



**GO VIRGINIA REGION 3
2019 UPDATE – GROWTH & DIVERSIFICATION PLAN**

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Executive Summary

This report is an update to the original Growth and Diversification Plan (Growth Plan) adopted by Region 3 in August 2017. The 2019 update follows the Growth and Diversification Plan 2019 Amendment Guidelines to comply with the Growth and Opportunity Act of 2016, which requires regional plans to be updated at least every two years.

Under the guidance of the Region 3 Growth & Diversification Plan Committee, the updated plan seeks to **build on learned experience** from implementation of the 2017 Growth Plan, **with an emphasis on understanding the context** in which GO Virginia is carried out in Region 3. The result is a framework that establishes strategies that are easily understood and can be measured.

What We Accomplished:

The learned experience of the last two years includes the *project investments* that are discussed in more detail in the Investment Strategy section of this Report:

- 3 projects totaling nearly \$6 million in approved GO Virginia funding
- Leveraging over \$7 million in non-state, private and philanthropic funding.
- These investments will result in
 - 1) a new innovation hub in the southern tier of the region that introduces and trains entrepreneurs, small businesses, existing manufacturers, and individuals on new technology platforms that increase productivity and lead to high-paying jobs; and
 - 2) a robust pipeline of talent that is certified and ready to be employed in occupations in the region's target sectors. The estimated return on investment over 5 years for the GO-TEC project that will be the Region 3 platform for developing the talent, is projected to exceed a 1.4:1 ratio, producing over \$9 million in new state revenue.

In addition, the regional council generated cross-region communication that has resulted in scale-ups of businesses, as well as sharing of best practices. To do this, the regional council personally engaged over 250 local and regional stakeholders

thru a variety of methods. It sponsored 4 all-hands meetings, held 4 webinars and dozens of stakeholder conference calls, and created 7 working advisory committees. The council launched a website and social media presence, produced a library of videos and photographs, gave multiple presentations to civic organizations, hosted a number of state agency partners at its council meetings, and conducted two deep dive analyses in the areas of high value wood products and of apprenticeship and work-based learning. It also began to connect its innovation resources and assets more formally.

What We Learned:

What was learned from all these successful launch steps is that Region 3's assets and people are truly stewards and leaders that form a solid basis for continuing to build a strong regional economy. The challenge, as with any large organization, is sustainability to ensure full engagement and continuing focus on the priority goals.

What has also been learned during the course of developing this update relates to the *context* in which any Regional economy and organization operates, and the impact of that context to the success (or barrier) to any regional strategies. As highlighted in the section entitled "Alignment with State and Private Initiatives" there are no less than a dozen ongoing evaluations, initiatives, and strategies being led by partners outside of Region 3. The majority of these efforts will likely have some impact to Region 3. As a result, the council should reassess this 2019 update when these external evaluations are finalized and determine how the reports, findings and recommendations impact Region 3.

Where We'll Go:

The Growth and Opportunity Act of 2016 requires regional plans to be updated at least every two years. Based on an empirical analysis produced by Mangum Economics and with the substantial input from a variety of informed stakeholders with expertise and knowledge about the economy in Region 3, the forward looking strategy recommendations are intended to provide guidance to the Region 3 Council on how to most impactfully use its limited resources and its

substantial intellectual leadership, as it continues to build on its successes from 2017 and yet, adapt to changing market conditions that affect rural America. Forward-looking strategic recommendations include economic and operational actions.

Fundamentally, **both the data and the stakeholders** told us that:

- **The Region 3 economy overall is stable.** Perhaps attributable to stronger national economic conditions, there were some concerns raised about national policies related to trade. No major shifts in the economy in the last two years were noted; to some this is evidence of stability; to others it is a red flag for concern that the region is not keeping pace with its counterparts in rural America. Furthermore, the numerous unique physical assets that are currently underleveraged could, if fully developed, be **regionally impactful job centers** that stimulate the economy powerfully to complement ongoing incremental job creation. These assets included the facilities like the Foreign Affairs Security Training Center in Blackstone, Microsoft's data center in Mecklenburg County, the Virginia International Raceway in Halifax County, the Olde Dominion Agricultural Complex in Pittsylvania County, the vacant hospital facilities in South Boston and in Patrick County, the former DuPont Complex in Henry County, St. Paul's College in Brunswick County, and others.
- **Talent supply, development and recruitment remains a priority.** As evidenced in the Mangum Economic report, shortages in middle-skilled talent remain challenging for employers. Soft skills were cited by stakeholder as another weakness. GO-TEC is not yet a recognized brand - stakeholders generally indicated some awareness of it – but its outcomes have not yet begun to be felt in the Region and its brand has not yet become recognized by stakeholders. These impacts are expected over the next 2-5 years.
- **Lack of broadband remains a barrier to business formation, expansion and attraction and to talent development and recruitment in the region.** From entrepreneurs to small businesses to major manufacturers to health care to education, the lack of ubiquitous coverage at acceptable speeds and costs is a barrier to the economy's ability to fully grow.

- **Publicly controlled and prepared industrial real estate is acceptable, even competitive, for a region of this size.** However, the impact of sub-region variations of this prepared real estate product is evidenced through the numbers and quality of business development prospects being referred to the region as well as visiting the region. Additionally, there is a no formal assessment about the quantity and quality of prepared inventory for small-to-medium businesses and entrepreneurs that could support the creation of higher-paying tech jobs and the redevelopment of vacant buildings in the smaller towns of the region.
- **Opportunity exists in the entrepreneurial space** (see the TEconomy report), but, without a cohesive strategy and the promotion of support resources, this space's success is limited to defined geographic pockets. TEconomy's data indicates that there is a strong concentration of start-up activity in the **agriculture, natural resource, manufacturing, and health care sectors** in Region 3. Particularly notable among the young professional stakeholders is the willingness to launch businesses, coupled with frustration about lack of support systems and in some cases, policy barriers to business formation.
- **Data supports that the original strategic sectors defined in the 2017 Growth & Diversification Plan remain appropriate.** Despite the GO Virginia State Board determination that the health care field is not a traded sector and therefore not appropriate for GO Virginia funding, there is good data and strong stakeholder support in Region 3 to maintain the health care sector as important to the regional economy, particularly related to the use of technology in this field. There is also interest in focusing on the opportunities for value-added production opportunities for natural resource products including wood products and hemp. Input also indicated a desire to think toward the future for business sectors that may align, but not yet be fully researched to validate regional capacity for growth, such as unmanned systems. The 2019 plan update incorporates these sectors.

There are 29 strategies and measures identified in the Investment Priorities and Areas of Critical Needs, categorized in each section of this report. A summary of all strategies and measures can be found in the appendix entitled *Summary*

Recommendations. Successfully investing in projects that align with these strategies will, over time, lead to the ultimate goal of higher job creation through business formation, scale-up, and attraction.

Region 3 is a large geographic area with limited communication channels flowing east to west or west to east. In 2017, stakeholders told us that they did not know what was going on in other parts of the region. In 2019, stakeholders told us that they were beginning to learn what was happening in other parts of the region and they wanted to know more.

The strategies will continue to foster communication, cooperation, and collaboration among all areas of the region. The council has made great strides over the first 2-3 years, and the real impact lies ahead as workforce pipelines are filled and as the entrepreneurship center comes online. The Region 3 Council is eager and prepared to move forward.

Background

About GO Virginia

GO Virginia (“GO” stands for Growth & Opportunity) is a statewide economic development initiative to promote private-sector economic growth and diversification across Virginia by targeting new investment and innovation in high-income and export-oriented industry sectors. Nine independent Regional Councils are tasked with implementing the initiative within their regional footprint. The Growth & Diversification Plan provides a regional roadmap enabling Councils to assess their opportunities for investment and benchmark their progress. Each Council is responsible for supporting the investment of grant funds to incentivize collaboration between higher education, business and local government to address the opportunities outlined in each respective regional Growth Plan.

About Region 3

GO Virginia Region 3 incorporates 15 localities in Southern Virginia, including 13 counties and 2 cities. By geographic footprint, the Region is the largest of the nine GO Virginia Regional Councils *and* has the lowest combined population. The Region includes the Counties of Patrick, Henry, Pittsylvania, Halifax, Mecklenburg, Brunswick, Nottoway, Prince Edward, Lunenburg, Buckingham, Cumberland, Charlotte, Amelia and the Cities of Martinsville and Danville.

Region 3’s footprint reflects the combined footprints of the following regional partner organizations:

- Regional Development Organizations
 - Southern Virginia Regional Alliance
 - Virginia’s Growth Alliance
- Planning District Commissions
 - Commonwealth Regional Council (Planning District 14)
 - Southside Planning District (Planning District 13)
 - West Piedmont Planning District (Planning District 12)

- Virginia Community Colleges
 - Patrick Henry Community College
 - Danville Community College
 - Southside Virginia Community College
- Virginia Career Works
 - West Piedmont Region
 - South Central Region
- Institutes of Higher Education
 - New College Institute
 - Institute for Advanced Learning & Research
 - Southern Virginia Higher Education Center
- Small Business Development Centers
 - Longwood Small Business Development Center
- Four-Year Colleges and Universities
 - Averett University
 - Longwood University
 - Hampden Sydney College

Investment Strategy

Sectoral Development & Areas of Critical Need - 2017

The 2017 Growth Plan identified target business sectors as listed below. In addition, the Plan identified *Areas of Critical Need*, which were intended to guide the Region 3 Council's investment strategy within these targeted sectors:

- Sectoral Development
 - Business Services and IT/Data Centers
 - Advanced Manufacturing & Materials
 - Aerospace
 - Production Technology
 - Lighting & Electrical Equipment
 - Automotive & Over-The-Road (OTR) Trucks
 - Biopharmaceuticals
 - High Value Natural Resource Products
 - Health Care
- Areas of Critical Need
 - Workforce Talent Development & Recruitment
 - Cyber Infrastructure

Below is a summary of the outcomes for each of the strategies that were originally recommended in the 2017 Growth & Diversification Plan.

2017 Strategies & Outcomes

<i>Priority Sectors</i>	<i>Strategies</i>	<i>Outcomes – 2019 2-years</i>
Advanced Manufacturing (Aerospace, Production Technology, Lighting/Electrical, Automotive, Biopharmaceutical)		
	1) Talent Development Pipeline Integration	GO-TEC I & IIA & B approved, and implementation initiated
	2) Support unique, attractive regional assets	n/a
	3) Talent Recruitment and Retention	GO-TEC I & IIA & B approved, and implementation initiated. Tobacco Commission Talent Attraction Program (TAP) and the Virginia Community College G3 Program, while not managed by GO Virginia, are aligned with this strategy.
High Value Wood Products		
	1) Talent Development Pipeline Integration	GO-TEC I & IIA & B approved, and implementation initiated
	2) Support unique, attractive regional assets	n/a
	3) Talent Recruitment and Retention	GO-TEC I & IIA & B approved, and implementation initiated. Tobacco Commission Talent Attraction Program (TAP) and the Virginia Community College G3 Program, while not managed by GO Virginia, are aligned with this strategy.

***Authorized and completed a
Deep-Dive on the High
Value Wood Products Sector***

Areas of Critical Need

Cyber Infrastructure

5) Create Broadband Expansion Focus Group	n/a
6) Consider region-wide tax-exempt status for Mid-Atlantic Broadband	n/a
7) Encourage local incentives for last-mile broadband deployment	n/a
8) Incentivize broadband providers to subsidize broadband for low-income homes with school-age children	n/a
9) Evaluate wireless alternatives for disadvantaged children	n/a
10) Commission study for the implementation of the Internet of Things (IoT) for government infrastructure and services	n/a
11) Commission study on innovative methods to expand for wireless broadband coverage	Funded by the Tobacco Commission, a pilot project using TV Whitespace was implemented in a partnership between Mid-Atlantic Broadband and Charlotte County (part of the Microsoft Airband Initiative)
12) Commission study on applications of available IoT technology for business development in Region 3	n/a

***Authorized and approved
the SOVA Innovation Hub
project***

Talent Development and Recruitment

13) Regional Sector Partnerships (Cyber, Advanced Manufacturing, Health Care)	For Advanced Manufacturing: GO-TEC I & II approved and implementation initiated. For Cyber and Health Care: through GO-TEC I & II, the Career Connection labs address IT skills exploration.
14) Implement robust career pathways strategy aligned with strategic sectors	For Advanced Manufacturing: GO-TEC I & II approved and implementation initiated. For Cyber and Health Care: through GO-TEC I & II, the Career Connection labs address IT skills exploration.
15) Prepare workers to be college and career ready as measured through assessments	Not funded by GO Virginia, the ACT Work-Ready Communities program has certified or has enrolled every locality in the Region 3 footprint.
16) Create a coordinated system to expand work-based learning opportunities with an emphasis on apprenticeships and internships.	For Advanced Manufacturing: GO-TEC I & II approved and implementation initiated. Authorized and completed a Deep Dive on Apprenticeship
17) Develop a regional system to quantify and validate skill acquisition	For Advanced Manufacturing: GO-TEC I & II approved and implementation initiated.
18) Develop platforms to create lifelong learning and incumbent worker training	n/a

19) Identify highly skilled job opportunities and develop a strategic plan for targeted recruitment	Tobacco Commission Talent Attraction Program (TAP) and the Virginia Community College G3 Program, while not managed by GO Virginia, are aligned with this strategy.
20) Identify the types of people who want to "be here" and go after them	n/a
21) Consider incentives to recruit highly skilled talent, especially within the strategic industry sectors	Tobacco Commission Talent Attraction Program (TAP) and the Virginia Community College G3 Program, while not managed by GO Virginia, are aligned with this strategy.
21) Create a regional platform for entrepreneurship and small business development and recruitment	The Region 3 Council created an innovation and entrepreneurship committee to assist with the state-led TEconomy assessment that resulted in a data-based analysis of the innovation ecosystem in Region 3.
22) Create other incentives to recruit would-be entrepreneurs and small businesspeople	n/a

Sectoral Development & Areas of Critical Need – 2019 Recommendations

After reviewing data and receiving input from a broad array of stakeholders, in 2019 the Council has determined that there should be no change in target sectors, as they still remain the sectors where growth in higher paying jobs can impact the Region 3 economy positively. There are challenges to growing these sectors, most notably employment losses between 2017 and 2018 in manufacturing and health care (*see Figure 12, page 17, Mangum Empirical Assessment*) and policy decisions by the GO Virginia State Board that restricts GO Virginia investments in both broadband and health care projects.

There are, however, some recommended next steps and new opportunities in those target markets that have been identified through stakeholder engagement, lessons learned in the past years, data regarding Region 3 startup activity, and ongoing (as of the writing of this document) non-GO Virginia analyses that can impact Region 3's capabilities to support these sectors and Areas of Critical Need. Thus, the target sectors and the Areas of Critical Need should remain a focus for Region 3. In addition, Region 3 should expand its focus to include broader consideration for project investments in other transformational opportunities.

The 2019 Growth Plan recommends maintaining the target business sectors that were originally approved in the 2017 Growth & Diversification Plan, **with modifications as shown below**. In addition, the Plan endorses maintaining the *Areas of Critical Need* and **incorporating additional areas as shown**, to guide the Region 3 Council's investment strategy within these targeted sectors:

- Sectoral Development – Grow Existing Clusters
 - Business Services and IT/Data Centers
 - Advanced Manufacturing & Materials
 - Aerospace
 - Production Technology
 - Lighting & Electrical Equipment
 - Automotive & Over-The-Road (OTR) Trucks
 - Biopharmaceuticals
 - High Value Natural Resource Products
 - **Structural Engineered & Biochemical Wood Products**

- ***Agricultural Production***
- Health Care
- ***Emerging Industries***
 - ***Environmental Technologies***
 - ***Ag-Based Products (hemp)***
 - ***Autonomous Vehicles***
- Areas of Critical Need
 - Workforce Talent Development & Recruitment
 - Cyber Infrastructure
 - ***Innovation & Entrepreneurship Ecosystem***
 - ***Sites & Real Estate***

Below is a listing of strategies and outcomes for sectors and Areas of Critical Need that are recommended in the 2019 Growth & Diversification Plan.

<i>Priority Sectors</i>	<i>Sector Strategies</i>	<i>Measures 2-years</i>
Advanced Manufacturing (Aerospace, Production Technology, Lighting/Electrical, Automotive, Biopharmaceutical)		
	1) Subsector location factors validated and matched with Region 3 assets	5 subsector assessments completed
	2) Large-scale prepared sites effectively positioned in market	Supply Chain story is developed that connects Berry Hill, Commonwealth Crossing, and Heartland Park and is promoted through web-based platform
	3) VBRSP site assessments certify sites to align with Priority Sectors	All sites over 25 acres have been VBRSP assessed and at least 10 are certified at Tier 2 level.
	4) Technical assistance provided to improve processes and expand markets	2 companies/sub-region engaged in scale-up and supply-chain optimization
	5) Talent Development (see Talent Development Strategies)	See Talent Development Strategies
	6) Environmental Technologies, Autonomous Vehicles	Market validation and economic impact assessment completed
Business Services/IT Data Centers		
	7) Middle Mile infrastructure leveraged for sector growth	The sector stabilizes job growth and adds at least 150 new jobs. Two new companies establish presence in region.
	8) Entrepreneurial program/facilities expansion (see Entrepreneurial Strategy)	SOVA Innovation Hub Co-Working Space fully utilized. Interactive lab space utilized at least monthly by students from TechSpark region

9) Prepared real estate options identified, assessed and promoted	2 Sites for data center use are certified. Assessment of adaptive reuse of small downtown buildings for IT and business service companies is completed
10) Commonwealth Cyber Initiative Implementation	Cooperation agreement implemented between hub and higher education institutions in Region 3
11) Talent Development (see Talent Development Strategies)	See Talent Development Strategies
High Value Natural Resource Products (manufactured wood products, agricultural production)	
12) New product lines - Pellets, Thermally Modified Wood, Cross Laminated Timbers, biochemical, etc.	Companies identified, strategy for business development implemented by economic development partners
13) Ag-based value-added production	Market research and validation of impact completed
14) Employer-led apprenticeship strategy	Collaborative formed; apprentice program initiated
15) Talent Development (see Talent Development Strategies)	See Talent Development Strategies
<i>Program Strategies – Areas of Critical Need</i>	
Sites and Building Strategies	
16) Complete VBRSP site assessments and certify sites	All sites over 25 acres have been VBRSP assessed and at least 10 are certified at Tier 2 level.

17) Continue investment in publicly owned and/or unique properties	6 business sites have increased their site readiness rating. Region invests in development of at least one unique asset (i.e. Foreign Affairs Security Training Center at Fort Pickett; Virginia International Raceway in Halifax; St. Paul's College in Brunswick County; former Community Memorial Hospital in Mecklenburg County; IKEA Building in Pittsylvania County; DuPont complex in Henry County; Patrick County Hospital in Patrick County)
18) Region has a portfolio of buildings in small towns ready for IT and entrepreneurial/small business company locations	Complete assessment of potential for adaptive reuse of at least 10 buildings in at least 2 small towns is completed
Innovation and Entrepreneurship	
19) Region-wide strategy focuses on traded sectors principally aligned with target sectors for Region	Complete a Region 3 Innovation & Ecosystem strategy
20) Ensure Region 3 connectivity with Virginia Innovation Strategy	Incorporate recommendations for connectivity into the Region 3 Innovation & Ecosystem Strategy
21) Assess and define innovation opportunities in the health care and agribusiness sectors	Partners in health care engaged to define talent development needs and innovation through use of technology. Agribusiness partners engaged to assess new products, technology applications.
22) Expand Youth entrepreneurship programs in K-12 and Community Colleges	Incorporate assessment and recommendations for expansion into Regional Innovation and Ecosystem strategy

23) Leverage the Region's 23 Opportunity Zones for business development	Opportunity Zones are mapped and characterized for business development
Talent Development and Recruitment	
24) Support GO-TEC as primary regional platform for talent development	By September 2020: achieve metrics as noted in GO-TEC 2A Contract Addendum, including targets for career connection labs launched, branding and marketing completed, student enrollment, teacher training, industry certifications awarded, students graduated, companies announced, and jobs created. Receive approval from State Board for GO-TEC 2B Contract.
25) Engage and leverage the Commonwealth Cyber Initiative	Partner agreements signed. Educational institutions from all of Region's geography are represented in the agreement.
26) Support expansion of employer-led apprenticeship models	Apprenticeship Consortium pilot implemented and benchmarked
27) Expand opportunities for incumbent talent to increase skills in target sectors	Pilot initiative for upskilling incumbent talent is implemented and measured for results
28) Leverage and measure results from the Tobacco Commission's Talent Attraction Program (TAP) and from the Virginia Community College's G3 program for occupations aligned with Region 3 talent gaps.	Confirm results of strategy for occupations of: Information Security, Network and Computer Systems Analyst; Industrial and Electrical Engineers; Physical Therapists; Occupational Therapists and other occupations associated with health care and manufacturing & trades.
29) Change the Talent and Training perception in Region 3 using current data	GO-TEC brand is utilized in economic development messaging

Operational Program

Operationally, the sustainability of the Region 3 Council is imperative to the long-term success of the resources provided by the State GO Virginia Board. In her article "Remaking Economic Development" (for the Brookings Institution, 2016) Amy Liu states, *"Major initiatives that require collective action must have visible leadership to elevate the work, create a center of gravity, and sustain focus, as plans evolve or competing priorities emerge. This is true whether for comprehensive strategies or more targeted initiatives, such as a plan for boosting exports. Regions that create high-level steering committees composed of corporate, political, and philanthropic leaders, joined with broadly representative community partners, are better positioned to succeed—and to survive inevitable transitions in leadership. Without visible champions, such as prominent co-chairs, to reinforce the sense of urgency and centrality, even well-designed plans can flounder or get lost amid other initiatives."*

Resources for the Region 3 Council are limited, from both human and financial perspectives. The Council's successful attraction of over \$200,000 in private-sector financial and in-kind support for operations in its first two years is a testimony to the engagement of each and every Council member. Add to that the private commitments that were included as part of each project application and it becomes clear that there are likely even deeper financial resources in the Region 3 footprint that can be leveraged for the future, if strategic thought and proactive attention is given to this.

Furthermore, through a focused stakeholder engagement process that was initiated in 2017 to develop the first Growth & Diversification Plan, a network of over 150 stakeholders across the Region was launched through the creation of seven advisory committees. The diverse intellectual views and experience of these individuals provides the Region 3 Council with a base of partners for continuing to address one of its most important learnings: that "east-west" communication and best practice sharing are not the "natural" state of things in

Southern Virginia, and as a result, the Region has not maximized and scaled-up success in ways that could more powerfully impact the entire footprint.

Defining success in operational outcomes, while necessary to the sustainability of this program, is not the focus of this 2019 Plan Update. However, because of the importance of operational sustainability at the Regional Council level as well as at the State level, this section of the report will make observations regarding communications strategies and strategies for project pipeline development, each of which can be measured to determine progress.

Summary of Project Investments 2017 – 2019

The most immediate and visible deliverable from the work of GO Virginia’s State Board and its Councils is their approval to invest in collaborative projects that align with both State and Regional priorities. Over the last two years, the Region 3 Council has learned much in the way of project pipeline development; a robust pipeline is necessary for the Council to ultimately have choices of where to make its investments. The Region 3 Council’s pipeline, while initially strong with 5 applications in the first round in 2017, has subsequently slowed to a very limited number of formal applications.

