of data centers in Northern Virginia and other locations in Virginia. The ability of a locality to provide bulk water rates is a factor in data center location decisions.

The ability to lower local business personal property taxes on computer equipment can also be an important factor in whether a data center chooses to locate.

Innovation Support

Those localities in the region with full-time or part-time economic development programs have established existing "Business Retention and Expansion (BRE)" programs. These programs can vary widely in the types and amount of contact and consultation that is provided to their existing businesses in the Information cluster. In most cases, a more robust BRE program would help facilitate the modernization and expansion of the existing information businesses.

Professional Services

The Professional, Scientific, Technical Services, and Management of Companies cluster includes a large array of consulting service industries including; 1) architectural and engineering services, 2) computer programing services, 3) computer systems design, 4) computer facilities management, 5) management consulting, 6) environmental consulting, 7) scientific research and development, 8) advertising and public relations, and 9) management of companies. Firms in this cluster are present throughout the region, but are highly concentrated in the George Washington sub-region. This cluster is one of the region's largest employers and provides over 9,000 jobs. Regionally, there are over 1,000 companies in this sector and they tend to be small to medium in size. The large presence of government contractors and companies supporting these contractors has fueled the growth of this cluster.

The average weekly wages paid in this sector are $1,657 and are the highest of any sector except Utilities.

Federal budgetary policies have had a major impact on this cluster since a significant number of companies are tied to federal procurement. In recent years there has been a shift away from dependence on federal spending towards private sector consulting. Since much of the George Washington region's economy is tied to the military, the prospect of increased military spending in the upcoming budget cycles should spur additional growth in this cluster.

Product

Since most of the companies are small to medium sized firms, the availability of office space is key to the growth of the professional services cluster. The following table illustrates the distribution and characteristics of the inventory of office buildings listed in the Virginia Scan database.

Of the 56 office buildings listed 47 are located in three localities, Spotsylvania, Stafford, and Fredericksburg. There is a shortage of office space in the remainder of the region to support expansion in this cluster. 50 of the 56 buildings are for lease and 28 are located in local Technology Zones. Businesses that locate in these Technology Zones are eligible for special local incentives.

The quality of the supply of office space varies for Class "A" space in modern office buildings in corporate business parks to Class "C" space in less desirable locations. The size of space also varies from just 2,000 sq. ft. to 100,000 sq. ft.

GO Virginia Region 6						
Office Building Analysis						
Locality	**Office Bldg.**	**For Sale**	**Lease**	**Single Tenant**	**Technology Zone**	**HUB Zone**
Caroline	2	1	1	1	2	0
Essex	0	0	0	0	0	0
Gloucester	4	2	4	1	0	0
King and Queen	0	0	0	0	0	0
King George	0	0	0	0	0	0
King William	0	0	0	0	0	0
Lancaster	0	0	0	0	0	0
Mathews	0	0	0	0	0	0
Middlesex	3	3	0	1	0	0
Northumberland	0	0	0	0	0	0
Richmond	0	0	0	0	0	0
Spotsylvania	19	7	17	1	14	0
Stafford	21	4	21	0	5	0
Westmoreland	0	0	0	0	0	0
Fredericksburg	7	0	7	0	7	7
Total	56	17	50	4	28	7

The local business support organizations indicate that they see a need by small fledgling businesses for very small lease space, as low as 200 sq. ft., that has access to common amenities (board room, reception area, mail room, etc.) and business support services.

Workforce

The estimated labor pool to employment ratio in the Professional, Scientific and Technical Services cluster is 8.5. This ratio is low and may raise questions concerning the ability of the labor market to supply a sufficient number of workers to meet the needs of this industry cluster. The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher will need to come from the

existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. The workforce gaps analysis indicates that additional training programs may be needed to fill four "middle-skill" occupational categories: Industrial Machinery Mechanics, Electricians, Technical Writers and Construction and Building Inspectors.

The study by the University of Mary Washington indicates that a large number of out-commuters to northern Virginia have the occupational skills needed for the expansion of this sector.

Cost of Doing Business

For small Professional Services firms the Business, Professional Occupational License (BPOL) tax can be significant cost factor in their business operations. The ability of a locality to adjust the BPOL tax in the early stages of a business' life may be important for the growth in this sector. Several localities have adopted Technology Zones ordinances that provide BPOL tax relief.