Region 3 approved, and received approval from the GO Virginia State Board, to invest in three projects from 2017 – 2019.

- **GO-TEC I & II.** This unique cross-region talent development system, designed as a “hub & spoke” structure, focuses on those occupations that are in high demand, align with the Council’s sector priorities, and create efficiencies by engaging 4 community colleges and 3 higher education institutes, as well as 15 K-12 public school systems in a structure that emphasizes interdependency and connectivity of curriculum and training. The total GO Virginia award for GO-TEC I & 2 is \$6 million, matched by an equivalent amount of non-state funding. The pre-GO Virginia pilot project for GO-TEC was launched by Danville and Pittsylvania County with the Danville Community College and the Institute for Advanced Learning & Research. Based on outcomes that included introducing middle-school students to high-demand careers, awarding

industry-certified credentials, and influencing the location of four new companies, GO-TEC I was approved to begin the scale-up of this successful model. Followed within a year by the GO-TEC II competitive application with Region 1, Region 3 was approved for the highest award ever approved by the State Board. As of the writing of this report, GO-TEC I & II are launched and moving toward outcomes, which by September 2020 will result in:

- Enrollment of 1000 students in Career Connection Labs
 - 10 students enrolled in mechatronics
 - 20 students certified in mechatronics
 - 100 industry credentials awarded
 - 60 program graduates
- **SOVA Innovation Hub.** The Enhanced Capacity Grant of \$80,000 leveraged an additional \$80,000 from the applicant, Mid-Atlantic Broadband Communities. Enhanced by its close partnership with Microsoft, the SOVA Innovation Hub project conducted a market and program assessment of the gaps in utilization of innovation technology by existing business as well as entrepreneurs and small businesses. Simultaneously, an engineering analysis was completed to identify a location and the infrastructure needed to establish a point of presence in eastern southern Virginia that could serve businesses and entrepreneurs in the localities of Brunswick, Charlotte, Lunenburg, Mecklenburg and Nottoway as a training site, technical assistance site, co-working site, and temporary space site for new and expanding companies. The SOVA Innovation Hub project is near to completing its deliverables and has already resulted in an announcement by Microsoft to use the SOVA Innovation Hub as the location for its TechSpark program. MBC subsequently announced it will invest over \$5 million to develop the property and the programming.

In addition to these approved projects, the Region 3 Council received formal applications from four other parties which were not approved and were sent back to the applicants for further work. As of the writing of this Plan, the Region 3 Council has a pipeline of eleven projects in various stages of development. The

profiles of these projects generally align with the Regional Council's priorities and includes potential applications for all three pots of funding

- Enhanced Capacity Building – 2
- Per Capita – 2
- Competitive – 3
- To Be Determined – 4

Of the projects in the pipeline, 6 are in the sites and infrastructure category; 3 are in the innovation and scale-up category; and 5 are in the talent development category (aggregate is 14 because projects fall into more than 1 category). A summary of these projects is included in the Appendix. Pipeline development remains a focus for the Region 3 Council, as it has nearly \$2 million in Per Capital funding available to invest in projects.

Context of Pipeline Development

The GO Virginia program was started approximately three years ago with the regional Growth and Diversification Plans being completed in 2017. Once these plans were adopted by each Regional Council and approved by the state GO Virginia Board the Councils began soliciting applications for funding.

When created, GO Virginia's communicated consistently that *"GO Virginia is a bottom-up, collaborative approach that will enable each region to develop practical, **transformational** projects that will help the private sector, including both small and large businesses, grow."* In its two years of operation, Region 3 has found that there is some tension between the goal of "transformational" and the necessity to produce a two-year Return on Investment. Other policy and operational barriers, while not unexpected in the launch of a major initiative, have also provided learning opportunities for the Region 3 Council.

The requirements and characteristics to further the GO Virginia mission are laudable, understandable and in the public's interest but do limit the potential pool of project applications for GO Virginia funding.

Specifically, the following characteristics of existing collaborations in Region 3 further limits applicants applying for GO Virginia funding:

- For many of the GO Virginia funding priorities it is the first time that the key public and private stakeholders have come together to discuss collaboration on a specific regional initiative or project idea,
- Local and regional funding sources that have identified set-aside match funding for GO Virginia are limited (and leaves room for the Council to adopt a position statement that encourages localities to set aside funding to be used as match for GO Virginia projects).
- There are few regional organizations that have missions that are directly aligned with the GO Virginia mission
- Limited practical experience at the local and regional level to implement the GO Virginia philosophy/approach
- During the startup of the program, staff resources have been limited to assist potential applicants in structuring proposals for funding
- Potential applicants view the program as narrow in scope and difficult to meet all the program requirements
- Potential applicants are reluctant to invest the extended time necessary to prepare a fundable application

Both the state GO Virginia Board and the Regional Councils have recognized the many challenges in applying for GO Virginia funding and have made policy changes that will increase the likelihood that more applications will come forward in the future.

Some regions have instituted procedures that will assist applicants in preparing their application such as asking for a simple letter of intent (LOI) to begin the discussion of program policies between the potential applicant and the staff of the regional council. These early discussions can help determine early if the proposed project can realistically be a candidate for funding and what are some of the steps that will be needed to prepare a competitive application.

The Region 3 Regional Council has recently adopted an “8 Weeks to Application” process. This process was intended to break down extensive work of application preparation into manageable segments over 8 weeks. Each week, participants received a worksheet covering a specific element of the application process, and twice during the schedule, participants were offered coaching sessions conducted by the Regional Council Contract Manager. The Appendix Section of this Report shows the complete “8 Weeks” schedule.

Region 3 has been staffed with part-time contract consulting resources, limiting the amount of time that was able to be devoted to marketing the GO Virginia program and proactively working with potential applicants. As of the summer of 2019, the Council is currently pursuing the hiring of a full-time contract manager who lives in the Region 3 footprint. Council expects to complete the transition from contract consultant to contract manager in early 2020.

A positive aspect of Region 3 is the significant resource that the Virginia Tobacco Commission has invested in the region. In addition to their sizable financial investments, the Tobacco Commission has played a major role in encouraging their localities to work collaboratively on projects, particularly on business/industrial site development and workforce development projects.

In addition, the Region has well-established Regional Development Organizations (Southern Virginia Regional Alliance, Virginia’s Growth Alliance, and Mid-Atlantic Broadband’s “Invest Southern Virginia” brand). These organizational models mean that most of the localities in the region understand the necessity to work together to expand their economies. Supporting the involvement of localities in Region 3 in these three organizations is important and can be enhanced.

While the actions that have been taken to date have helped increase the likelihood of increasing the number of project applications, the process of regional collaboration is difficult, time consuming and subject to many side-tracks. A more aggressive and proactive approach is necessary if fundable project applications are to come forward in a timely manner.

Recommendations for Stronger Project Pipeline Development

If the GO Virginia resources are to be directed at addressing the high-priority strategies outlined in the Growth and Diversification Plan, recent experience indicates that the Region 3 Council should consider additional steps to improve the depth and quality of the projects in its pipeline. These include:

1. **Consider “pre-seeding” some project ideas.** This proactive approach may take many forms from convening potential project partners, to offering capacity building grants to flesh out concepts, to coaching the applicant, etc. This approach deviates from current practice of being reactive to applicants to being proactive in recruiting and mentoring applicants.
2. **Investment Strategy** – More clearly define the Council’s policy outlining its priorities for investment among the strategies outlined in the Growth and Diversification Plan. This investment strategy will help communicate to potential applicants what are considered high-priority actions. The investment strategy is not meant to be discourage innovation or creativity but to spur hesitant applicants into action.
3. **Capacity Building Grant Policy** - The Regional Council should adopt an affirmative policy related to the use of the capacity building grants. An affirmative statement by the Council identifying high priority strategies/concepts contained in this Plan that require further investigation would encourage potential applicants to seek financial and technical assistance from the Region 3 Council and staff. This proposed policy statement is not meant to dissuade any applicant from applying for a capacity building grant but only encourage organizations to pursue the development of promising ideas into projects.
4. **Entrepreneurship Coordination Function** - Use the flexibility granted by the State Board to fund a strategy that can later be implemented for entrepreneurship initiatives. The purpose of the funding would be the exploration of expansion of the entrepreneurship support services, facilities (incubators, accelerators, etc.) and capital resources throughout the region based on the TEconomy recommendations. At the time of this report, the

Council's Innovation Committee is making a recommendation for an organizing entity to move forward with this step.

5. **Letter-of-Intent Process** – It is recommended that the Regional Council institute a Letter-of-Intent (LOI) process for surfacing potential projects early in their development. The LOI process helps applicants begin the discussion with staff early and often helps the applicant structure the project to be more receptive by the Regional Council and the GO Virginia board. In some circumstances the LOI helps save the applicant a lot of time in preparation of the application when the project may not be suited for GO Virginia funding. At the time of this writing, the Regional Council's Executive Committee has endorsed this concept.
6. **Increased and Focus Staff Resources** – It is recommended that the Regional Council increase the staffing resources or prioritize staff time to work with potential applicants to refine project concepts into fundable applications.
7. **Site Assessment - Virginia Business Ready Sites Program (VBRSP)** – It is recommended that the Regional Council contract for the assessment of the business/industrial sites in the region not covered by the VEDP contracted VBRSP assessment project. VEDP has contracted with four consultants statewide to conduct an assessment of business and industrial sites across the state against the VBRSP five-tier rating system. This assessment will not be complete until the fall of 2019 and does not cover all of the available properties in the region. Completing the assessment of all business/industrial sites will provide the Regional Council a more complete understanding of the status of marketable sites within the region. This is particularly important given the significant variations of site control and readiness in each sub-region.

Communication Strategies

In 2018 the Region 3 Council approved a contract to engage a regionally based public relations and communication firm. Under the guidance of the Region 3 Communications Committee the firm created a communications strategy that includes the following. The firm is currently measured by outcomes associated primarily with increased pipeline development.

- Launched a Region 3 website www.govirginia3.org.
- Created collateral materials including the Infographic found in the Appendix of this report
- Region 3 pages on FaceBook and LinkedIn are managed by the firm
- Creates and distributes a monthly electronic newsletter.
- Utilizes the Council's bi-annual "All-Hands Meeting" to generate video and photographic content and stories that are promoted throughout the year.
- Developed the Council's "8 Weeks to Application" virtual training program, with 13 registrants in the inaugural session.

Recommendations for Communication Strategies

The current metrics by which the communications firm is measured include increased exposure on social media as evidenced by "likes" and "shares" and friends who have joined. The outcome of the work by this firm is measured by increase in the numbers of projects in the pipeline, as measured by Letters of Interest and/or Project Applications.

Considering the emphasis placed by the Region 3 Council on addressing the lack of historical communication connectivity from east-west across the Region, and the need for more effectively building partnerships across the Region as well as sharing best practices that can scale-up economic success (such as the GO-TEC II project in which 6 higher education partners worked together to create the project applications), the communications committee should consider ways to cross-communicate proactively to audiences east to west.

- Create conversations among leaders in aligned functions, to share their successes and their barriers to success.
 - Chambers of Commerce
 - Economic Development Organizations
 - K-12 Superintendents
 - News media
 - Young leaders' organizations
 - Human resource
 - Innovation assets (see Appendix for listing of these)
- Outreach to civic clubs and non-profit organizations in the footprint
 - Develop a list of most active organizations in each locality, and seek Board volunteers to present to these organizations
- Identify and leverage key existing business leaders to discuss ways to maximize their investment in the region, seek their support for leveraging their corporate philanthropic divisions.

Sites and Buildings

The purpose of this analysis is to study the availability of business real estate, “product” (sites and buildings) and prospect activity as reported by Virginia Economic Development Partnership (VEDP). Ensuring that there is alignment between the priority sectors identified in the Growth & Diversification Plan, and the prospect activity that is the primary responsibility of the Southern Virginia Regional Alliance and Virginia’s Growth Alliance, is important as the capacity-building investments made by the Region 3 Council will succeed only if alignment among these three organizations is well-established.

The analysis presents data at the GO Virginia regional level, economic development region and locality level. The consultants were able to obtain a database from VEDP that contains the details of prospect recommendations and prospect visits for the years 2014 to 2018. In addition, the data related to available sites and buildings was taken from the VEDP VirginiaScan website in May of 2019. The data for some of localities was not available in these databases. The complete analysis can be found in the Appendix of this Report.

Sites - Region 3

This analysis looked at the total distribution of available business sites across the region including the utility and size characteristics of those sites. There was not any data on the VirginiaScan website for Patrick or Henry Counties. The consultants were able to find site data on the Henry County on the Martinsville/Henry County economic development website. As a result, there may be some double counting of sites and buildings since it was difficult to distinguish which locality the sites/buildings were located. It is assumed that Patrick County did not have business sites that meet the VEDP requirements for inclusion in the database.

There is a total of 103 business sites listed for Region 3 on VEDP VirginiaScan website and Martinsville/Henry County website. Of these 103 sites 66 (64.1%) were located in the Southern VA sub-region. 37 sites (35.9%) were in the VGA

sub-region. Danville (25 – 26.3%), Martinsville (12 – 12.6%), Halifax (11 – 11.6%), Mecklenburg (11 – 11.6%), and Pittsylvania (10 – 10%) had the majority of the sites, 69%, in the region.

The same distribution pattern is present for those sites with utilities (water and sewer) available. Of the sites with water and sewer 59 are in the Southern VA sub-region (64.1%) and 21 are in the VGA sub and on-region. 47 sites have natural gas available to the sites and all but 3 are in the Southern VA sub-region.

Most manufacturing and distribution/logistics businesses require larger sites, typically above 50 acres served by water, sewer and natural gas. Again, almost all of the larger sites greater than 50 acres, 21 (67.7%), are located in the Southern VA sub-region.

There are 13 certified sites, 8 in the Southern VA sub-region and 5 in VGA. The number of certified sites in the region is a strong indication of the commitment of the localities to provide suitable locations for business expansion/location, particularly manufacturers.

Buildings – Region 3

This analysis looked at the distribution of available industrial, flex and office buildings across the region according to tenancy, size and other characteristics. Industrial and flex buildings were analyzed separately from office buildings. There were no industrial/flex building data listed for four localities, Amelia, Buckingham, Nottoway and Patrick Counties. In addition, only five localities had any data listed for office buildings, Mecklenburg, Prince Edward, Danville, Halifax, Henry Counties and Martinsville. This report does not include the to-be-vacated IKEA facility.

There is a total of 55 industrial and flex buildings listed on VEDP VirginiaScan website and Henry EDA website for the localities in Region 3. Of the 55 buildings 35 (63.6%) were located in the Southern VA sub-region. The remaining 20 buildings (36.3%) were in the VGA sub-region. Mecklenburg, (12 – 21.8%), Danville (9 – 16.4%), Halifax (9 – 16.4%), Martinsville (8 – 14.5%) and Henry (7 –

12.7%) had the majority, 72.8%, of the industrial and flex buildings within the region.

A vast majority of the Industrial/flex buildings, 44 (80%), are for sale and 35 are for lease. 11 of the buildings are considered flex buildings and there are several publicly owned shell buildings in the region. 25 of the industrial/flex buildings are served by natural gas and 19 have ceiling heights over 20 ft. with only 5 buildings with ceiling heights greater than 30 ft.

The vast majority of the industrial/flex buildings are greater than 10,000 sq. ft., 52 (94.5%). 37 of the buildings are greater than 50,000 sq. ft. with 19 greater than 100,000 sq. ft.

Manufacturing facilities typically require buildings greater than 100,000 sq. ft. and ceiling heights above 20 ft. and logistics/distribution facilities typically require buildings greater than 100,000 sq. ft. with ceiling heights in excess of 30 ft.

The inventory and characteristics of 27 office buildings listed on the VEDP website shows they are evenly split between for sale and for lease. All but 3 of the buildings, 88.9%, are located in the Southern VA sub-region. Only 6 localities had office buildings listed, Mecklenburg (1), Prince Edward (2), Danville (8), Halifax (4), Henry (7) and Martinsville (5). Martinsville had the only Class A office building available in the region. 17 of the office are greater than 20,000 sq. ft.

Economic Development Prospect Activity

The analysis of the prospect recommendations is centered on the number, type and distribution of site recommendations made by VEDP project managers to business prospects over a five-year period from 2014 to 2018. Often the recommendations of VEDP represent the vast majority of prospect leads that rural localities receive during any calendar year. If a locality has manufacturing as a target industry, VEDP is an essential partner in expanding a locality's or regions manufacturing base.

Often site location consultants and major manufacturers work primarily through states' economic development organizations. VEDP is the primary marketing and project management organization for out-of-state business prospects.

Region 3 had a total of 628 site recommendations from VEDP for the five years between 2014 and 2018. Two thirds of the recommendations were for sites in the Southern VA sub-region. The remaining third of the recommendations was for sites in the VGA sub-region. Sites in Henry, Pittsylvania, Mecklenburg, Danville and Halifax were recommended at the highest rate over the past five years at 154 (24.7%), 126 (20.2%) 114 (18.3%), 60 (9.6%) and 54 (9.0%) respectively.

The vast number of site location recommendations are related to manufacturing use. Often a prospect will have several components/uses of their proposed facility. For example, a manufacturing prospect may have a warehouse & distribution (W&D) use, be the proposed company's headquarters, have staff offices and have a research and development (R&D) function. In this case all of these uses would be listed in the VEDP file as manufacturing. 527 of 628 or 83.9% of the recommendations were related to a manufacturing. This may overstate manufacturing as the major use since other uses are often related to the manufacturing activity. Typically, service use or data center use is not combined with manufacturing. Service uses only represent 5.7% of site recommendations and Data Centers only 1.6%. This lack of diversity in referrals creates an opportunity for the Region to more effectively promote its assets for services and data centers, to VEDP as a strategic partner.

Based on the site recommendations what has been the success of prospects choosing Virginia? The majority of prospects disengage with VEDP, 64% of the time. This could be for a variety of reasons, such as choosing not to pursue the project, choosing to expand at an existing facility, delaying plans for expansion to an uncertain date, etc. Business prospects don't always share the reasons for disengagement. 7% of the total site recommendations for the region choose a Virginia site for their expansion. The figures in the tables in the Appendix reflect a win/location for Virginia not necessarily a win for the individual locality. From the

known data, prospects choose another state 18.6% of the total number of site recommendations. 10.5% of the site recommendations were still active in 2019.

The number of site recommendations made over the five years ranged from a high of 176 in 2018 to a low of 87 in 2016. The number of recommendations among localities varied from year to year. Four counties, Halifax, Henry, Mecklenburg and Pittsylvania typically had the highest number of recommendations each year.

Economic Development Prospect Visits

The same patterns emerge when reviewing the prospect visits data as was present when analyzing the site recommendation data. Logic indicates the larger number of recommendations a locality receives the greater the likelihood that a locality will receive a prospect visit. In Region 3, the Southern Virginia Regional Alliance sub-region had the largest number of visits, 65, about two-thirds of the total. Danville had the largest number of visits at 20 and Martinsville had the lowest at 5 within the Southern Virginia Regional Alliance sub-region.

The Virginia's Growth Alliance sub-region had a total of 31 prospect visits with Mecklenburg County receiving the most visits, 9, within the Virginia's Growth Alliance sub-region.

Manufacturing prospects again dominated the prospect visits, 53 out of a total of 65 (77%). The SVRA sub-region had 53 manufacturers visit the sub-region or 81.5% of the sub-region total. The VGA sub-region had a total of 21 manufacturing prospects visit with 7 of those visiting Mecklenburg County.

Based on prospect visits, how many prospects choose Virginia? The majority of prospects disengage with VEDP, 53% of the time. This could be for a variety of reasons, i.e. choosing not to pursue the project, choosing to expand at an existing facility, delaying their plans for expansion to an uncertain date, etc. For some, the reasons for prospect disengagement are unknown. As illustrated by the data, if a prospect visits a Region 3 site there is a one in four chance that they will locate in Virginia. The figures in the tables in the Appendix reflect a win/location for

Virginia not necessarily a win for the individual locality. From the known data, 9% of the prospects chose another state after making a visit. 7% of the prospects that made a visit were still active in 2019.

The number of prospect visits across the region over the past five years ranged from a high of 31 in 2014 to a low of 7 in 2018. The SVRA sub-region again had the largest number of visits, 65, two-thirds of the total. Danville had the largest number of visits at 20 and Martinsville had the lowest at 5 within SVRA's footprint. The annual distribution of visits among the SVRA localities varied considerably across the five years.

The VGA sub-region had a total of 31 prospect visits with Mecklenburg County receiving the most visits, 9, within the VGA sub-region. No locality within the VGA sub-region had more than 2 visits in any one year.

Prospect Activity Related to Product Availability

The central question for Region 3 is the relationship between the availability of prepared sites for business expansion/location and actual prospect activity and alignment of these prospects with the target industry sectors of the Growth & Diversification Plan, as well as the occupational skill requirements' alignment with the Talent Development strategy.

The data illustrates a direct correlation between the total number of prepared sites and prospect activity. VGA region had slightly less than a third of the prepared sites and had roughly a similar percentage of prospect activity, recommendations and visits.

Likewise, the SVRA region had about two thirds of the prepared sites and had roughly the same proportion of prospect activity. Those localities that have prepared sites (served by water, sewer and gas) get recommended more frequently and receive the greater number of prospect visits.

Summary

The following are the primary findings and conclusions from an analysis of VEDP data on available sites and buildings for business expansion/location and VEDP prospect activity, site recommendations and prospect visits. The tables and charts with data are shown in the Appendix of this Report.

- A majority of available sites and buildings are concentrated in the Southern and Western sub-regions.
- There are a significant number of certified sites, 13, in the Region demonstrating a strong commitment to providing suitable sites for business location/expansion.
- There are numerous publicly owned/controlled sites in the region.
- Manufacturing (priority industry cluster) typically requires larger sites with utility service (water, sewer and gas) – there is good selection of quality business sites meeting these industry standards, but they are concentrated in a few localities primarily in the Southern and Western sub-regions.
- Available industrial/flex buildings are concentrated in many of the same localities as available sites.
- There is a limited supply of office space available and it is located in just 6 localities, primarily in the Southern sub-region.
- There is only one office building available, Martinsville, that is classified as “Class A” office space.
- Two-thirds of VEDP site recommendations are in the Southern VA sub-region and one-third in the VGA sub-region.
- 83.9% of all site recommendations had manufacturing as a primary use.
- Only 7% of the total site recommendations resulted in a decision for a Virginia location. 64% of the site recommendations never materialize because the prospect disengages.
- Prospect visits mirror the trends of site recommendations in geographic distribution and primary use, manufacturing. The southern and western sub-regions had two-thirds of prospect visits and manufacturing use dominated.

- Once a prospect visits the region, there is a one in four chance that it will choose a Virginia location.
- There is a direct correlation between the availability of quality business sites/buildings and prospect activity from VEDP.

The greater the selection/distribution of prepared larger sites (above 50 acres) the greater the likelihood of prospect activity in the targeted industry clusters.

Recommendations for Site Development

At the time of the writing of this report, the VEDP Site Characterization process is underway. When that Characterization process is completed, it is recommended that the Region 3 Council receive an update from VEDP and the two Regional Development Organization partners, Southern Virginia Regional Alliance and Virginia's Growth Alliance, as well as the Mid-Atlantic Broadband Communities Corporation, to discuss the findings and consider next steps to assure the most effective outcome in terms of business expansion and location and job creation, within the targeted sectors of the Region 3 footprint.