Access to capital for small and growing companies has been raised as a significant issue influencing the growth of businesses in this sector. The inability to access equity capital has been identified as a barrier to small and emerging business development. The lack of venture capitalists and "angel" investors stymie's the growth of emerging businesses in this sector. Sources of equity capital are available in the surrounding metropolitan areas of northern Virginia, Richmond and Hampton Roads but are not readily available within the region. Venture capitalists and angel investors tend to invest in local firms to be able to mentor and monitor the company's progress on a regular basis.

While the traditional private sources of debt capital are plentiful throughout the region certain types of unique lending are needed. The large concentration of federal government contractors in the George Washington Regional Commission area creates a specific need for funding that will bridge the time period from the award of the contract(s) to the payment on the contract. The access to this type of working capital and bridge financing is a barrier for growing companies being able to administer multiple contracts at one time. In Northern Virginia, there are financial institutions that specialize in this type of financing but these companies are not well represented in the region.

Another type of capital that has been identified as being in short supply is micro lending. Typically lenders have shied away from commercial loans under $100,000. These loans often require a lot of technical assistance to the borrower to make them credit worthy and the return on these loans often does not justify the transaction costs. Often these borrowers have limited track records in operating their business and thus pose a greater risk than established companies. REDCO and Virginia Community Capital Bank are two organizations that have the ability to serve this niche market but there would need to be credit enhancements and support funding provided to allow this niche market to be served.

A third type of funding that was identified for business development was funding for leasehold improvements for growing companies. While leasehold improvements are often included as a part of lease agreements with sophisticated landlords and commercial real estate firms, they are not that common in rural areas, downtowns and with smaller landlords. Gloucester County is an example of a community that has tried to address this issue by providing limited matching grants for these leasehold improvements. A special loan program or credit enhancements or an incentive grant program may be necessary to meet this need.

Innovation Support

Small Professional Services firms have benefited from the business advisory services and facilities available throughout the region. The UMW Small Business Development Center (SBDC) has two offices serving the region, Fredericksburg, and Warsaw. Gloucester County is served by Small Business Development Centers located in the Hampton Roads. Much of the Middle Peninsula is either underserved or not served by the existing SBDC network.

The Quantico Innovation Center, UMW EagleWorks Business Incubation Center and the Northern Neck Enterprise Center provide incubation/acceleration facilities for start-up and small businesses. These facilities are critical in accelerating the growth of small growing Professional Services companies throughout the region. The success of these facilities illustrates the demand and need for expansion of these type facilities to other areas of the region.

Finance and Insurance

The Finance and Insurance cluster contains a variety of financial institutions and insurance carriers. The number of employees in this sector is under reported since GEICO Insurance Company employment numbers are suppressed because of the size of its operation. There are 449 firms employing 2,492 workers as reported by VEC but if GEICO was included the number of employees would increase significantly.

The economic development directors indicate that they foresee significant potential in this sector's expansion in the region.

Product

The availability of office space is key to the growth of the Finance and Insurance cluster. The availability and distribution of existing office space was discussed in the previous analysis of the Professional Services sector.

The location of a new Finance or Insurance facility in the region would require a stand-alone location or a location in an office park. These facilities are typically office structures requiring water and sewer in a downtown or commercial environment. The availability of sites that meet the requirements of this sector are typically more numerous and readily available.

A more complete discussion of the general availability of sites that could accommodate the construction of a new building was provided in the previous Manufacturing cluster analysis.

Workforce

The estimated labor pool to employment ratio in the Finance and Insurance cluster is 21.7. This ratio may raise questions concerning the ability of the labor market to supply a sufficient number of skilled workers to meet the future needs of this cluster. GEICO's major presence in the northern portion of the region also impacts the availability and demand for future workers in this sector.

The workforce gaps analysis indicates that workers for those occupations that require a bachelor's degree or higher will need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. The workforce gaps analysis indicates that additional training programs may be

needed to fill two "middle-skill" occupations: Air Conditioning and Refrigeration Mechanics, and Loan Interviewers and Clerks.

Cost of Doing Business

There does not appear to be any significant or unusual cost factors that would be an impediment to expansion within this sector.

Innovation Support

The business support services available to Finance and Insurance firms would be the same as those available to the Professional Services sector discussed in the previous section.

Tourism

Tourism was identified in each of the stakeholder workshops as a high-performance growth sector with significant potential for expansion throughout the region. The tourism industry is comprised of performing arts companies, amusements and recreation companies, hotels and motels and other accommodations. This industry has a major impact on restaurants, retail shops, transportation and a host of other establishments. By Virginia Tourism Corporation estimates tourism expenditures exceed $1B and support employment of 11,200 with a payroll of $219 million. While a significant employer in the region, tourism is one of the lowest paying sectors with average weekly wages of $357.

Product

Because of the wide variety of commercial establishments that are covered by the tourism cluster the facility requirements are unique to each type of facility. The location criteria for a bed and breakfast facility is much different from a hotel, that is much different from a marina, that is much different from a water park as examples. Given the abundance of natural and historic amenities in the region finding suitable locations for most tourism facilities should not pose a challenge.

Workforce

The estimated labor pool to employment ratio in the Tourism Cluster is 20.7. This ratio is low and may raise questions concerning the ability of the labor market to supply a sufficient number of skilled workers to meet the future needs of the Tourism cluster

particularly given the traditionally low wage paid and the seasonal nature of the industry.

The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher may need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. The workforce gaps analysis indicates that additional training programs may be needed to fill two "middle-skill" Occupations: Emergency Medical Technicians and Paramedics and Motorboat Mechanics.

Cost of Doing Business

For small Tourism firms the Business, Professional Occupational License (BPOL) tax can be significant cost factor in their business operations. The ability of a locality to adjust the BPOL tax in the early stages of a businesses' life may be important for the growth in this sector. Several localities have adopted Technology Zones ordinances that can provide BPOL tax relief.

Spotsylvania and Fredericksburg have both adopted Tourism Development Zones to encourage the expansion of tourism businesses.

The personal property taxes on boats is seen as a deterrent to expansion in the boating industry since Maryland does not tax boats which gives their marinas a competitive advantage.

Innovation Support

The Northern Neck Tourism Commission promotes tourism development on the Northern Neck and the Middle Peninsula Alliance has plans to institute a tourism development program serving the Middle Peninsula but there is not a similar organizational effort serving the I-95 corridor in the Fredericksburg area.

Lodging and meals taxes are often seen as deterrents to the tourism but, if funneled back into tourism promotion, the revenues that are generated from these taxes can help expand the industry.

Education

The region has a number of private educational institutions that offer a variety of educational offerings. There are private K-12 schools like Saint Margret's and Crist Church School to Chesapeake Marine Training Institute and ITI (specialized security training) that offer very specialized training programs. There are about 100 firms offering private educational programs and these firms employ about 900 workers.

Product

Typically, education programs need classroom space that can be configured from open office space, The availability of office space is key to the growth of the private Education sector. The availability and distribution of existing office space was discussed in the previous analysis of the Professional Services sector.

Workforce

The estimated labor pool to employment ratio in the Education cluster is 91.3. This high ratio indicates that there is a sufficient labor pool to meet the future needs of the Education cluster. Most of the occupations in this sector require a bachelor's degree or higher and the workforce gaps analysis indicates that workers in those occupations may need to come from the existing workforce, out-commuters or be recruited from four-year higher education institutions outside the region. For other occupations, there are a sufficient nymber of skilled workers to meet projected employment levels, with the possible exception of three "middle-skill" occupations: Childcare Workers, Heating Air Conditioning and Refrigeration Mechanics and Electricians.

Cost of Doing Business

There does not appear to be any significant or unusual cost factors that would be an impediment to expansion within this sector.

Innovation Support

The business support services available to Education firms would be the same as those available to the Professional Services sector discussed in the previous sections.

Utilities

The Utilities cluster is composed of private sector providers of electric power and water and sewer. Regionally, there are only 14 firms reported in this sector and those firms employ 342 workers. The major electricity providers, Dominion Energy, Rappahannock Electric Cooperative and the Northern Neck Electric Cooperative are not included in these figures. Even though it is not a large employer in the region, this cluster pays the highest average weekly wage, $1,685.

The growth industry in this sector is renewable energy, particularly solar power. There have been several recent announcements of private sector companies' plans to construct major solar farms in the region. While these facilities will bring significant capital investment to the region and some temporary construction jobs there will not be any long-term employment gains as a result of these facilities.