Strategies could be established that include:

- Ensure all sites over 25 acres are assessed as part of the VEDP Site Characterization project
- Continue to encourage investment in publicly owned and/or unique properties
- Assess small town buildings to determine their readiness for IT and entrepreneurial/small business company locations

Innovation and Entrepreneurial System

In 2018, the GO Virginia State Board GO engaged with TEconomy Partners LLC to undertake an assessment of each GO Virginia Region, as to its innovation capacity, system and assets. For context, TEconomy states that overall, Virginia recognizes that it lags in the development of innovative small- and medium-sized companies. The report also recognizes that entrepreneurial development is a very localized phenomenon and that solutions to support growth of a healthy entrepreneurial ecosystem must be tailored to the needs of specific regions and must allow local stakeholders to have key roles in governance and oversight of organizations systems.

In the fall of 2018, under the leadership of the Region 3 Innovation Committee, TEconomy Partners conducted three stakeholder sessions and also completed a baseline analysis of the current assets and capabilities within the Region. The conclusions from the TEconomy Report are summarized below. Following these summaries is a listing of potential innovation partners in the Region; this list was developed in 2017 as the Region 3 Council was launched. It provides a base of contacts of organizations that could be involved in developing a strategy for the Region.

The TEconomy report notes that in Region 3, between 2013 and 2017, on average 30 percent of job growth comes from early-stage startups that have been in business for 5 years or less. This is consistent with other rural regions; however, it is still well below the measure in the state of Virginia overall and the nation as a whole. The good news is, 10-year survival rate for businesses in the region is roughly equivalent to the statewide 10-year survival rate (52 percent for the region vs 53.5 percent for the state as a whole). In general, the net employment gains from surviving startup firms outpaces employment loss from startup failures across Region 3.

Startup activity in the region is occurring mainly in the sectors targeted by the region's GO Virginia initiative: Advanced Manufacturing, Health Care, and Natural

Resource Products. Table 3 below shows the number of start-ups and start-up employment within the region.

Major Industry Cluster	Number of Start-ups in Cluster	Number of Start-ups Surviving by 2017	Number of High Growth Start-ups in Cluster**	Start-up Employment Levels, 2017	Start-ups Industry Cluster Employment Concentration Index*
Agriculture & Food Processing	195	113	9	599	2.73
Business Services	544	291	28	1,246	0.69
Energy, Natural Resources, & Finished Products	109	57	6	524	2.08
Engineering, R&D, Testing & Technical Services	43	25	5	131	0.33
Financial & Insurance Services	123	59	3	162	0.40
Health Care Services	57	35	11	498	1.20
Information Technology & Communications Services	50	25	6	186	0.32
Life Sciences	26	15	0	87	0.56
Manufacturing	98	59	9	488	1.69
Ship Building, Aerospace, & Defense	1	1	0	5	0.11
Transportation, Distribution and Logistics	332	137	33	670	0.76

Patent activity is one way to measure the development impact of start-up companies. Patent awards have relatively stable year over year from 40 in 2014 to 41 in 2017. The overwhelming majority of patents issued to assignees in the

region are to government organizations. Of the technology patents issued from 2010 to 2017, they address a relatively narrow range of needs.

Startups are making important contributions to all of Region 3's major industry clusters. However, just 30% of quarterly growth in traded sectors from 2013-2017 is being generated by early stage startups. So, scale-up of new businesses is weak. In 2010, 150 traded sector companies were launched in Region 3. In 2017, 64 were still in business (a 42.7% survival rate), and those companies created 502 jobs. Table 5 shows how the survival of traded-sector start-ups in the region and their employment changed over time.

Founding Year of Startup Cohort	Number of Startups in Traded Sector Industries	Number of Startups Surviving by 2017	Survival Rate by 2017	Start-up Employment Levels 2017
2007	111	32	28.8%	219
2008	100	33	33.0%	200
2009	80	25	31.3%	202
2010	150	64	42.7%	502
2011	76	27	35.5%	147
2012	135	63	46.7%	343
2013	133	50	37.6%	246
2014	103	57	55.3%	453
2015	112	74	66.1%	326
2016	100	79	79.0%	508
2017	97	97	100%	510

Region 3 Innovation Partners

LOCAL ECONOMIC DEVELOPMENT OFFICES – 15

Patrick, Martinsville/Henry, Danville, Pittsylvania, Halifax, Mecklenburg, Brunswick, Nottoway, Amelia, Cumberland, Prince Edward, Charlotte, Lunenburg, Buckingham

LOCAL PARTNER OFFICES (CHAMBERS, MAIN STREET, TOURISM) – TBD

REGIONAL ECONOMIC DEVELOPMENT ORGANIZATIONS – 2

Virginia's Growth Alliance, Southern Virginia Regional Alliance

REGIONAL PLANNING DISTRICT COMMISSIONS – 3

Southside Planning District, Commonwealth Regional Council, West Piedmont Planning

REGIONAL FOUNDATIONS – 2

Danville Regional Foundation, The Harvest Foundation

REGIONAL COMMUNITY COLLEGES and WIBS – 5

Southside Virginia Community College, Danville Community College, Patrick Henry Community College, West Piedmont WIB, South Central WIB

REGIONAL FOUR-YEAR

COLLEGES/UNIVERSITIES – 3

*Longwood University, Hampden
Sydney College, Averett
University*

REGIONAL HIGHER EDUCATION CENTERS – 3

Southern Virginia Higher Education Center, Institute for Advanced Learning, New College Institute

STATE AGENCIES and PRIVATE PARTNERS – 12

*Virginia Tourism Corporation (2), Center for Innovative Technology, Virginia Tobacco Commission, Southern Virginia GO, Genedge, Virginia
Economic Development Partnership, Virginia Department of Housing & Community Development, Virginia Chamber of Commerce, Longwood Small Business Development Center, MidAtlantic Broadband, Old Dominion Electric Coop, Dominion Virginia Power*

LOCAL INNOVATION ASSET PARTNERS – 10

R&D Camee, SOVA Motion, National Tire Research Center, C-CARE, Southern Virginia Product Advancement Center, ModSim Center of Excellence, FabLab, HAAS Performance Center, The Launch Place

Recommendations for Innovation EcoSystem

In the Spring of 2019, the Region 3 Council discussed and considered utilization of a portion of its per capita funds to support the development of a Region-wide innovation strategy. It further authorized the issuance of a Request for Letters of Interest from organizations with a location in the Region. Four responses were received and evaluated by the Innovation Committee. Subsequently, two responders were asked to resubmit a collaborative application and the Council will consider this response at its meeting in July 2019.

Strategies the Council may wish to consider include:

- Focus primarily on traded sectors principally aligned with the target sectors for the Region
- Ensure Region 3 is well-connected with the Virginia Innovation Strategy
- Specifically assess and define the innovation opportunities in the health care and agribusiness sectors
- Consider creation or expansion of youth entrepreneurship programs in K-12 and Community Colleges
- Leverage the Regions 23 Opportunity Zones for business development

Talent Development and Attraction

A priority of the Region 3 Council for the first two years of its existence, the Council chose to make significant investments in its signature project, GO-TEC. The launch and outcome of this program is expected to begin to address the real and perceived talent gap that exists in Region 3, when focused on the target sectors that add the most economic impact to the Region's health.

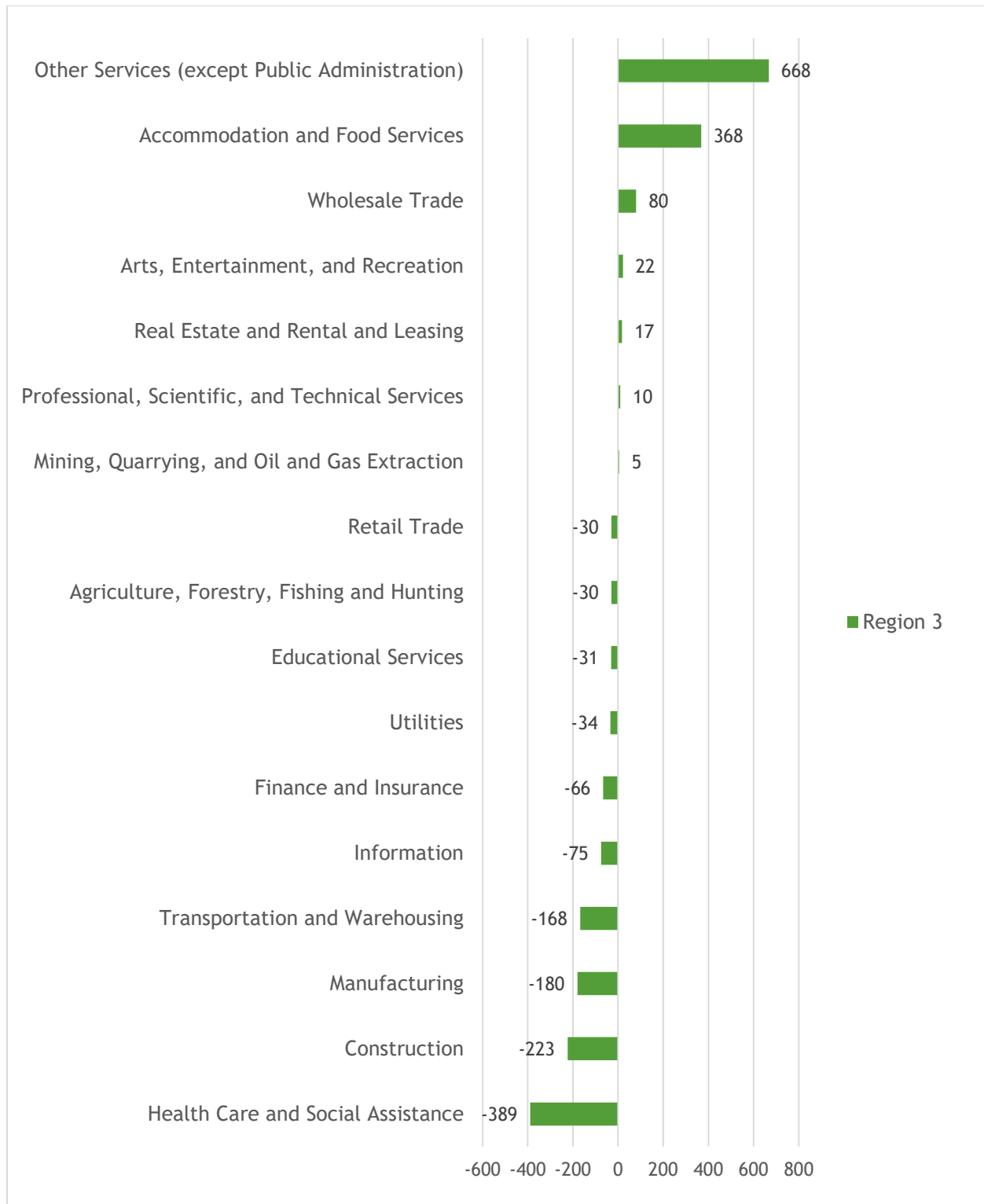
As noted in the Economic Analysis from Mangum Economics, between 2012 and 2017, the share of the working-age population with at least a bachelor's degree grew by 10 percent, which was equal to the 10 percent growth rate for the state as a whole or the 12 percent growth rate for the entire United States. A good sign. However.

Most of the binding workforce gaps identified in below pertain to "middle-skill" occupations that require a less than a two-year, post-secondary certificate, and which are associated with the target business clusters identified as priorities by the Region 3 Council. This is where the identified gaps could potentially be problematic (see Mangum Economic Analysis, pages 31-33). These occupations are:

- Industry and Machinery Mechanics
- Machinists
- Medical Assistants

Additionally, as shown in Figure 12 below, over the one year period between 2017 and 2018 the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 668 jobs), 2) Accommodation and Food Services (up 368 jobs), and 3) Wholesale Trade (up 80 jobs). While at the other end of the spectrum, the three industry sectors in Region 3 with the largest employment losses between 2017 and 2018 were: 1) Health Care and Social Assistance (down 389 jobs), 2) Construction (down 223 jobs), and 3) Manufacturing (down 180 jobs).

GO VIRGINIA REGION 3



In the summer of 2018, the Region 3 Council also commissioned a “deep-dive” report on the topic of apprenticeship and work-based learning. The full report can be found in the Appendix of this document. Its findings included:

- Not only is there interest in apprenticeships at the regional level; there are indications that the current federal administration is very interested in expanding apprenticeships and providing funding to support the expansion to include development of Industry-Recognized Apprenticeships as a parallel to Registered Apprenticeships.
- Region 3 has an opportunity to develop appropriate systems and supports in order to take advantage of future opportunities.
- As Region 3 continues its economic development efforts by working to attract U.K. and other European companies, it is imperative that it demonstrate the ability to support a robust apprenticeship system.
- Apprenticeship will not solve the region's workforce challenges; however, it is critical that this proven talent-development tool be expanded as a viable pathway for skilled occupations, beginning in high school.

Recommendations for Talent Development and Attraction

- Support GO-TEC as the primary regional platform for talent development
- Engage and leverage the Commonwealth Cyber Initiative
- Support expansion of employer-led apprenticeship and work-based learning models
- Expand opportunities for incumbent talent to increase skills and gain certifications in occupations associated with priority sectors
- Leverage and measure results from the Tobacco Commission's Talent Attraction Program (TAP) and from Virginia Community College's G3 Program for occupations aligned with the priority sectors
- Change the perception of the Talent pool in Region 3 by branding, messaging and use of workforce data that is current.

Alignment with State & Private Initiatives

Not visible at the time of the writing of this Plan, are the outcomes of a myriad of significant studies and analyses currently underway that could impact the context of strategies that the Region 3 Council adopts in its 2019 Update. These are summarized below, incorporating the relevance to Region 3. Further detail is provided in the Appendix to this report.

These non-GO Virginia studies and analyses are likely integral to how the recommendations in this 2019 Growth & Diversification Plan update succeed. For that reason, it is recommended that the Region 3 Council monitor the results of these studies, ensure understanding of the impact to the Council's Plan, and be prepared to update this 2019 Plan continuously, based on any impact from these studies.

The following initiatives/programs are described in more detail in the Appendix of this report. Below are brief summaries:

- **Virginia Business Ready Sites Program**
 - Virginia Business Ready Sites Program (VBRSP) is a discretionary program to promote development and characterization of sites to enhance the Commonwealth's infrastructure and promote the Commonwealth's competitive business environment. The program's goal is to identify, assess, and improve the readiness of potential industrial sites.
 - A team of state, regional, and local stakeholders including Virginia Economic Development Partnership (VEDP), Virginia Department of Environmental Quality (DEQ), railroad representatives, utility representatives, civil engineers, and other government, business, and industry representatives developed VBRSP.

- VEDP is in the process of assessing the inventory of sites across the Commonwealth according to the VBRSP. VEDP has contracted with four professional engineering firms to conduct this initial assessment. **The desk audits will begin the summer of 2019 with a status report available in the fall of 2019.**
- *Relevance to Region 3:* the Region is home to a significant number of prepared sites; however, there is an imbalance between the eastern, western and southern sub-regions of the Council's footprint. This imbalance impacts both the "readiness" of these subregions to identify projects that align with GO Virginia, as well as the subregions' "readiness" for economic development projects and thus, the direct impact of GO Virginia's role in leading to high-wage job creation.
- **Commonwealth Cyber Initiative (CCI)**
 - The Commonwealth Cyber Initiative (CCI) is a \$25-million effort funded in the 2018-20 Virginia budget. It calls on higher education institutions and industry to build an ecosystem of cyber-related research, education, and engagement. The goal is to position Virginia as a world leader where cybersecurity meets data analytics, machine learning, and autonomous systems.
 - The Commonwealth Cyber is collaboration between the Council of Higher Education of Virginia (SCHEV) and the Virginia Research Investment Committee. The CCI initiative is established to serve as an engine for research, innovation, and commercialization of cybersecurity technologies, and address the Commonwealth's need for growth of advanced and professional degrees within the cyber workforce.
 - The initiative calls for a primary "hub" to be located in Northern Virginia and a network of "spoke" sites across the commonwealth with collaborating universities in Virginia. Virginia Tech will lead the initiative because of its strengths in science and engineering, existing expertise in cybersecurity research and education, and its significant research

- presence in Northern Virginia. **In Region 3, Longwood University has been identified as the primary “spoke” partner for this Region.**
- *Relevance to Region 3:* The CCI’s “node” mission aligns with GO Virginia and Region 3 as evidenced in its Blueprint on page 36: 1) Cyber workforce development (see Talent Development focus for Region 3), and 2) Regional Ecosystems (see Entrepreneur and Innovation recommendations for Region 3). In addition, Longwood University serves as the Region’s “spoke” for this initiative; in the first two years of the GO Virginia program, Region 3 has been challenged to leverage the strong assets of this University in an applicable way. CCI affords the Region the opportunity to strengthen the capabilities of this partner in GO Virginia outcomes.
 - **VEDP Assessment of Community Competitiveness**
 - In the summer and fall of 2019, VEDP will produce, with extensive partner and external stakeholder input, a document that provides to each locality an overview of the key indicators of its general economic competitiveness.
 - The project is intentionally designed to help localities compare themselves with peers and to facilitate a dialogue whereby models that have worked (whether for economic development funding or programming, or regulatory/tax practices) can be shared between cities and counties.
 - **As of the writing of this report, VEDP plans to present its findings to major stakeholders in September-December 2019**
 - *Relevance to Region 3:* This unique assessment will impact the localities of Region 3 as it relates to 1) the target business sectors; 2) talent supply; 3) sites & buildings availability and preparedness; and 4) self-investment in economic development. As an independent project that is uniform across Virginia’s localities, this effort will provide a tool for self-assessment that is useful in encouraging examination of priorities

and competitiveness, which is a fundamental element of GO Virginia’s mission.

- **Amazon HQ2 Tech Talent Pipeline Initiative**

- The centerpiece of Virginia’s proposal for HQ2 was a performance-based, statewide investment in computer science and related programs to more than double Virginia’s tech-talent pipeline, which will benefit tech employers across the Commonwealth.
- **Vision** - To strengthen the tech-talent pipeline across Virginia, the Commonwealth will make performance-based investments in public higher education institutions statewide. The effort will produce 25,000 to 35,000 additional degrees in computer science and related fields – roughly split between bachelor’s degrees and master’s degrees – over the next two decades, in excess of current rates. Existing degree production levels will more than double as a result.
- **Program Design** - Subject to performance-based agreements to be negotiated with each public community college, four-year college, and university across Virginia that wish to participate, state funding will be provided to recruit faculty, address capital needs, and **provide ongoing enrollment support necessary to more than double existing levels of degree production in computer science and closely related fields**. The overall program includes five components:
 - K-12 tech-talent pipeline initiative;
 - A Community College program;
 - Bachelor’s-level education;
 - Master’s-level education; and
 - Tech internship program for higher education students
- *Relevance to Region 3*: Region 3 has identified talent development and talent recruitment as priority “Areas of Critical Need”. Alignment with GO-TEC and other talent development initiatives is imperative to maximize the benefits of the HQ Tech Talent Pipeline in the Region 3 footprint.

- **Virginia Telecommunications Initiative**

- The Virginia Telecommunication Initiative (VATI) provides grants to extend broadband service to currently underserved areas in the Commonwealth. VATI prepares communities to build, utilize, and capitalize on telecommunications infrastructure with the goal of creating strong, competitive communities.
- Consistent with the enabling legislation, DHCD was appropriated \$4 million in FY 2019 to be awarded eligible applicants, subsidizing the construction costs and providing last-mile services to these underserved areas of the state. **The FY 2020 state appropriation is for \$19 million.**
- *Relevance to Region 3:* Region 3 identified lack of broadband as an “Area of Critical Need”. At the time of this Report, GO Virginia’s State Board has adopted a policy of not using GO Virginia funds to invest in projects in the broadband space. Thus, the Region 3 Council must seek to identify alternative resources and promote those resources to its localities, enabling them to maximize the State resources and continue to implement solutions to this significant barrier.

- **Virginia FastForward Initiative**

- FastForward is a short-term workforce credential program to train Virginians for top, in-demand jobs through the Virginia Community College system. Most programs take between six and 12 weeks and are built so students can get their education while they work.
- FastForward offers credential training programs to prepare Virginians for 40 high-demand careers. The FastForward training programs to date have a completion rate of more than 90%.
- **FastForward credentials are offered in the following industry sectors; Logistics and Transportation, Healthcare, Welding and Manufacturing, Skilled Trades, Information Technology, Business and Customer Service, and Education.**
- *Relevance to Region 3:* Region 3 has identified talent development and talent recruitment as priority “Areas of Critical Need”. Alignment with

GO-TEC and other talent development initiatives including *FastForward* is imperative to maximize the benefits of this program in the Region 3 footprint.

- **Opportunity Zones**

- Opportunity Zones are economically distressed communities, designated by states and territories and certified by the U.S. Treasury Department, in which certain investments are eligible for preferential capital gains tax treatment. The tax incentive is designed to spur economic development and job creation in distressed communities by providing these tax benefits to investors.
- Effective June 14, 2018, Treasury certified Opportunity Zones in all states, territories and the District of Columbia. Opportunity Zone designations will remain in effect until December 31, 2028. 212 Opportunity Zones have been designated in Virginia.
- Virginia Community Capital (VCC), with leadership from LOCUS Impact Investing and in partnership with the Virginia Department of Housing and Community Development (DHCD) and the Virginia Housing Development Authority (VHDA), will develop an online marketplace to help educate stakeholders on the program, share project ideas and pipeline, and connect investors to businesses and property in Virginia's Opportunity Zones. The Virginia Opportunity Zone Marketplace is expected to be launched in the fall of 2019.
- There are 23 Opportunity Zones in Region 3 in the following localities: Martinsville/Henry County, Danville/Pittsylvania County, Cumberland/Prince Edward Counties, Charlotte County, Brunswick County, Halifax County and Mecklenburg County.
- *Relevance to Region 3:* Opportunity Zone Fund Structures will include access to capital that may be interested in investing in projects that align with Regional growth strategies. To the extent that Region 3 and its partners are knowledgeable about the product available in the Region 3 Opportunity Zones, and further understand and market to investors, the

Region will expand its access to external capital and will potentially identify projects for GO Virginia investment that lead to higher-paying jobs.

- **Invest Southern Virginia**

- Invest Southern Virginia drives economic growth by attracting foreign and domestic advanced manufacturing and technology companies to Southern Virginia to create jobs and increase capital investment.
- Mid-Atlantic Broadband Communities Corporation, an advanced open-source fiber provider that connects Southern Virginia to the world, leads this economic development initiative.
- **Invest Southern Virginia** focuses on growing **advanced manufacturing, data center, and technology companies** to qualified sites in the Southern Virginia region. The professional economic development staff of Mid-Atlantic Broadband leads this initiative.
- *Relevance to Region 3:* Mid-Atlantic Broadband is headquartered in Region 3 and is a source of capital, technology, lead generation and economic development thought-leadership. While formally a 503-c-4 corporation, the company also represents an existing business with significant global connectivity. As a partner in Region 3, it is an entity that can support project pipeline development as well as the organizational capacity of the Region 3 Council.