Product

The introduction of solar farms to the existing power grid only requires relatively flat land close to a substation. Given the amount of agriculture land in crop production, there should not be any shortage of suitable sites for solar installations.

Workforce

The estimated labor pool to employment ratio in the Utilities cluster is 125.6. This high ratio indicates that there is a sufficient labor pool to meet the future needs of the Utilities cluster. The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher may need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. For all other occupations, there appear to be a sufficient number of skilled workers to fill projected levels of employment, with the possible exception of two "middle-skill" occupations: Electricians and Electrical Power-Line Installers and Repairers.

Cost of Doing Business

There does not appear to be any significant or unusual cost factors that would be an impediment to expansion within this sector.

Innovation Support

The business support services available to Utilities firms is the same as those available to most of the other industry clusters referenced in this report.

Mining and Quarrying

The Mining and Quarrying cluster is made up of sand, gravel and stone mining/quarrying. This cluster also includes the mining of clay for the production of kitty litter. Regionally, there are only 10 reported firms in this cluster and they employ 177 workers. Even though this cluster does not employ a large number of workers, the average weekly wage within the cluster is the third highest of any of the sixteen high-performance growth clusters.

The growth in this sector is tied closely to the construction sector. As the economy grows, construction increases and there is a greater demand for sand, gravel and stone products.

Product

The availability of sites to support these facilities is dependent upon the location of the natural deposits and the willingness of local governments to permit the mining or quarrying activity. Often residential neighbors object to this activity since it typically is noisy, dusty and generates significant truck traffic.

Expansion of existing operations often requires a special use permit from the local government. New mining and quarrying sites are often located far away from densely populated areas to avoid these conflicts.

Workforce

The estimated labor pool to employment ratio in the Mining and Quarrying cluster is 82.4. This ratio indicates that there is a sufficient labor pool to meet the future needs of the Mining and Quarrying cluster. The workforce gaps analysis indicates that workers in those occupations that require a bachelor's degree or higher may need to come from the existing workforce, out-commuters, or be recruited from four-year higher education institutions outside the region. For all other occupations, there appear to be a sufficient number of skilled workers to fill projected levels of employment, with the possible exception of two "middle-skill" occupations: Industrial Machinery Mechanics, and Mobile Heavy Equipment Mechanics.

Cost of Doing Business

Environmental regulatory compliance has a direct impact on the costs operating surface mines and quarries. These costs of regulatory compliance are not significantly different in this region than other regions of eastern Virginia.

Innovation Support

The business support services available to Mining and Quarrying firms is the same as those available to most of the other industry clusters referenced in this report.

APPENDIX A

Virginia Economic Development Partnership

Site Characterization Tier Level

The following Site Characterization Tier Levels describe the level of existing development at a potential site:

(i) Tier 1:
Site under (a) public ownership, (b) public/private ownership, or (c) private ownership which such private owner(s) agreeable to marketing the site for economic development purposes and to allowing access to the property for site assessment and marketing purposes, but at no established sales price. The comprehensive plan reflects site as appropriate for industrial or commercial development and use, but the site is not zoned as such. The site has minimal or no infrastructure. Minimal or no due diligence has been performed.

(ii) Tier 2: Site under (a) public ownership, (b) public/private ownership, or (c) private ownership with an option agreement or other documentation of a commitment by the private owner(s) to a competitive sales price, to permit access to the site for site assessment, construction, and marketing, and to market the site for industrial or commercial economic development purposes. Comprehensive Plan reflects site intended for industrial or commercial development and use, but the site is not zoned as such and a rezoning hearing needs to be scheduled. The site has minimal or no infrastructure. Minimal or no due diligence has been performed.

(iii) Tier 3: Site is zoned for industrial or commercial development and use. The site has minimal or no infrastructure. Due diligence including, among other things, a wetlands survey with Army Corps of Engineers approval within the last five years, geotechnical borings, boundary and topographical survey, cultural resources review, an Endangered Species review, and a Phase I Environmental Site Assessment, has been completed. Estimated costs of development have been quantified.

(iv) Tier 4: All infrastructure is in place or will be deliverable within 12 months. All permit issues have been identified and quantified.

(v) Tier 5: All permits are in place and the site is ready for a site disturbance permit from the locality in which the site is located.

Appendix B
Draper Aden Associates
Virginia Scan Site Assessment