- **G3 Initiative**

- The Virginia Community College System (VCCS) has up to \$5.1 million of Workforce Innovation and Opportunity Act (WIOA) state set-aside funds to support planning activities needed to establish and refine the educational pathways aligned with the following industry sectors: **Information Technology/Computer Science, Healthcare, Manufacturing and Trades, Public Safety, and Early Childhood Education.**

- This funding opportunity is 100% supported by federal U. S. Department of Labor Employment and Training Administration Workforce Innovation and Opportunity Act (WIOA) funds.
 - Based on funding availability, future students enrolled in pre-approved G3 pathways may be eligible for last-dollar scholarships, providing greater access to postsecondary education for Virginians while encouraging enrollment, retention, and completion in the critical areas needed to support the Commonwealth's skilled workforce. Participating students must also give back to their communities by completing documented community service.
 - *Relevance to Region 3:* Region 3 has identified talent development and talent recruitment as priority "Areas of Critical Need". Alignment with Virginia Career Works, VCCS and G3 addresses the "talent recruitment" aspect of talent supply in the Region's footprint.
- **Microsoft Airband Initiative**
 - Reaping the benefits of the new digital world requires a high-speed broadband connection, a link not available to 25 million Americans, 19 million of whom live in this country's rural areas. Microsoft has sent a collaborative goal—to **eliminate the rural broadband gap by July 4, 2022**, by launching the Microsoft Airband Initiative.
 - Launched in 2017, it is a five-year commitment to tackle this persistent problem in innovative ways, like harnessing unassigned broadcast spectrum known as TV white spaces to bring broadband connectivity to 2 million unserved rural Americans.
 - Including TV white spaces technologies, alongside traditional fiber optic and satellite coverage, can be the most cost-effective way to expand broadband availability in rural communities.
 - In the year ahead, Microsoft will increase the number of states with Microsoft Airband Initiative infrastructure projects and expand the work we are doing to offer skills training in rural communities.

- *Relevance to Region 3:* At the time of this Report, GO Virginia’s State Board has adopted a policy of not using GO Virginia funds to invest in projects in the broadband space. Thus, the Region 3 Council must seek to identify alternative resources and promote those resources to its localities, enabling them to maximize the State resources and continue to implement solutions to this significant barrier. As the host region for Microsoft’s largest data center as well as its TechSpark program, Region 3 has an exceptional opportunity to leverage additional private sector leadership and capital to address this barrier to a health economy in the Region.
- **Tobacco Commission Talent Attraction Initiative**
 - The Talent Attraction Program (TAP) is designed to encourage recent graduates to live in the tobacco region and work in targeted, hard-to-fill occupations by providing up to \$12,000 annually in student loan repayment with a two-year commitment. This two-year period may be renewed for a further two years for a total possible repayment of \$48,000 over four years.
 - Eligible occupations for this program include **Physical Therapists, Occupational Therapists, Industrial or Electrical Engineers, and Information Security, Network, or Computer Systems Analysts.**
 - *Relevance to Region 3:* At the time of this Report, GO Virginia’s State Board has adopted a policy of not using GO Virginia funds to invest in projects in the broadband space. Thus, the Region 3 Council must seek to identify alternative resources and promote those resources to its localities, enabling them to maximize the State resources and continue to implement solutions to this significant barrier. As a public partner whose geographic footprint includes all of Region 3, the strategies of the Tobacco Commission that are aligned with Regional Council priorities are important to leverage and benchmark for results.

Budget Considerations/Funding Sources

The GO Virginia program requires that most project applications have matching resources that equal the amount of GO Virginia resources allocated to the project. Of this dollar for dollar match, 20% or \$50,000, whichever is greater, must come from local governmental resources. The governmental resources can be local appropriations, in-kind resources, property value or other tangible resources contributed to the project. The GO Virginia matching resources cannot be from state appropriated funds based on the philosophy that state dollars should not be used to match state dollars.

The potential array of matching funds typically includes resources from Federal government, local government including political subdivisions, foundations, private sector and special funding sources.

An example of a “leveraged” funding source is the Virginia Tobacco Region Revitalization Commission. While these funds are ineligible to count toward the required 1:1 match, they are an important demonstration of leverage in sectors of alignment. To date, the Commission has awarded 2,215 grants totaling more than \$1.1 billion across the tobacco region of the Commonwealth. The Commission operates six programs, Research and Development, Special Projects, Tobacco Region Opportunity Fund, Southwest and Southside Economic Development, Agribusiness and Education, that provide grant or loan funds to accomplish specific economic revitalization objectives. All programs require dollar-for-dollar matching funds.

Another example of a special funding source might be the Opportunity Zone Funds that will be established to support the revitalization of the designated Opportunity Zones in the region.

There are typically four types of foundations that support community efforts, community foundations, hospital foundations, family/personal foundations and corporate foundations. All of these are potential sources for matching funds to GO Virginia resources. One restriction to accessing foundation resources is their

requirement that funding go to not-for-profit organizations. Typically, foundations do not fund government sector activities but do fund non-profit groups that serve public purposes. Examples of community foundations in the Region 3 include the Danville Regional Foundation, The Community Foundation of the Dan River, The Harvest Foundation, The Southern Virginia Higher Education Foundation and the Patrick County Education Foundation. An example of a foundation created from the proceeds of the sale of a non-profit hospital is the Harvest Foundation in Martinsville.

Most large corporations have foundations affiliated with their corporate structure. An example of this type of foundation would be the Microsoft Foundation which has recently begun investing in community college foundations in the Region, as well as its own TechSpark program. It is believed there are ways to leverage these untapped corporate foundations.

The various programs of the Federal government provide tremendous opportunity to match GO Virginia funding on a specific project. Some of the more popular Federal resources commonly used in the region include, Community Development Block Grants, Rural Development funding from USDA, Economic Development Administration funding from the US Department of Commerce and US Department of Labor programs.

Local government support is also important not only to leveraging GO Virginia funding but as a best practice in public policy. Setting aside funding specifically tied to economic development is a means of developing self-investment that can lead, over the long term, to substantial changes in local economic conditions.

Recommendations for Funding Sources

As business sector and public policy leaders representing the broad geography of Region 3, the Council has the network and intellectual capability to consider and implement strategies to identify and secure financial resources that support the mission of GO Virginia. The Council should consider:

- Adopting a position statement that encourages localities to set aside funding to be used as match for GO Virginia projects.
- Conducting an assessment of existing businesses with corporate foundations.
- Conducting an assessment of existing foundations in the Region and the “mission-match” with GO Virginia goals.
- Developing and implementing an outreach strategy to secure non-state funding for both operational and project-related investment.

Summary

The 2019 Region 3 Growth & Diversification Plan Update is the result of the combined efforts of over 100 individuals whose leadership and passion for the Region 3 footprint cannot be overstated. To them, many thanks are given.

The remainder of this document includes Appendices that contribute additional context and information to support the recommendations of this Plan.

For More Information About GO Virginia Region 3:

www.govirginia3.org

REGION 3 EMPIRICAL REPORT

SEPTEMBER 29, 2019

GO Virginia Region 3

EMPIRICAL ASSESSMENT

ECONOMIC AND LABOR MARKET CONDITIONS



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About Mangum Economics, LLC

Mangum Economics, LLC is a Richmond, Virginia based firm that specializes in producing objective economic, quantitative, and qualitative analysis in support of strategic decision making. Much of our recent work relates to IT & Telecom Infrastructure (data centers, terrestrial and subsea fiber), Renewable Energy, and Economic Development. Examples of typical studies include:

POLICY ANALYSIS

Identify the intended and, more importantly, unintended consequences of proposed legislation and other policy initiatives.

ECONOMIC IMPACT ASSESSMENTS AND RETURN ON INVESTMENT ANALYSES

Measure the economic contribution that businesses and other enterprises make to their localities.

WORKFORCE ANALYSIS

Project the demand for, and supply of, qualified workers.

CLUSTER ANALYSIS

Use occupation and industry clusters to illuminate regional workforce and industry strengths and identify connections between the two.

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Executive Summary

Consistent with the requirements of the GO Virginia initiative, this report provides an empirical assessment of economic and labor market conditions within GO Virginia Region 3. The principal findings from that assessment are as follows:

REGIONAL ECONOMY

Over the last five years, employment and wage growth in GO Virginia Region 3 has under-performed statewide trends. However, there are significant differences in the performance and composition of the economies of the three Planning Districts (PDCs) that comprise Region 3 – Commonwealth PDC, Southside PDC, and West Piedmont PDC

- The private sector accounts for about the same proportion of total employment in Region 3 as it does statewide in Virginia. In 2018, private sector employment accounted for 80 percent of total employment in Region 3 as a whole, 68 percent in the Commonwealth PDC, 82 percent in the Southside PDC, and 84 percent in the West Piedmont PDC as compared to 82 percent statewide in Virginia.
- Region-wide, total private employment growth in Region 3 was below that of the state as a whole over the last five years – 2.8 percent in Region 3 as a whole, 8.1 percent in the Commonwealth PDC, minus 0.3 percent in the Southside PDC, and 2.5 percent in the West Piedmont PDC as compared to 7.4 percent statewide in Virginia.
- Region-wide, private sector average weekly wage growth in Region 3 was a little above the statewide average over the last five years – 10.3 percent in Region 3 as a whole, 9.2 percent in the Commonwealth PDC, 10.4 percent in the Southside PDC, and 10.6 percent in the West Piedmont PDC as compared to 10.1 percent statewide in Virginia.
- Private sector average weekly wages in Region 3 are below the statewide average. In 2018, private sector average weekly wages were \$668 in Region 3 as a whole, \$651 in the Commonwealth PDC, \$690 in the Southside PDC, and \$666 in the West Piedmont PDC as compared to \$1,113 statewide in Virginia.
- Over the one year period from 2017 to 2018, the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 668 jobs), 2) Accommodation and Food Services (up 368 jobs), and 3) Wholesale Trade (up 80 jobs). While the three industry sectors with the largest employment losses were: 1) Health Care and Social Assistance (down 389 jobs), 2) Construction (down 223 jobs), and 3) Manufacturing (down 180 jobs).
- Over the five-year period from 2013 to 2018, the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 1,633 jobs), 2) Accommodation and Food Services (up 742 jobs), and 3) Health Care and Social Assistance (up 454 jobs). While the three industry sectors with the largest employment losses were: 1) Transportation and

Warehousing (down 343 jobs), 2) Professional, Scientific, and technical Services (down 213 jobs), and 3) Information (down 167 jobs).

- In 2017, Region 3 identified nine target industry clusters. Four of those were identified as Tier 1 or Primary clusters: 1) Forestry, 2) Lighting and Electrical Equipment, 3) Plastics, 4) and Vulcanized and Fired Materials. Three were identified as Tier 2 or Secondary clusters: 1) Business Services, 2) Food Processing and Manufacturing, and 3) Distribution and Electronic Commerce. Two were identified as emerging clusters: 1) Aerospace Vehicles and Defense, and 2) Production Technology and Heavy Machinery.
- Of Region 3's nine identified target industry clusters, in 2018 the three largest were: 1) Business Services (8,976 jobs), 2) Distribution and Electronic Commerce (5,566 jobs), and 3) Plastics (3,212 jobs). While, the three highest paying were: 1) Food Processing and Manufacturing (\$1,085 per week), 2) Vulcanized and Fired Materials (\$992 per week), and, and 3) Plastics (\$931 per week).¹
- Over the one year period between 2017 and 2018, the target industry clusters exhibiting the largest employment growth were: 1) Plastics (up 228 jobs), 2) Vulcanized and Fired Materials (up 69 jobs), and 3) Food Processing and Manufacturing (up 5 jobs).²
- Over the five year period between 2013 and 2018, the target industry clusters exhibiting the largest employment growth were: 1) Plastics (up 667 jobs), 2) Distribution and Electronic Commerce (up 393 jobs), and 3) Vulcanized and Fired Materials (up 97 jobs).³

ECONOMIC DRIVERS

GO Virginia Region 3 is home to a large and diverse number of high-performing industries.

- We assessed the relative economic performance of specific industries within Region 3 using a Composite Economic Performance Index that took into account each industry's relative employment footprint, short-term and long-term employment growth, short-term and long-term wage growth, industry wage as a proportion of the average wage for the region, proportion of industry output exported out of Region 3, and employment multiplier.
- That analysis identified 80 industries within Region 3 that exhibited a Composite Economic Performance Index that was above the median for the region and 40 industries that were performed in the upper quartile.

¹ Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

² Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

³ Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

WORKFORCE GAPS

Our “gap analysis” of potential shortfalls in the pipeline of completers graduating from regional post-secondary education programs in Region 3 relative to the occupation-driven demand for trained workers from those programs showed that:

- The most binding workforce gaps were in “middle-skill” occupations that require a less than a two-year, post-secondary certificate. For example:
 - Industry and Machinery Mechanics
 - Machinists
 - Medical Assistants

FORWARD-LOOKING DATA

Our analysis of forward-looking data required by GO Virginia guidelines drew heavily from the TEconomy Partners report, *Regional Entrepreneurial Assessment Project*. That analysis showed that:

- Between 2012 and 2017, the share of the working-age population with at least a bachelor’s degree grew by 10 percent, which was equal to the 10 percent growth rate for the state as a whole.
- Start-up activity in Region 3 is occurring mainly in the sectors targeted by the region’s GO Virginia initiative: Advanced Manufacturing, Health Care, and Natural Resource Products.
- Most patents issued in Region 3 are to government organizations.

Introduction

Consistent with the requirements of the GO Virginia initiative, this report provides an updated assessment of economic and labor market conditions within GO Virginia Region 3. Region 3 is comprised of cities of Danville and Martinsville; and the counties of Amelia, Brunswick, Buckingham, Charlotte, Cumberland, Halifax, Henry, Lunenburg, Mecklenburg, Nottoway, Patrick, Pittsylvania, and Prince Edward. Region 3 is generally consistent with the service areas of the Commonwealth Regional Council, Southside, and West Piedmont Planning District Commissions (PDCs).

This report was commissioned by GO Virginia Region 3 and produced by Mangum Economics.

Economic Profile

In this section, we provide a context for the analysis to follow by reviewing recent economic trends within GO Virginia Region 3, and the three Planning Districts that comprise Region 3 (Commonwealth PDC, Southside PDC, and West Piedmont PDC).⁴

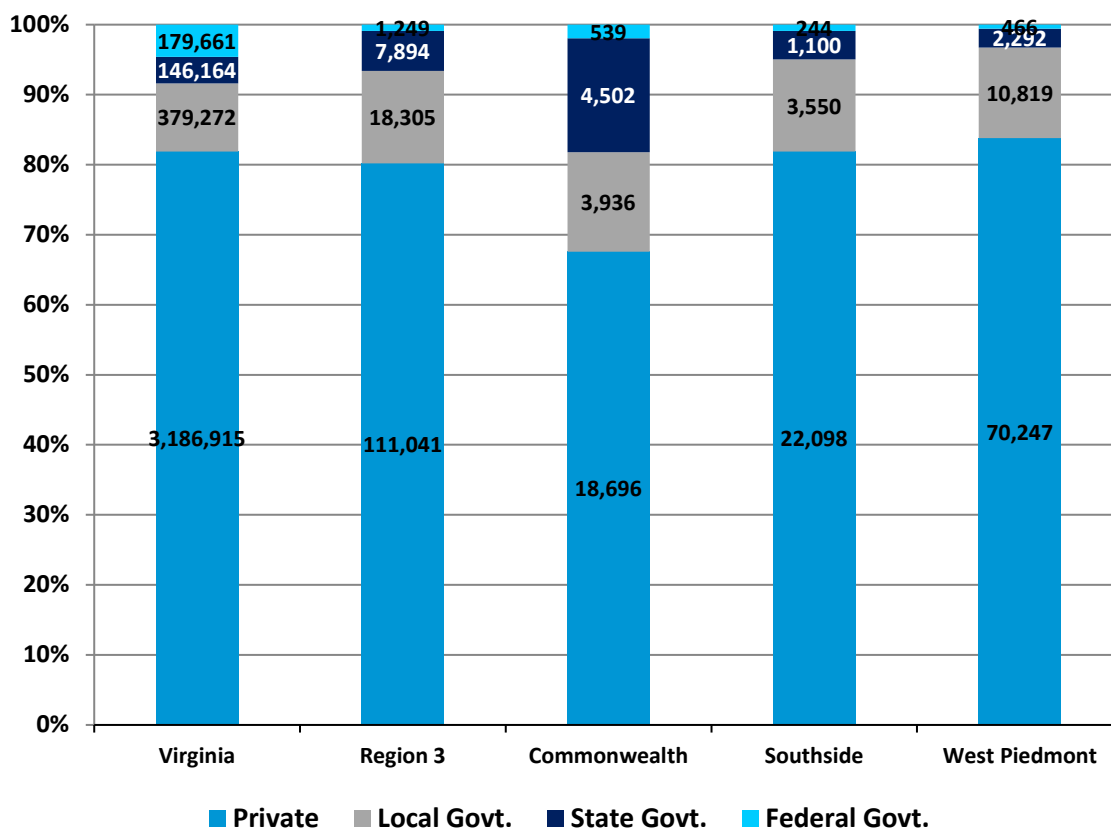
EMPLOYMENT BY OWNERSHIP CATEGORY

Figure 1 depicts employment by ownership category in Virginia, GO Virginia Region 3, and the three Planning Districts that are encompassed by Region 3, in 2018. As these data depict, where in Virginia as a whole private sector employment accounted for 82 percent of total employment, in Region 3 that figure was 80 percent. While at the PDC level, private sector employment accounted for: 1) 68 percent of total employment in the Commonwealth PDC, 2) 82 percent of total employment in the Southside PDC, and 3) 84 percent of total employment in the West Piedmont PDC. The significant difference in private employment in the Commonwealth PDC is attributable to the fact that state government employment accounted for 16 percent of total employment in that PDC, which is likely attributable to the three state correctional institutions in that PDC (*i.e.*, the Buckingham, Dillwyn, and Lunenburg Correctional Centers).

Consistent with the GO Virginia initiative's focus on private sector development, in the remainder of this section we will focus exclusively on private sector employment and wages.

⁴ The Commonwealth Regional Council PDC encompasses the counties of Amelia, Buckingham, Charlotte, Lunenburg, and Prince Edward. The Southside PDC encompasses of the counties of Brunswick, Halifax, and Mecklenburg. The West Piedmont PDC encompasses the cities of Danville and Martinsville, and the counties of Franklin, Henry, Patrick, and Pittsylvania. These PDC service areas closely match that of GO Virginia Region 3, but they do not perfectly overlap. Franklin County is included in the West Piedmont PDC, but is not part of Region 3, while Cumberland County and Nottoway County are part of Region 3, but are not included in either of the three PDCs.

Figure 1: Employment by Ownership Category – 2018⁵

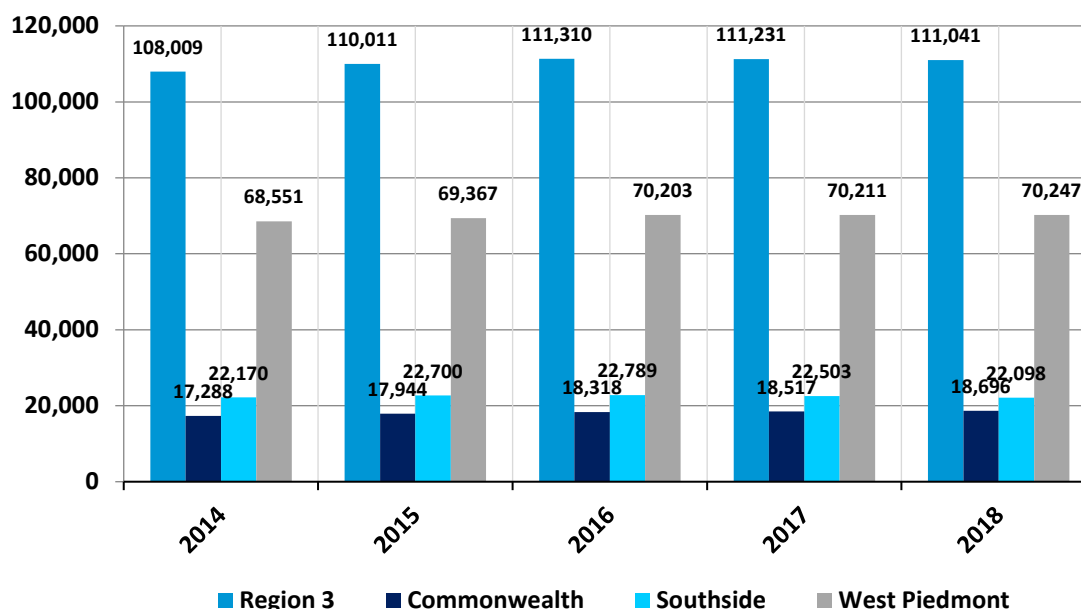


TOTAL PRIVATE EMPLOYMENT

Figure 2 provides data on total private employment trends in GO Virginia Region 3, and the three Planning Districts that it encompasses for the period from 2014 through 2018. Overall this five year period, Region 3 experienced an increase of 3,032 jobs, or 2.8 percent growth in total private employment. By way of comparison, over the same period the state of Virginia as a whole experienced 7.4 percent growth in total private employment.

⁵ Source: Virginia Employment Commission.

Figure 2: Total Private Employment in GO Virginia Region 3 and Planning Districts – 2014 to 2018⁶



To control for seasonality and provide a point of reference, Figures 3 and 4 compare the annual change in total private employment in Region 3 and the three Planning Districts that it encompasses to that of the state of Virginia as a whole over the same five-year period. Any point above the zero line in this graph indicates annual employment growth, while any point below the zero line indicates annual employment decline. As these data indicate, with the exception of the Commonwealth PDC, annual private employment growth in Region 3 and its Planning Districts tracked below the statewide norm over this period. In 2018, annual private employment growth was 1.5 percent in Virginia statewide, as compared to minus 0.2 percent in Region 3, plus 1.0 percent in the Commonwealth PDC, minus 1.8 percent in the Southside PDC, and plus 0.1 percent in the West Piedmont PDC.

Finally, Figure 5 depicts the cumulative annual growth in total private employment in Region 3 and the three Planning Districts that it encompasses between 2014 and 2018. Here again, with the exception of the Commonwealth PDC, cumulative annual total private employment growth in Region 3 and its Planning Districts tracked below the statewide norm over this period. As these data show, over this period: 1) Virginia experienced a 7.4 percent cumulative increase in total private employment, 2) Region 3 experienced a 2.8 percent increase; 3) the Commonwealth PDC experienced an 8.1 percent increase, 4) the Southside PDC experienced a 0.3 percent decline, and 5) the West Piedmont PDC experienced a 2.5 percent increase.

⁶ Source: Virginia Employment Commission.

Figure 3: Annual Change in Total Private Employment in GO Virginia Region 3 – 2014 to 2018⁷

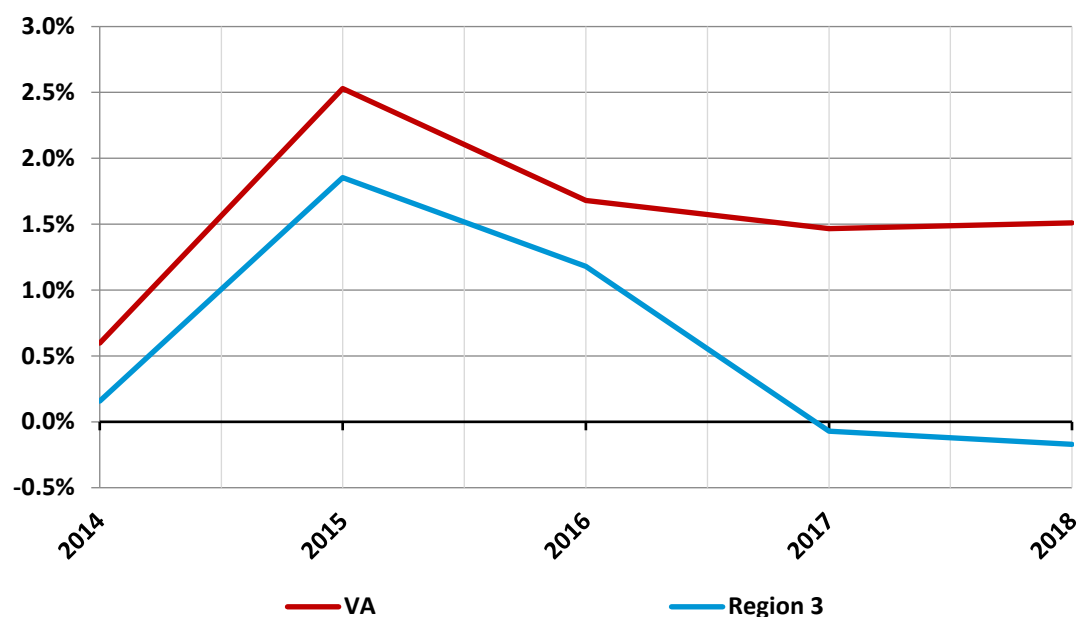
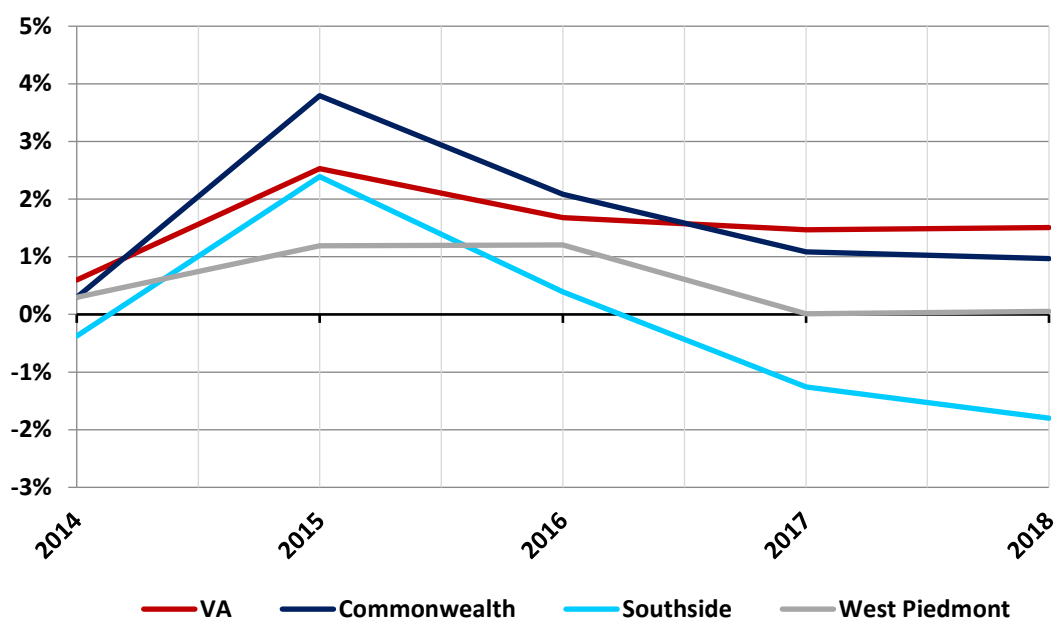


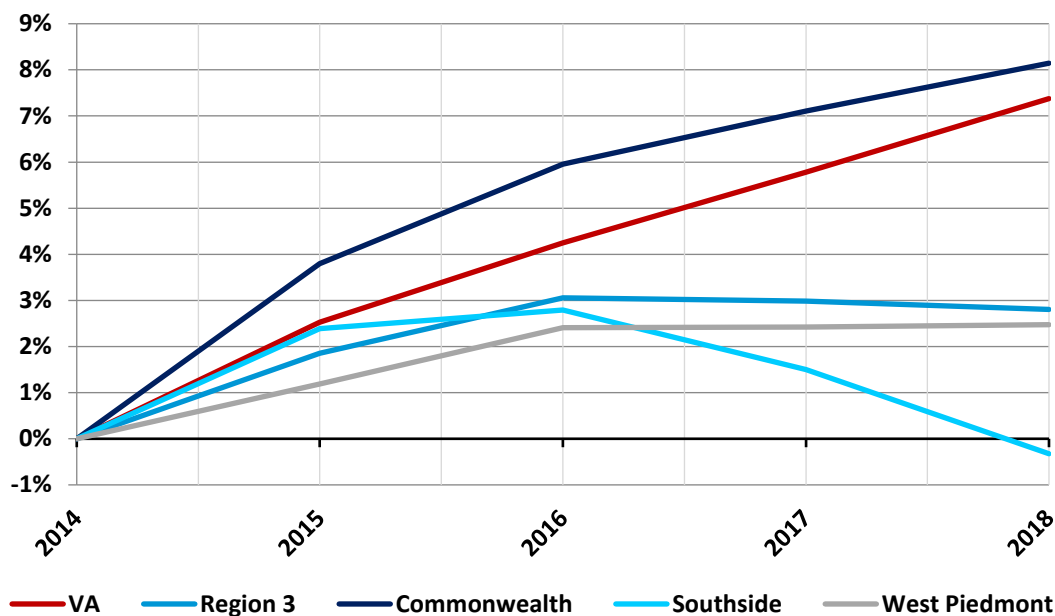
Figure 4: Annual Change in Total Private Employment in GO Virginia Region 3 by PDC – 2014 to 2018⁸



⁷ Source: Virginia Employment Commission.

⁸ Source: Virginia Employment Commission.

Figure 5: Cumulative Growth in Total Private Employment in GO Virginia Region 3 and Planning Districts – 2014 to 2018⁹



PRIVATE SECTOR AVERAGE WEEKLY WAGES

Figure 6 provides data on trends in private sector average weekly wages in GO Virginia Region 3, and the three Planning Districts that it encompasses for the period from 2014 through 2018. While Figure 7 depicts the cumulative growth in private sector average weekly wages in each geography between 2014 and 2018 on an annual basis (unadjusted for inflation). As these data show, over this period private sector average weekly wages increased by: 1) 10.1 percent statewide in Virginia, 2) 10.3 percent in Region 3, 3) 9.2 percent in the Commonwealth PDC, 4) 10.4 percent in the Southside PDC, and 5) 10.6 percent in the West Piedmont PDC (unadjusted for inflation).

⁹ Source: Virginia Employment Commission.

Figure 6: Private Average Weekly Wages in GO Virginia Region 3 and Planning Districts – 2014 to 2018¹⁰

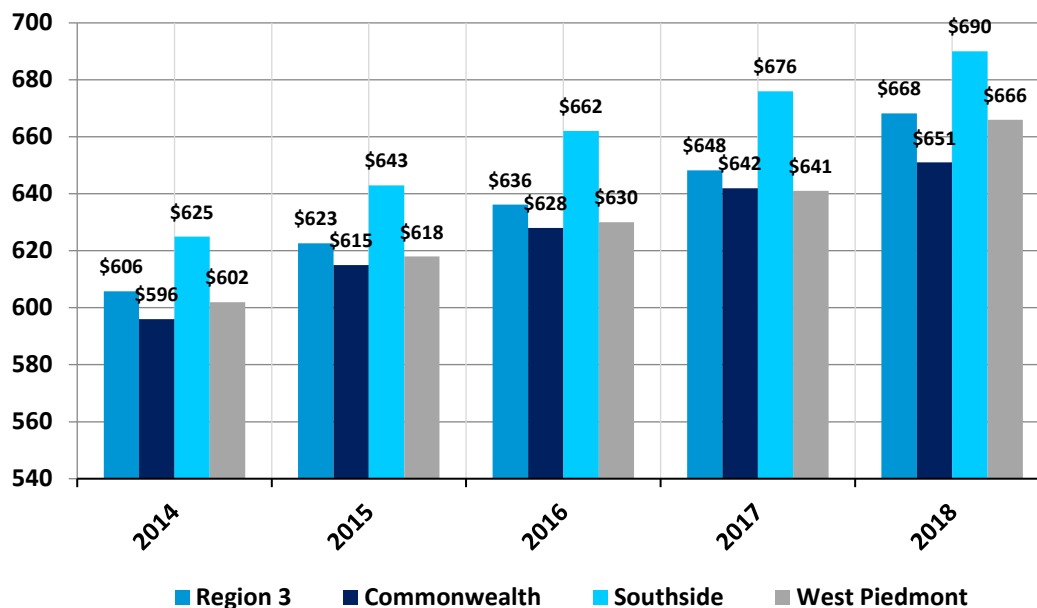
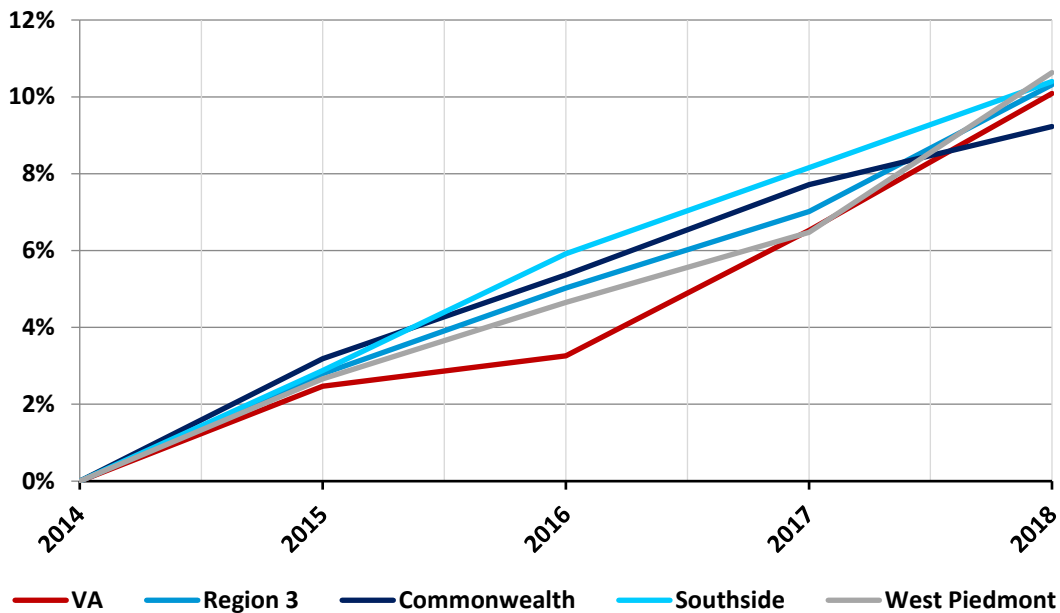


Figure 7: Cumulative Nominal Growth in Private Average Weekly Wages in GO Virginia Region 3 and Planning Districts – 2014 to 2018¹¹



¹⁰ Source: Virginia Employment Commission.

¹¹ Source: Virginia Employment Commission.

EMPLOYMENT BY MAJOR INDUSTRY

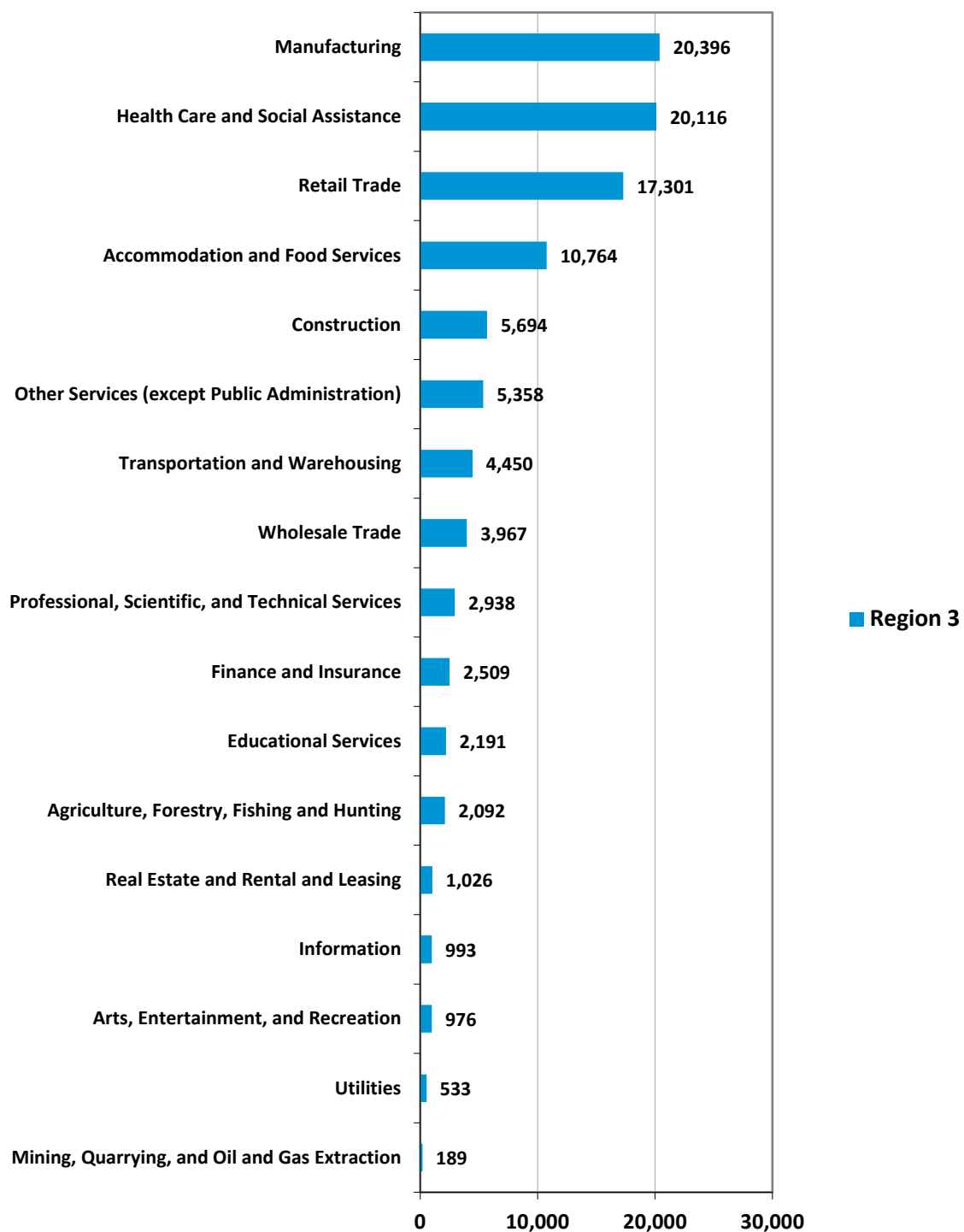
In this portion of the section, we provide a drill-down for employment and wages by major industry sector in GO Virginia Region 3 and the three Planning Districts it encompasses. As shown in Figure 8, in 2018 the three largest industry sectors in Region 3 were: 1) Manufacturing (20,396 jobs), 2) Health Care and Social Assistance (20,116 jobs), and 3) Retail Trade (17,301 jobs).

Figure 9 provides a similar breakdown by PDC. In 2018 the three largest industry sectors in the Commonwealth PDC were: 1) Health Care and Social Assistance (4,135 jobs), 2) Retail Trade (2,941 jobs), and 3) Accommodation and Food Service (1,945 jobs). In the Southside PDC, the three largest industry sectors that year were: 1) Health Care and Social Assistance (4,013 jobs), 2) Manufacturing (3,400 jobs), and 3) Retail Trade (3,203 jobs). While in the West Piedmont PDC, the three largest industry sectors were: 1) Manufacturing (15,076 jobs), 2) Health Care and Social Assistance (11,968 jobs), and 3) Retail Trade (11,157 jobs).

Figures 10 and 11 provide similar data for average weekly wages in 2018. As shown in Figure 10, in 2018 the three highest paying industry sectors in Region 3 were: 1) Utilities (\$1,878 per week), 2) Mining, Quarrying, and Oil and Gas Extraction (\$997 per week), and 3) Wholesale Trade (\$950 per week).

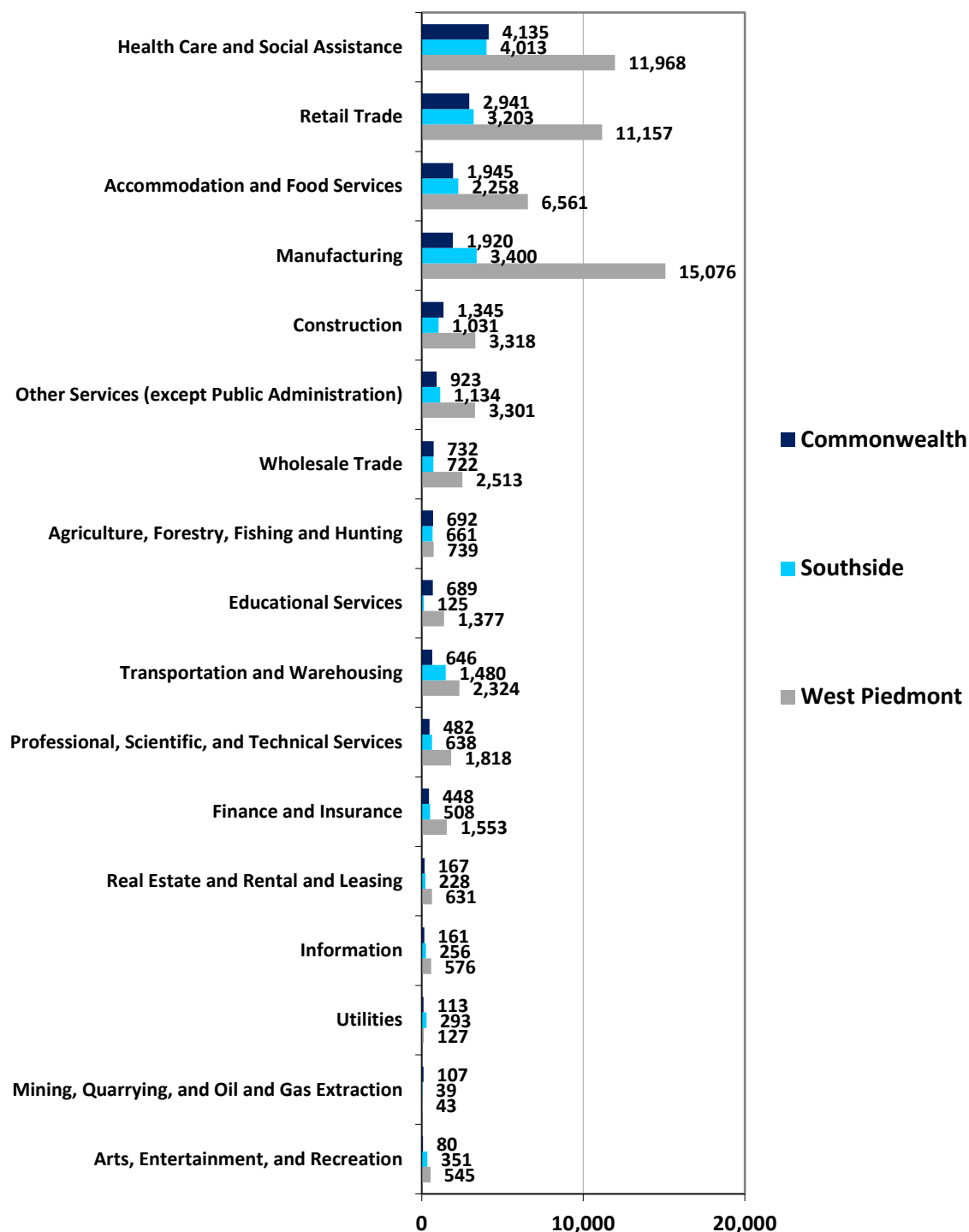
Figure 11 provides the same rankings by PDC. In 2018 the three highest paying sectors in the Commonwealth PDC were: 1) Utilities (\$1,912 per week), 2) Mining, Quarrying, and Oil and Gas Extraction (\$1,023 per week), and 3) Professional, Scientific, and Technical Services (\$949 per week). In the Southside PDC, the three highest paying industry sectors that year were: 1) Utilities (\$1,973 per week), 2) Mining, Quarrying, and Oil and Gas Extraction (\$1,168 per week), and 3) Professional, Scientific, and Technical Services (\$1,140 per week). While in the West Piedmont PDC, the three highest paying industry sectors were: 1) Utilities (\$1,629 per week), 2) Wholesale Trade (\$948 per week), and 3) Finance and Insurance (\$914 per week).

Figure 8: Private Employment by Major Industry Sector in Region 3 – 2018¹²



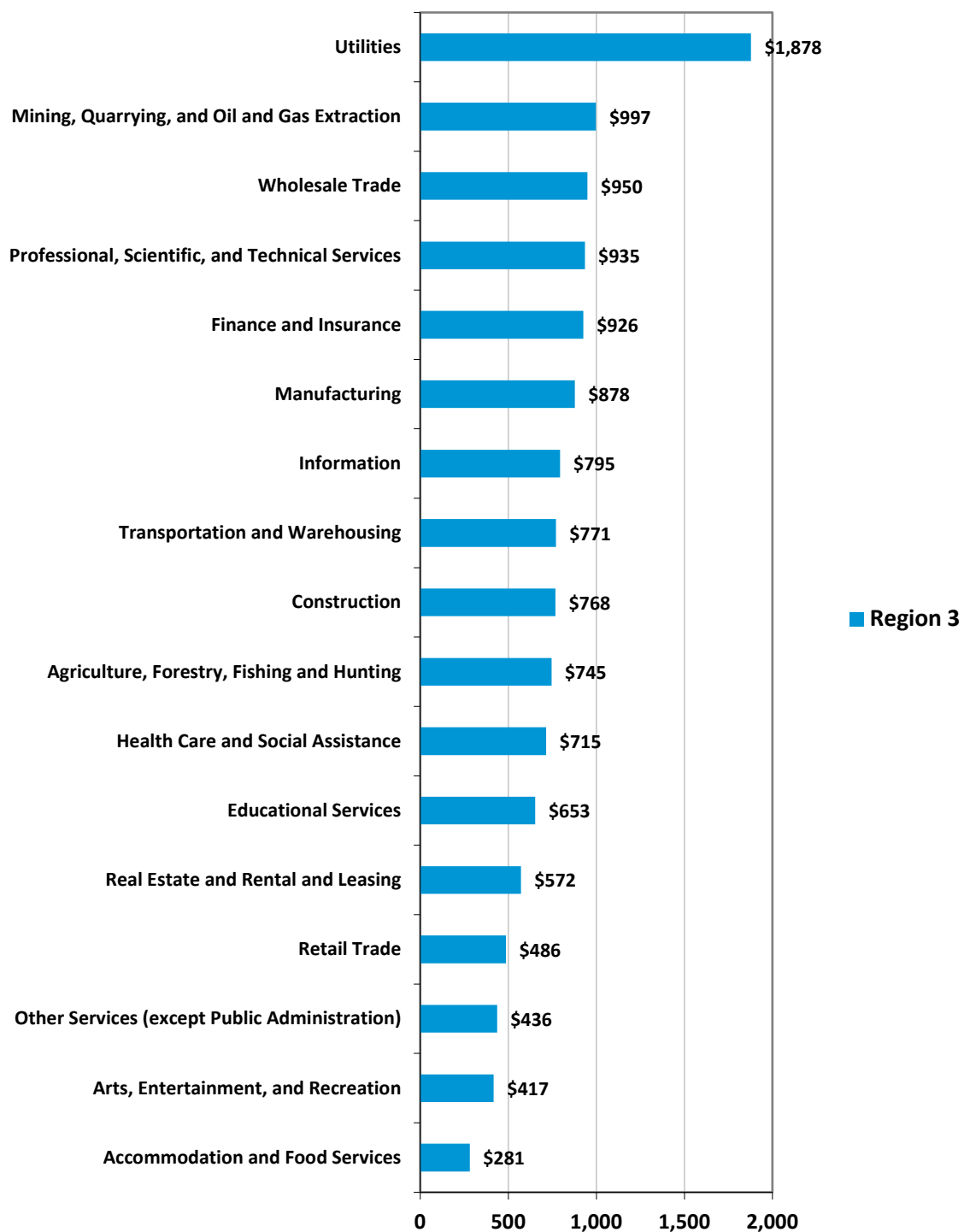
¹² Source: Virginia Employment Commission.

Figure 9: Private Employment by Major Industry Sector in Region 3 by PDC – 2018¹³



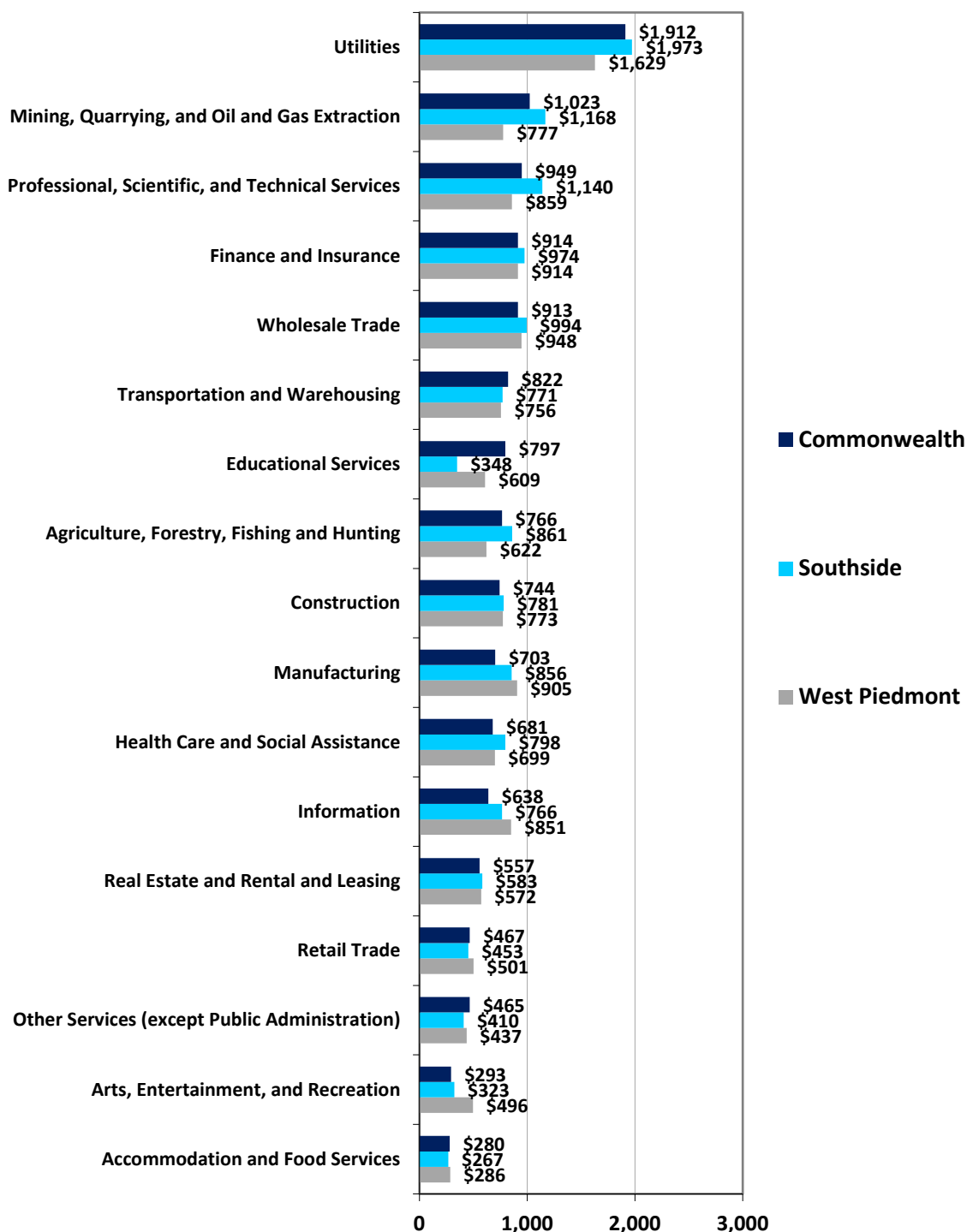
¹³ Source: Virginia Employment Commission.

Figure 10: Private Average Weekly Wages by Major Industry Sector in Region 3 – 2018¹⁴



¹⁴ Source: Virginia Employment Commission.

Figure 11: Private Average Weekly Wages by Major Industry Sector in Region 3 by PDC – 2018¹⁵



¹⁵ Source: Virginia Employment Commission.

Finally, Figures 12 through 15 depict one year (2017 to 2018) and five year (2013 to 2018) employment changes in Region 3 and the three Planning Districts it encompasses. As shown in Figure 12, over the one year period between 2017 and 2018 the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 668 jobs), 2) Accommodation and Food Services (up 368 jobs), and 3) Wholesale Trade (up 80 jobs). While at the other end of the spectrum, the three industry sectors in Region 3 with the largest employment losses between 2017 and 2018 were: 1) Health Care and Social Assistance (down 389 jobs), 2) Construction (down 223 jobs), and 3) Manufacturing (down 180 jobs). Figure 13 provides similar data for one year employment growth at a Planning District level.

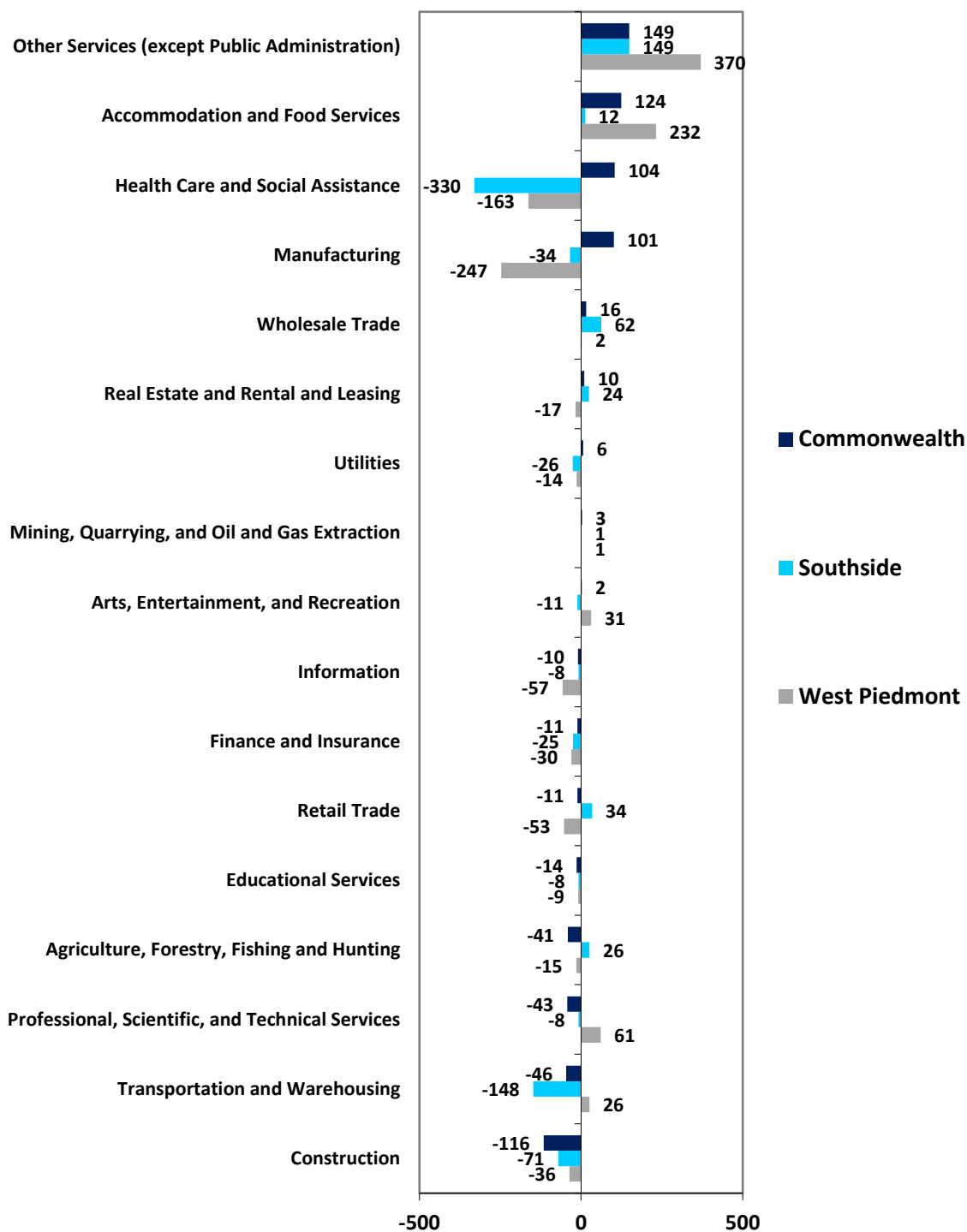
As shown in Figure 14, over the five year period between 2013 and 2018 the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 1,633 jobs), 2) Accommodation and Food Services (up 742 jobs), and 3) Health Care and Social Assistance (up 454 jobs). While at the other end of the spectrum, the three industry sectors in Region 3 with the largest employment losses between 2013 and 2018 were: 1) Transportation and Warehousing (down 343 jobs), 2) Professional, Scientific, and Technical Services (down 213 jobs), and 3) Information (down 167 jobs). Figure 15 provides similar data for five year employment growth at a Planning District level.

Figure 12: One Year Change in Private Employment by Major Industry Sector in Region 3 (2017 to 2018)¹⁶



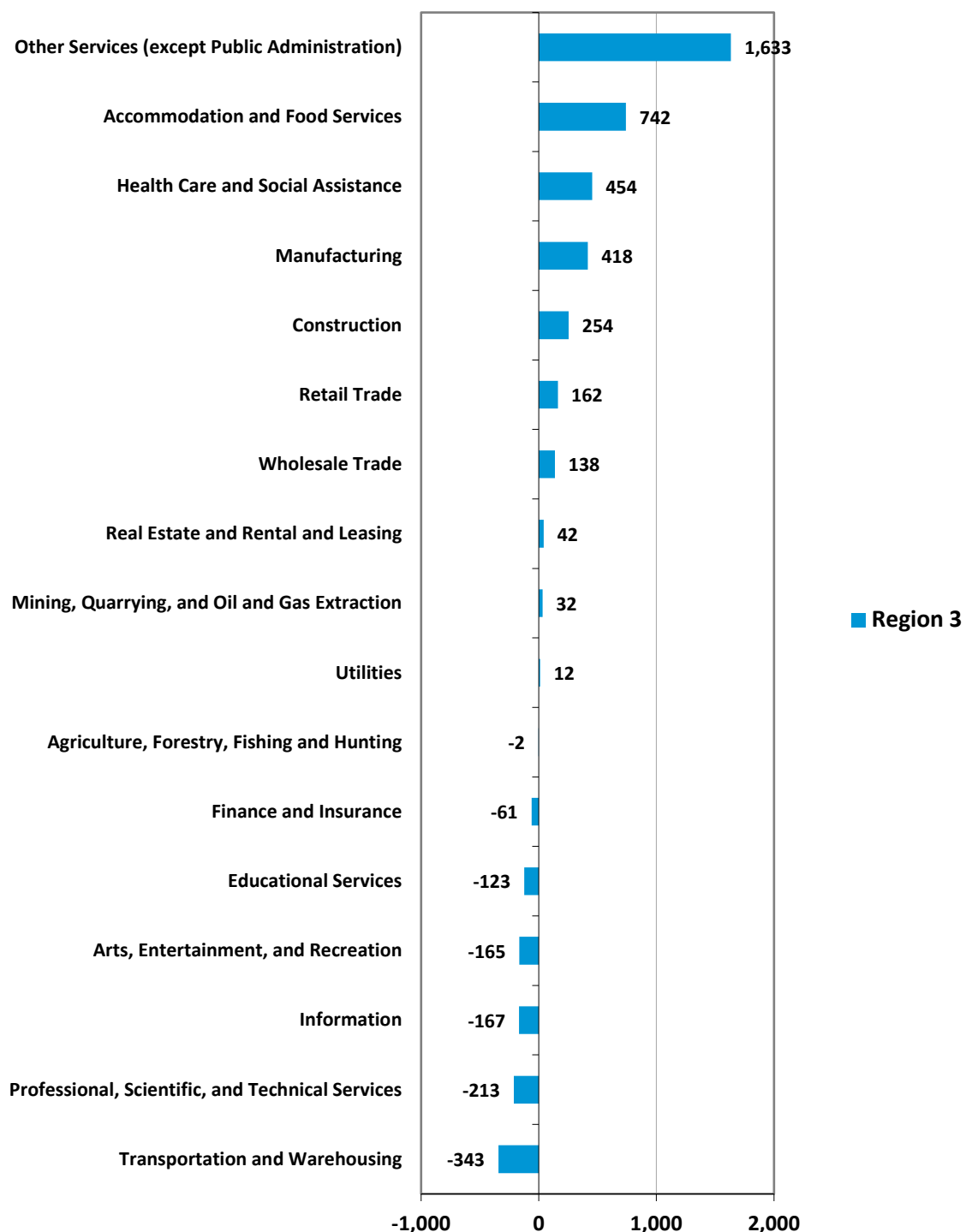
¹⁶ Source: Virginia Employment Commission.

Figure 13: One Year Change in Private Employment by Major Industry Sector in Region 3 by PDC (2017 to 2018)¹⁷



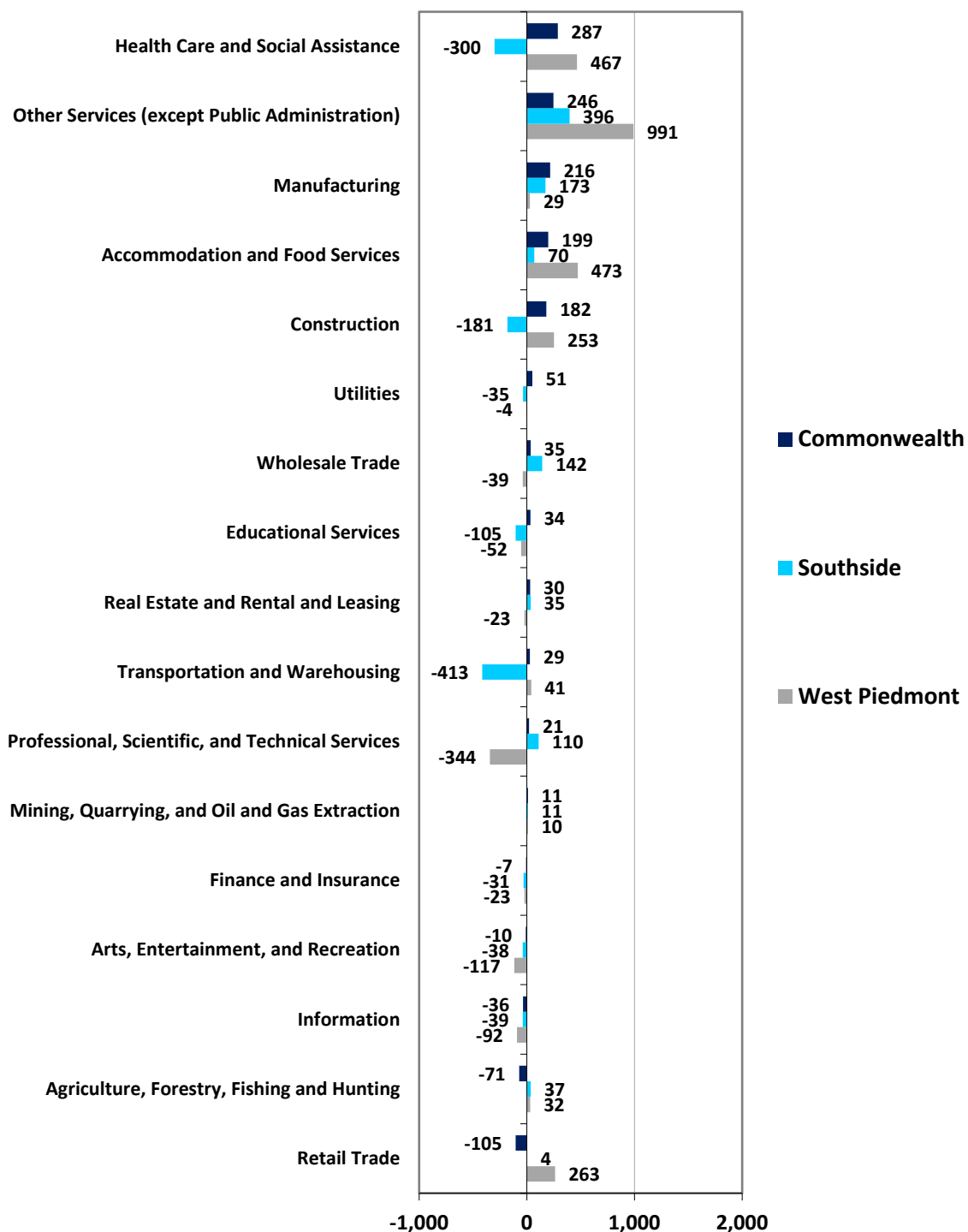
¹⁷ Source: Virginia Employment Commission.

Figure 14: Five Year Change in Private Employment by Major Industry Sector in Region 3 (2013 to 2018)¹⁸



¹⁸ Source: Virginia Employment Commission.

Figure 15: Five Year Change in Private Employment by Major Industry Sector in Region 3 by PDC (2013 to 2018)¹⁹



¹⁹ Source: Virginia Employment Commission.

EMPLOYMENT BY TARGET CLUSTER

In this portion of the section, we provide a drill-down for employment and wages for each of GO Virginia Region 3's nine identified target industry clusters. Those clusters are:

Primary:

1. [Forestry](#)²⁰
2. [Lighting and Electrical Equipment](#)²¹
3. [Plastics](#)²²
4. [Vulcanized and Fired Materials](#)²³

Secondary:

5. [Business Services](#)²⁴
6. [Food Processing and Manufacturing](#)²⁵
7. [Distribution and Electronic Commerce](#)²⁶

²⁰This cluster includes: Forestry and Logging (NAICS 113) and Support Activities for Forestry (NAICS 1153).

²¹ This cluster includes: Electric Lighting Equipment Manufacturing (NAICS 3351), Electrical Equipment Manufacturing (NAICS 3353), and Other Electrical Equipment and Component Manufacturing (NAICS 3359).

²²This cluster includes: Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing (NAICS 3252), Plastics Product Manufacturing (NAICS 3261), Industrial Machinery Manufacturing (NAICS 3332), and Other Miscellaneous Manufacturing (NAICS 3399).

²³This cluster includes: Rubber Product Manufacturing (NAICS 3262), Clay Product and Refractory Manufacturing (NAICS 3271), Glass and Glass Product Manufacturing (NAICS 3272), and Other Nonmetallic Mineral Product Manufacturing (NAICS 3279).

²⁴This cluster includes: Taxi and Limousine Service (NAICS 4853), Other Transit and Ground Passenger Transportation (NAICS 4859), Data Processing, Hosting, and Related Services (NAICS 5182), Automotive Equipment Rental and Leasing (NAICS 5321), Lessors of Nonfinancial Intangible Assets (except Copyrighted Works) (NAICS 5331), Legal Services (NAICS 5411), Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412), Architectural, Engineering, and Related Services (NAICS 5413), Computer Systems Design and Related Services (NAICS 5415), Management, Scientific, and Technical Consulting Services (NAICS 5416), Other Professional, Scientific, and Technical Services (NAICS 5419), Management of Companies and Enterprises (NAICS 5511), Facilities Support Services (NAICS 5612), Employment Services (NAICS 5613), Business Support Services (NAICS 5614), and Other Support Services (NAICS 5619).

²⁵This cluster includes: Animal Food Manufacturing (NAICS 3111), Grain and Oilseed Milling (NAICS 3112), Sugar and Confectionery Product Manufacturing (NAICS 3113), Fruit and Vegetable Preserving and Specialty Food Manufacturing (NAICS 3114), Dairy Product Manufacturing (NAICS 3115), Bakeries and Tortilla Manufacturing (NAICS 3118), Other Food Manufacturing (NAICS 3119), Beverage Manufacturing (NAICS 3121), Glass and Glass Product Manufacturing (NAICS 3272), and Farm Product Raw Material Merchant Wholesalers (NAICS 4245).

²⁶This cluster includes: Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232), Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234), Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4335), Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236),

Emerging:

8. [Aerospace vehicles and Defense](#)²⁷
9. [Production Technology and Heavy Machinery](#)²⁸

In interpreting the information that follows, it is important to be aware that at this level of reporting the employment and wage data publicly provided by the Virginia Employment Commission are often subject to data suppression. That occurs when an industry contained in the cluster has a sufficiently small number of employees or employers that the Virginia Employment Commission is prohibited from publicly releasing those data because they could divulge employment or wages in an individual firm. As a result, the data presented in the following tables will in some cases unavoidably under-represent actual employment.

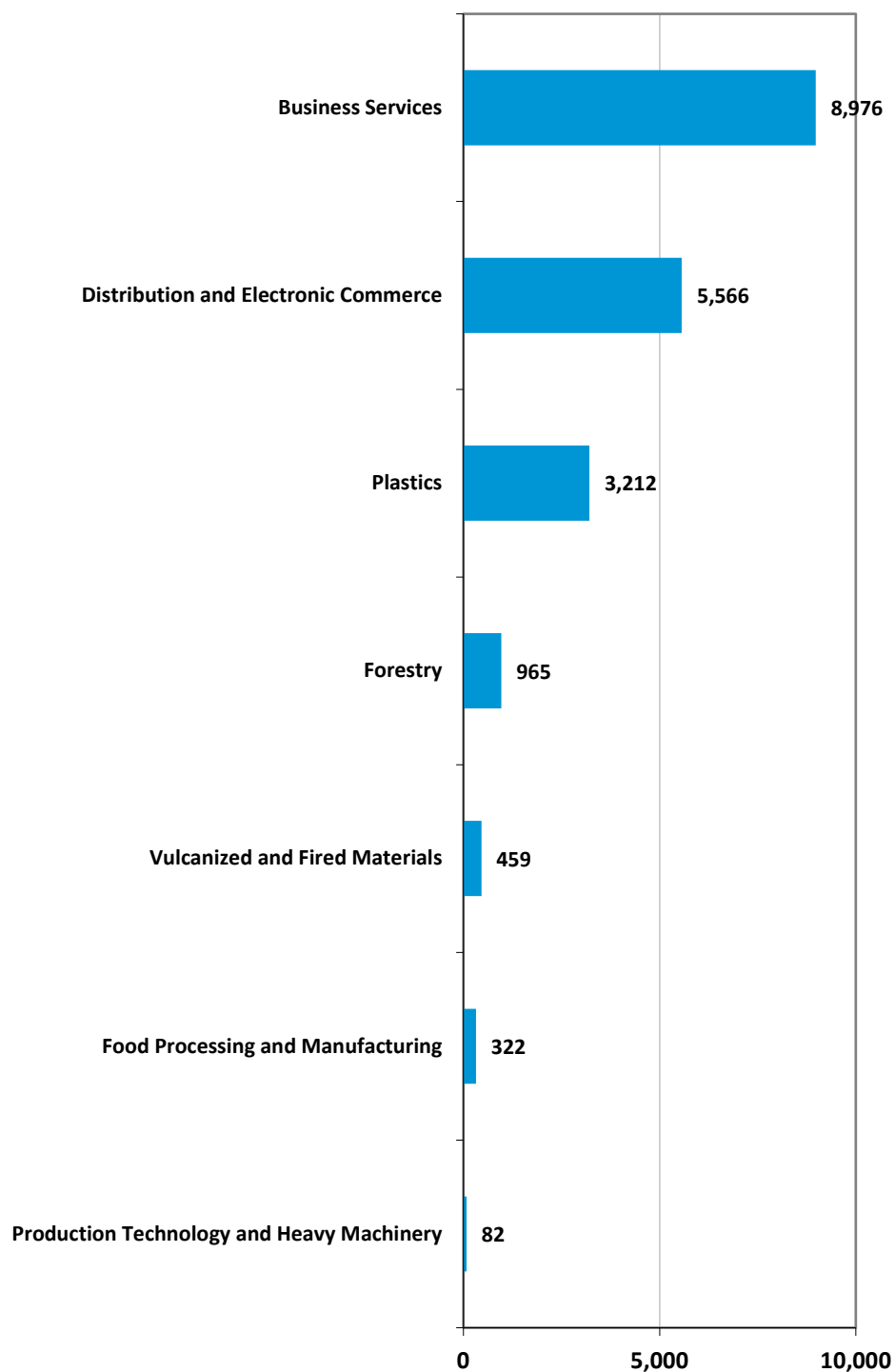
As shown in Figure 16, in 2018 the three largest target industry clusters in Region 3 were: 1) Business Services (8,976 jobs), 2) Distribution and Electronic Commerce (5,566 jobs), and 3) Plastics (3,212 jobs). While as shown in Figure 17, the three highest paying target industry clusters in Region 3 that year were: 1) Food Processing and Manufacturing (\$1,085 per week), 2) Vulcanized and Fired Materials (\$992 per week), and Plastics (\$931 per week).

Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238), Miscellaneous Durable Goods Merchant Wholesalers (NAICS 4239), Paper and Paper Product Merchant Wholesalers (NAICS 4241), Drugs and Druggists' Sundries Merchant Wholesalers (NAICS 4242), Apparel, Piece Goods, and Notions Merchant Wholesalers (NAICS 4243), Grocery and Related Product Wholesalers (NAICS 4244), Farm Product Raw Material Merchant Wholesalers (NAICS 4245), Chemical and Allied Products Merchant Wholesalers (NAICS 4246), Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247), Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers (NAICS 4248), Miscellaneous Nondurable Goods Merchant Wholesalers (NAICS 4249), Wholesale Electronic Markets and Agents and Brokers (NAICS 4251), (NAICS 4541), Warehousing and Storage (NAICS 4931), Business Support Services (NAICS 5614), and Other Support Services (NAICS 5619).

²⁷This cluster includes: Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345) and Aerospace Product and Parts Manufacturing (NAICS 3364).

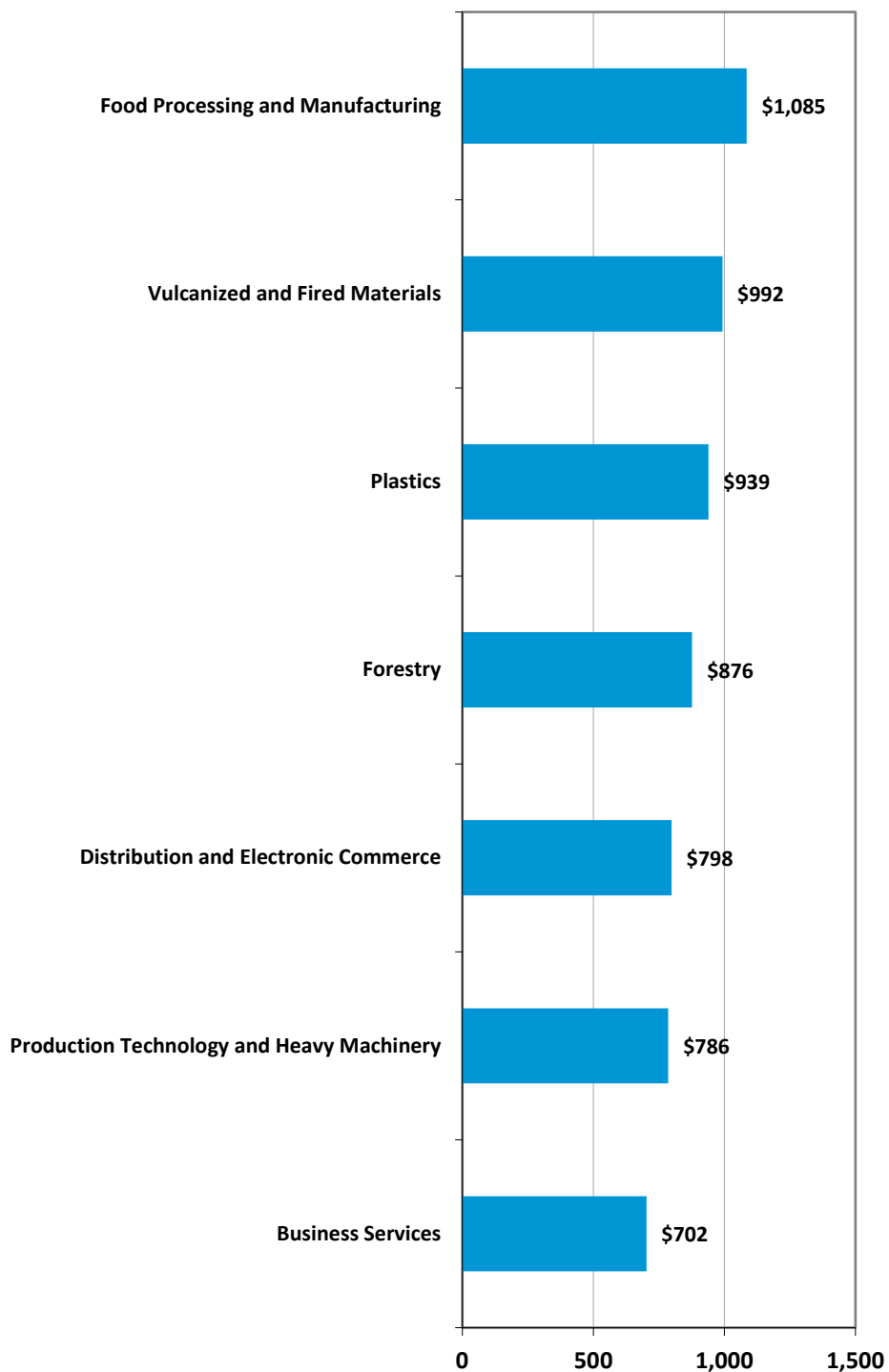
²⁸This cluster includes: Other Fabricated Metal Product Manufacturing (NAICS 3329), Agriculture, Construction, and Mining Machinery Manufacturing (NAICS 3331), Industrial Machinery Manufacturing (NAICS 3332), Commercial and Service Industry Machinery Manufacturing (NAICS 3333), Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 3334), Engine, Turbine, and Power Transmission Equipment Manufacturing (NAICS 3336), Other General Purpose Machinery Manufacturing (NAICS 3339), and Railroad Rolling Stock Manufacturing (NAICS 3365).

Figure 16: Private Employment by Target Industry Cluster in Region 3 – 2018²⁹



²⁹ Source: Virginia Employment Commission. Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

Figure 17: Private Average Weekly Wages by Target Industry Cluster in Region 3 – 2018³⁰

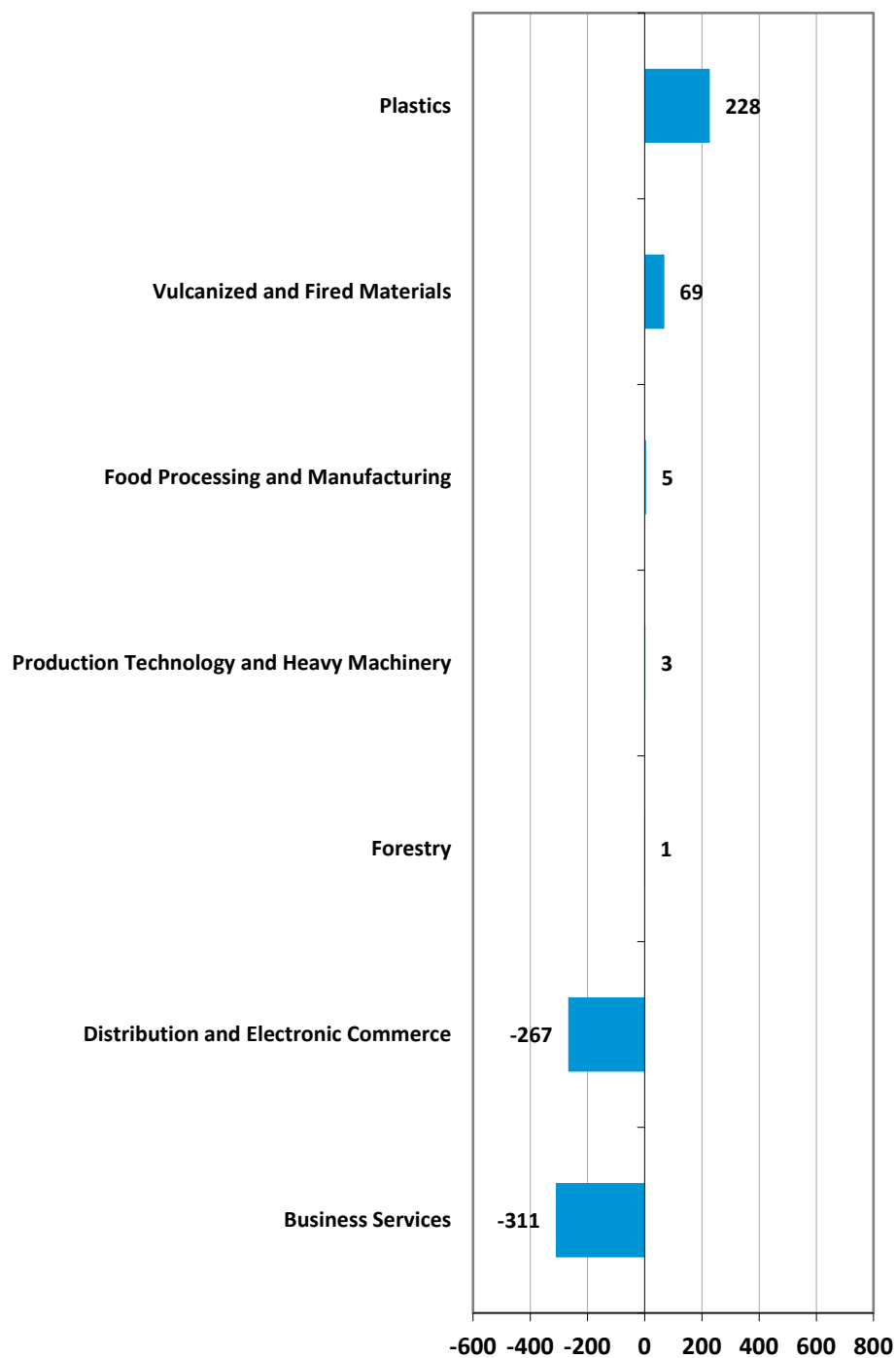


³⁰ Source: Virginia Employment Commission. Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

Finally, Figures 18 and 19 depict one-year (2017 to 2018) and five-year (2013 to 2018) employment changes in Region 3 for each of the identified target industry clusters. As shown in Figure 18, over the one year period between 2017 and 2018 five target industry clusters in Region 3 experienced employment growth: 1) Plastics (up 228 jobs), 2) Vulcanized and Fired Materials (up 69 jobs), 3) Food Processing and Manufacturing (up 5 jobs), 4) Production Technology and Heavy Machinery (up 3 jobs), and Forestry (up 1 job). While two target industry clusters experienced employment declines: 1) Business Services (down 311 jobs), and 2) Distribution and Electronic Commerce (down 267 jobs).

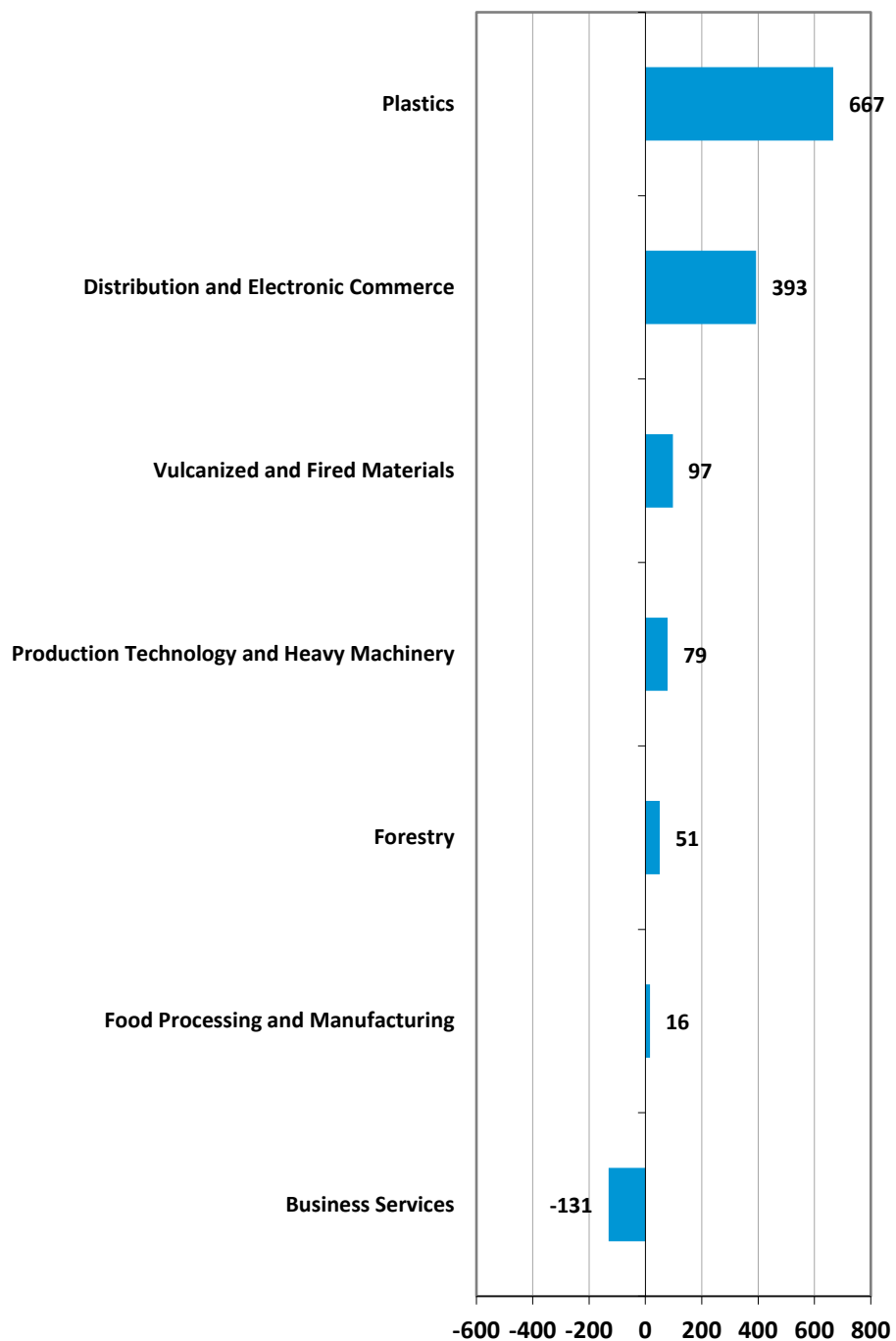
As shown in Figure 19, over the five year period between 2013 and 2018 six target industry clusters in Region 6 experienced employment growth: 1) Plastics (up 667 jobs), 2) Distribution and Electronic Commerce (up 393 jobs), 3) Vulcanized and Fired Materials (up 97 jobs), 4) Production Technology and Heavy Machinery (up 79 jobs), 5) Forestry (up 51 jobs), and 6) Food Processing and Manufacturing (up 16 jobs). While one target industry cluster experienced an employment decline: 1) Business Services (down 131 jobs).

Figure 18: One Year Change in Private Employment by Target Industry Cluster in Region 3 (2017 to 2018)³¹



³¹ Source: Virginia Employment Commission. Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

Figure 19: Five Year Change in Private Employment by Target Industry Cluster in Region 6 (2013 to 2018)³²



³² Source: Virginia Employment Commission. Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

Economic Drivers

In this section, we identify those industries that make an above average contribution to the growth of GO Virginia Region 3's economy and the economies of the three Planning Districts that comprise Region 3.

METHOD

To identify these economic driver industries, we employ a composite economic performance index that is based on eight individual metrics. These metrics were selected based on GO Virginia's prioritization of fast-growing, export industries, that offer high wages, and have a significant economic impact. Each metric, and the weight that it is given in the composite economic performance index is listed below.

10. Employment Location Quotient or "LQ" (weight = 11 percent): This metric measures the relative employment footprint of an industry.³³ If it is greater than one, that indicates that the industry has a larger employment footprint in the area than one would expect based on the statewide norm. If it is less than one, the industry has a smaller employment footprint than one would expect based on the statewide norm.
11. Short-Term Employment Growth or "ST Emp." (weight = 11 percent): This metric measures one-year employment growth in an industry.³⁴
12. Long-Term Employment Growth or "LT Emp." (weight = 11 percent): This metric measures five-year employment growth in an industry.³⁵
13. Short-Term Wage Growth or "ST Wage" (weight = 11 percent): This metric measures one-year wage growth in an industry.³⁶

³³ More specifically, the employment location quotient is calculated as: $LQ = ((\text{area private employment in industry } i) / (\text{total area private employment})) / ((\text{statewide private employment in industry } i) / (\text{total statewide private employment}))$. Data Source: derived from Virginia Employment Commission data.

³⁴ More specifically, short-term employment growth is calculated as: $ST \text{ emp} = ((2018 \text{ area private employment in industry } i) - (2017 \text{ area private employment in industry } i))$. Data Source: derived from Virginia Employment Commission data.

³⁵ More specifically, long-term employment growth is calculated as: $LT \text{ emp} = ((2018 \text{ area private employment in industry } i) - (2013 \text{ area private employment in industry } i))$. Data Source: derived from Virginia Employment Commission data.

³⁶ More specifically, short-term wage growth is calculated as: $ST \text{ wage} = ((2018 \text{ area private weekly wage in industry } i) - (2017 \text{ area private weekly wage in industry } i))$. Data Source: derived from Virginia Employment Commission data.

14. Long-Term Wage Growth or “LT Wage” (weight = 11 percent): This metric measures five-year wage growth in an industry.³⁷
15. Relative Wage or “Rel. Wage” (weight = 11 percent): This metric measures the wage in an industry relative to the average wage across all industries.³⁸ If it is greater than one, the wage in the industry is higher than the average wage for the area. If it is less than one, the wage in the industry is lower than the average wage for the area.
16. Industry Exports or “Exports” (weight = 17 percent): This metric measures the proportion of an industry’s output that is exported outside of Region 3.³⁹
17. Type I Multiplier or “Type I Mult.” (weight = 17 percent): This metric measures the direct and indirect employment impact the industry has on Region 3. It is an indication of the depth and breadth of an industry’s economic roots within an area. The larger the metric, the larger the proportion of the industry’s operational expenditures that go to suppliers and employees within the area, so the smaller the leakage of dollars outside of the area.⁴⁰

Each metric was produced for all industries at a four-digit NAICS level in GO Virginia Region 3 where sufficient data were available, and at a three-digit level when suppression issues necessitated a higher level of aggregation.⁴¹ Each industry is ranked on each metric relative to all other industries. Those rankings are then weighted and summed to produce the composite economic performance index for that industry. The larger the index, the higher the economic performance of that industry relative to all other industries within the study area.

CAVEATS

It is important to point out that the employment and wage data used in this section are taken from the Virginia Employment Commission’s Quarterly Census of Employment and Wages. Although these data provide the most comprehensive look at regional labor market data available, they are subject to limitations. Because these data are based on unemployment insurance reports filed by employers, they only reflect “covered” employment – employment that is covered by unemployment insurance. As a result, certain categories of employment (e.g., self-employed) and employment in certain industries

³⁷ More specifically, long-term wage growth is calculated as: $LT\ wage = ((2018\ area\ private\ weekly\ wage\ in\ industry\ i) - (2013\ area\ private\ weekly\ wage\ in\ industry\ i))$. Data Source: derived from Virginia Employment Commission data.

³⁸ More specifically, relative wage is calculated as: $Rel.\ wage = (2018\ private\ weekly\ wage\ in\ industry\ i) / (2018\ area\ private\ weekly\ wage\ across\ all\ industries)$. Data Source: derived from Virginia Employment Commission data.

³⁹ More specifically, industry exports is calculated as: $Exports = (2016\ industry\ output\ exported\ outside\ of\ Region\ 6) / (2016\ total\ industry\ output\ produced\ in\ Region\ 3)$. Data Source: derived from IMPLAN data.

⁴⁰ Data Source: IMPLAN.

⁴¹ NAICS stands for North American Industry Code System. It is a coding taxonomy that the U.S. Bureau of Labor Statistics uses to classify industries. It is a six-digit code, where the first two digits denote major industry sectors such as Manufacturing or Retail Trade. Going beyond two digits increases the granularity of the classification.

(e.g., agriculture) may be under-reported. In addition, the Virginia Employment Commission is required to suppress data when disclosure of those data could be used to identify employment and wages in a specific firm. This generally occurs when there is only one major employer in that industry within the region.

RESULTS

Table 1 provides a listing of the economic drivers in GO Virginia Region 3. In addition, economic driver industries that are within one of GO Virginia Region 3's nine identified target industry clusters are identified by cluster number and highlighted in yellow:

Primary:

1. [Forestry](#)
2. [Lighting and Electrical Equipment](#)
3. [Plastics](#)
4. [Vulcanized and Fired Materials](#)

Secondary:

5. [Food Processing and Manufacturing](#)
6. [Business Services](#)
7. [Distribution and Electronic Commerce](#)

Emerging:

8. [Aerospace vehicles and Defense](#)
9. [Production Technology and Heavy Machinery](#)

Economic drivers are defined as industries that demonstrated a composite economic performance index that was above the median for the study area. Each composite economic performance index was calculated in accordance with the method described above. Bolded entries in Table 1 rank in the first quartile for performance (*i.e.*, top 25 percent).

Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Timber Tract Operations	1	21.46	2	67	8.3%	48.6%	1.42	0.27	1.25	123.3
Veneer, Plywood, and Engineered Wood Product Manufacturing		11.35	-65	127	12.1%	20.9%	1.52	0.89	1.34	121.0
Sawmills and Wood Preservation		8.00	15	54	-3.6%	18.0%	1.22	0.81	1.43	113.8
Plastics and Rubber Products Manufacturing	3	9.13	96	573	6.5%	9.6%	1.66	0.98	0.63	110.0
Furniture and Home Furnishing Merchant Wholesalers	7	4.99	-11	36	16.5%	76.3%	2.18	0.14	1.21	108.4
Specialized Freight Trucking		2.14	-29	25	5.6%	29.2%	1.26	0.28	1.25	106.8
Nonmetallic Mineral Mining and Quarrying		1.67	2	-11	1.0%	14.0%	1.59	0.54	2.10	105.3
Securities and Commodity Contracts Intermediation and Brokerage		0.57	5	22	11.3%	29.7%	4.20	0.09	1.26	105.2
Management of Companies and Enterprises	5	0.36	8	159	5.1%	21.4%	2.22	0.15	1.23	103.8
Data Processing, Hosting, and Related Services	5	0.76	8	117	-10.4%	35.5%	1.36	0.15	1.40	103.5
Furniture Stores		2.89	19	41	4.1%	21.7%	0.95	0.18	1.21	103.3
General Medical and Surgical Hospitals		0.77	554	443	14.2%	21.2%	1.42	0.07	1.21	103.2
Architectural, Engineering, and Related Services	5	0.21	62	-17	22.3%	36.4%	1.96	0.08	1.28	102.4
Logging	1	12.45	10	6	3.0%	27.8%	1.30	0.38	1.16	102.0
Other Financial Investment Activities		0.09	-4	8	26.9%	493.3%	4.61	0.08	1.54	101.7
Other Ambulatory Health Care Services		1.87	20	127	2.8%	14.3%	1.01	0.29	1.21	101.2
Nonstore Retailers		2.15	715	119	-6.7%	9.7%	0.95	0.28	1.26	101.2
Traveler Accommodation		0.59	29	38	6.6%	15.2%	0.51	0.96	1.24	99.9

Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Other Wood Product Manufacturing		10.69	-89	112	5.6%	3.0%	1.04	0.89	1.27	99.8
Fabricated Metal Product Manufacturing	9	1.21	12	42	6.1%	21.9%	1.28	0.97	0.36	99.4
Food Manufacturing	6	1.34	46	451	3.7%	16.1%	1.20	0.95	0.30	98.4
Poultry and Egg Production		7.62	-31	-19	6.7%	14.9%	1.24	0.93	1.21	96.9
Outpatient Care Centers		1.51	112	326	6.0%	10.6%	1.23	0.07	1.21	96.6
Warehousing and Storage	7	1.96	-48	-68	7.9%	25.6%	1.13	0.52	1.24	96.3
Machinery Manufacturing	9	0.62	12	13	14.7%	22.0%	1.25	0.99	0.24	96.1
Clay Product and Refractory Manufacturing	4	7.19	4	2	-3.1%	11.1%	1.11	0.93	1.25	96.0
Waste Collection		0.81	1	28	4.5%	36.1%	1.26	0.05	1.26	95.9
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesale		0.95	10	38	6.3%	14.1%	1.35	0.14	1.21	95.3
Miscellaneous Durable Goods Merchant Wholesalers	7	1.93	127	126	-4.5%	17.6%	1.15	0.14	1.21	94.8
Facilities Support Services	5	1.56	3	-31	3.4%	18.2%	1.16	0.86	1.22	94.7
Agencies, Brokerages, and Other Insurance Related Activities		0.72	-17	37	3.2%	21.6%	1.26	0.11	1.95	94.5
Glass and Glass Product Manufacturing	6	5.24	-5	25	4.7%	14.0%	1.72	0.94	0.91	94.0
Investigation and Security Services		0.53	198	261	40.1%	92.6%	1.14	0.04	1.14	93.4
Offices of Real Estate Agents and Brokers		0.41	9	10	16.9%	54.2%	1.12	0.01	1.37	92.4
Cattle Ranching and Farming		6.74	-4	-28	-0.7%	13.1%	0.87	0.79	1.33	91.5
Other Professional, Scientific, and Technical Services	5	0.61	0	47	1.6%	21.3%	0.91	0.21	1.25	90.9

Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manu	3	3.22	168	101	-6.0%	-4.7%	1.35	0.99	0.76	90.8
Electric Power Generation, Transmission and Distribution		1.66	-39	7	10.9%	21.3%	2.94	0.35	0.57	89.2
Offices of Physicians		1.10	65	403	1.3%	8.7%	1.94	0.09	1.16	89.0
General Merchandise Stores.		1.81	-4	145	4.1%	12.4%	0.68	0.15	1.22	88.4
Lawn and Garden Equipment and Supplies Stores		1.92	17	48	0.7%	14.5%	0.85	0.13	1.21	88.4
Medical and Diagnostic Laboratories		0.27	21	54	11.1%	29.5%	1.17	0.08	1.17	87.7
Lumber and Other Construction Materials Merchant Wholesalers		0.61	7	-53	4.5%	23.8%	1.63	0.14	1.21	87.1
Support Activities for Road Transportation		0.31	5	5	13.0%	23.8%	0.75	0.11	1.24	86.1
Commercial and Industrial Machinery and Equipment (except Automotive and EI		2.33	-21	105	7.2%	9.6%	1.25	0.18	1.11	86.0
Specialized Design Services		0.22	6	5	51.1%	57.6%	1.16	0.01	1.24	85.9
Building Material and Supplies Dealers		1.53	34	87	-1.6%	10.3%	0.85	0.13	1.21	85.6
Travel Arrangement and Reservation Services		0.10	-3	-4	10.3%	47.8%	1.22	0.05	1.29	85.4
Transportation Equipment Manufacturing	8	0.13	12	51	9.8%	13.0%	1.30	0.90	0.46	85.1
Employment Services	5	1.17	68	-711	8.6%	21.9%	0.54	0.26	1.19	84.8
Insurance Carriers		0.11	-3	-11	6.8%	18.9%	1.67	0.05	1.83	84.5
Independent Artists, Writers, and Performers		0.15	-1	0	23.5%	9.5%	0.66	0.26	1.39	84.2
Amusement Parks and Arcades		0.10	4	8	23.7%	54.0%	0.33	0.20	1.21	83.5

Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers		1.17	7	22	-2.1%	16.0%	1.20	0.14	1.21	83.0
RV (Recreational Vehicle) Parks and Recreational Camps		1.36	7	1	-3.2%	6.6%	0.60	0.99	1.24	83.0
Machinery, Equipment, and Supplies Merchant Wholesalers	7	0.99	-27	-53	5.3%	24.5%	1.50	0.14	1.21	82.7
Oilseed and Grain Farming		0.94	4		3.0%		0.59	0.86	1.31	82.5
Support Activities for Forestry	1	3.03	-12	13	15.6%	26.9%	1.45	0.03	1.08	81.7
Computer Systems Design and Related Services	5	0.09	-31	91	1.5%	78.3%	1.74	0.10	1.21	81.2
Services to Buildings and Dwellings		0.86	24	321	2.3%	12.1%	0.65	0.19	1.14	81.0
Highway, Street, and Bridge Construction		0.76	244	137	26.3%	20.1%	1.24			80.5
Scientific Research and Development Services		0.13	-2	-11	-6.4%	23.7%	2.10	0.12	1.31	80.5
Wholesale Electronic Markets and Agents and Brokers	7	0.26	-8	-140	4.6%	61.4%	1.97	0.14	1.21	79.8
Gasoline Stations		1.96	4	-106	1.8%	10.5%	0.51	0.28	1.24	79.5
Sporting Goods, Hobby, and Musical Instrument Stores		0.81	-32	5	18.1%	22.2%	0.66	0.08	1.23	79.5
Fabric Mills		3.37	6		2.2%		1.11	0.99	0.86	79.3
Support Activities for Crop Production		1.17	17	20	21.3%	28.4%	0.87	0.03	1.08	79.2
Other Miscellaneous Store Retailers		1.47	134	123	-10.0%	6.0%	1.10	0.04	1.23	79.1
Drycleaning and Laundry Services		0.56	30	-87	23.6%	5.4%	0.50	0.29	1.21	78.3
Professional and Commercial Equipment and Supplies Merchant Wholesalers	7	0.11	2	2	4.0%	14.0%	1.77	0.14	1.21	78.0

Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Merchant Wholesalers, Nondurable Goods	7	1.50	-4	2	2.6%	7.6%	1.20	0.14	1.21	77.4
Other Transit and Ground Passenger Transportation	5	0.48	3	-33	4.8%	11.8%	0.49	0.16	1.31	76.8
Other Crop Farming		5.07	-7	-23	0.1%	23.2%	0.99	0.71	0.90	76.7
General Freight Trucking		1.40	-58	-284	0.4%	11.8%	1.16	0.28	1.25	76.6
Cement and Concrete Product Manufacturing		1.32	0	1	0.1%	19.0%	1.15	0.48	0.74	76.4
Consumer Goods Rental		2.40	-23	-80	5.4%	3.0%	0.90	0.19	1.22	75.9
Paper Manufacturing		1.54	21	-295	0.2%	5.1%	1.24	0.97	0.77	75.5
Radio and Television Broadcasting		0.52	26	7	4.4%	9.9%	0.72	0.01	1.38	75.4
Business Support Services	5	1.18	-497	303	2.4%	-0.9%	0.59	0.35	1.22	75.0
Colleges, Universities, and Professional Schools		1.11	27	28	-2.0%	-3.1%	0.94	0.18	1.19	75.0

Workforce Gap Analysis

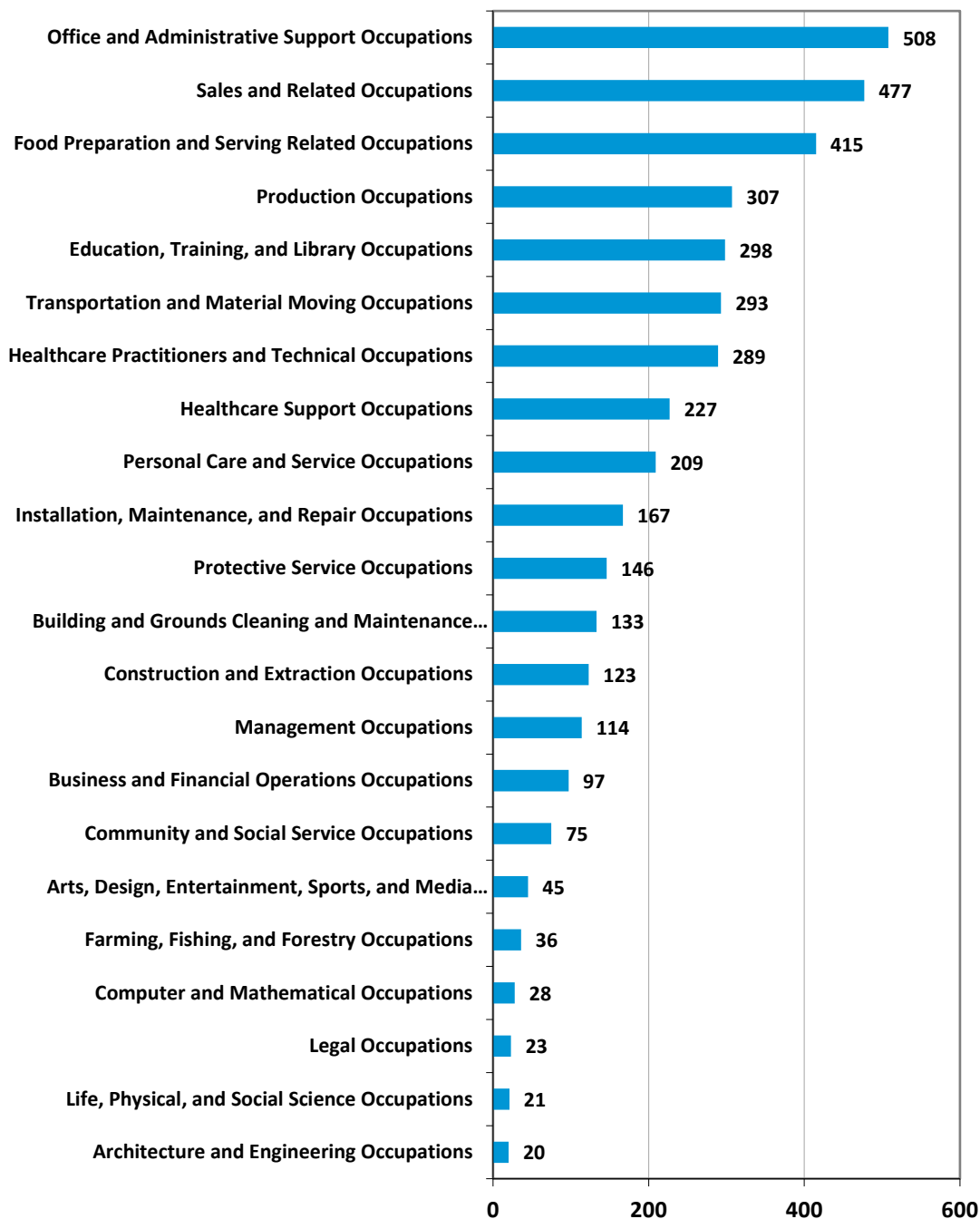
In this section, we compare the occupation-driven demand for trained workers in GO Virginia Region 3 to the pipeline of completers graduating from regional post-secondary education programs, to identify potential gaps between the two.

REGIONAL DEMAND FOR TRAINED WORKERS

To estimate the occupation-driven demand for trained workers in Region 3, we start with the most recent sub-state occupational employment projections from the Virginia Employment Commission. According to those projections, between 2014 and 2024 Region 3 will experience approximately 4,049 job openings each year.⁴² Figure 20 provides a breakdown of these annual openings by major occupation category.

⁴² Source: Virginia Employment Commission, “2014 to 2024 Sub-state Occupational Employment Projections.” It should be noted that the Virginia Employment Commission produces sub-state employment projections for Workforce Development Areas only. The Workforce Development Areas that most closely associated with GO Virginia Region 3 are the South Central Virginia and West Piedmont. The South Central Virginia and West Piedmont Workforce Development Areas encompass the Region 3 localities of the cities of Danville and Martinsville, and the counties of Amelia, Brunswick, Buckingham, Charlotte, Halifax, Henry, Lunenburg, Mecklenburg, Patrick, Pittsylvania, and Prince Edward. However, the South Central Virginia and West Piedmont Workforce Development Areas do not include the Region 3 localities of Cumberland County and Nottoway County, and they do include Franklin County, which is not part of Region 3.

Figure 20: Projected Average Annual Openings in Region 3 by Major Occupation Category – 2014 to 2024⁴³



⁴³ Data Source: Virginia Employment Commission.

REGIONAL SUPPLY OF COMPLETERS

To estimate the regional supply of completers from those education and training programs identified in the demand analysis, we use 2017-18 completions data from the U.S. Department of Education's IPEDS Data Center for all post-secondary institutions within Region 3.⁴⁴

COMPARING DEMAND AND SUPPLY

In the next step of the process, we use a crosswalk developed by the National Crosswalk Service Center to “map” occupations into the specific education and training program(s) necessary for entrance into that occupation.⁴⁵ It is important to realize that these relationships are often many-to-many (one occupation maps into multiple programs, or one program maps into multiple occupations). Our approach specifically takes this into account by “allocating” completers across occupations based on the number of annual openings associated with each occupation. Through this process, we are able to use the occupational employment projections for Region 3 to estimate the occupation-driven demand for trained workers in Region 3.

CAVEATS

In interpreting the results of this analysis, it is important to keep the following caveats in mind:

- Multi-campus institutions report enrollment and completion data to the IPEDS Data Center through their main campus only. As a practical matter, this means that all enrollment and completions are reported “as if” they occurred at the main campus.
- Post-secondary institutions do not report completions for non-credit or specialized workforce training classes to the IPEDS Data Center. As a result, completers from these programs may not be captured in the pipeline of completers graduating from regional post-secondary education programs.
- For these reasons, the training “gaps” identified in this section are correctly viewed as “potential” gaps in the regional pipeline of trained workers. They identify areas where there may be an insufficient supply of programs or program graduates within the region, and where further conversations with employers and educators/training providers may be advisable.

⁴⁴ More specifically, those data capture degree and certificate completions in 2017-18 from Averett University, Averett University Non-Traditional Programs, Danville Community College, Danville Regional Medical Center School of Health Professions, Ferrum College, Hampden-Sydney College, Longwood University, Patrick Henry Community College, and Southside Community College.

⁴⁵ The National Crosswalk Service Center is funded by the U.S. Department of Labor, Employment and Training Administration.

PERCENTAGE OF REGIONAL NEED MET

Table 2 provides detail on the proportion of demand, in terms of projected annual openings, that is being met by the existing supply of post-secondary education completers from institutions of higher education within Region 3, for those occupations that are projected to have at least ten average annual openings between 2014 and 2024.

In these tables:

- [Occupation](#): Is an occupation within the specified cluster.
- [Avg. Annual Openings](#): Is the projected number of average annual openings for the given occupation over the period from 2014 to 2024.
- [Typical Educ. Level](#): Is the level of educational attainment typically associated with the given occupation.
- [Cert](#): Is the number of 2017-18 completers from education and training programs in Region 3 associated with the given occupation that received a less than two-year postsecondary education certificate.
- [Assoc](#): Is the number of 2017-18 completers from education and training programs in Region 3 associated with the given occupation that received an associate's degree.
- [BA](#): Is the number of 2017-18 completers from education and training programs in Region 3 associated with the given occupation that received a bachelor's degree.
- [MA](#): Is the number of 2017-18 completers from education and training programs in Region 3 associated with the given occupation that received a master's degree.
- [Total Comp](#): Is the total number of 2017-18 completions from education and training programs in Region 3 associated with the given occupation.
- [% of Need Met](#): Is the percentage of demand for trained workers in the given occupation that was met through regional education and training programs.

Most of the binding workforce gaps identified in table 2 pertain to “middle-skill” occupations that require a less than a two-year, post-secondary certificate, where the identified gaps could potentially be problematic. Those occupations are:

- Industry and Machinery Mechanics
- Machinists
- Medical Assistants

Table 2: Potential Gaps in Pipeline of Trained Workers in Region 3

Occupation	Occupational Demand		Supply of Completers					% of Need Met.
	Avg. Annual Openings	Typical Educ. Level	Cert.	Assoc.	BA	MA	Total Comp.	
Personal Care Aides	129	HS						0%
Nursing Assistants	126	HS						0%
Office Clerks, General	82	HS						0%
Registered Nurses	78	Associates		109	79		188	100%
Customer Service Representatives	73	HS						0%
Licensed Practical and Licensed Vocational Nurses	59	Certificate	239				239	100%
Correctional Officers and Jailers	53	HS	1				1	2%
Elementary School Teachers, Except Special Education	50	BA			3		3	7%
Home Health Aides	45	HS						0%
Heavy and Tractor-Trailer Truck Drivers	44	HS						0%
First-Line Supervisors of Retail Sales Workers	43	HS						0%
General and Operations Managers	41	Associates		7	22 2	74	303	100%
Secondary School Teachers, Except Special and Career/Technic	40	BA			25 9	18	277	100%
Teacher Assistants	38	Some College		5			5	13%
Maintenance and Repair Workers, General	37	HS						0%
Receptionists and Information Clerks	35	HS						0%
First-Line Supervisors of Food Preparation and Serving Workers	33	HS	8				8	23%
Police and Sheriff's Patrol Officers	31							0%
Automotive Service Technicians and Mechanics	27		36				36	100%
Sales Representatives, Wholesale and Manufacturing, Except T	25	BA						0%
Tellers	22	HS						0%
Accountants and Auditors	21				11		11	52%

Table 2: Potential Gaps in Pipeline of Trained Workers in Region 3

Occupation	Occupational Demand		Supply of Completers					% of Need Met.
	Avg. Annual Openings	Typical Educ. Level	Cert.	Assoc.	BA	MA	Total Comp.	
Cooks, Restaurant	21	HS	5				5	23%
Bus Drivers, School or Special Client	21	HS						0%
Middle School Teachers, Except Special and Career/Technical	20	BA			8	8	17	83%
Secretaries and Administrative Assistants, Except Legal, Med	20	HS						0%
Logging Equipment Operators	20	Less than HS						0%
Industrial Machinery Mechanics	20	Certificate						0%
Sawing Machine Setters, Operators, and Tenders, Wood	20	HS						0%
Light Truck or Delivery Services Drivers	19	HS						0%
First-Line Supervisors of Office and Administrative Support	18	HS						0%
Machinists	16	Certificate						0%
First-Line Supervisors of Production and Operating Workers	15	HS						0%
Inspectors, Testers, Sorters, Samplers, and Weighers	15	HS						0%
Bookkeeping, Accounting, and Auditing Clerks	14	HS						0%
Child, Family, and School Social Workers	13	BA			28		28	100%
Physicians and Surgeons, All Other	13							0%
Insurance Sales Agents	13	BA						0%
Carpenters	13							0%
Highway Maintenance Workers	13	HS						0%
Emergency Medical Technicians and Paramedics	12	Certificate	13	13			26	100%
Cooks, Institution and Cafeteria	12	Less than HS	3				3	23%
Medical Assistants	11	Certificate						0%
Electricians	11	Certificate	8				8	74%

Table 2: Potential Gaps in Pipeline of Trained Workers in Region 3

Occupation	Occupational Demand		Supply of Completers					% of Need Met.
	Avg. Annual Openings	Typical Educ. Level	Cert.	Assoc.	BA	MA	Total Comp.	
First-Line Supervisors of Mechanics, Installers, and Repaire	11	HS						0%

Forward-Looking Assessment

This section summarizes information for Region 3 tied to GO Virginia's four priority areas: talent development, start-up companies, scale-ups, and site development for new business prospects. The information in this section relies heavily on a report for the region commissioned by the statewide board of GO Virginia.⁴⁶

TALENT DEVELOPMENT

Between 2012 and 2017, the share of the working-age population with at least a bachelor's degree grew by 10 percent, which was equal to the 10 percent growth rate for the state as a whole or the 12 percent growth rate for the entire United States.

Talent development is facilitated by the Patrick Henry Community College's Dalton IDEA Center Fab Lab that provides a key resource for prototyping, 3D printing, plus access to accelerator services. Additionally, the Southern Virginia Higher Education Center's Innovation Center a resource for design, prototyping, other business services.

START-UP COMPANIES

In Region 3, between 2013 and 2017, on average 30 percent of job growth comes from early-stage startups that have been in business for 5 years or less. This is consistent with other rural regions; however, it is still well below the measure in the state of Virginia overall and the nation as a whole. However, the 10-year survival rate for businesses in the region is roughly equivalent to the statewide 10-year survival rate (52 percent for the region vs 53.5 percent for the state as a whole). In general, the net employment gains from surviving startup firms outpaces employment loss from startup failures across Region 3.

Startup activity in the region is occurring mainly in the sectors targeted by the region's GO Virginia initiative: Advanced Manufacturing, Health Care, and Natural Resource Products. Table 3 shows the number of start-ups and start-up employment within the region.

⁴⁶ TEconomy Partners, *Regional Entrepreneurial Assessment Project: Briefing Report, Region 3: Southside*, 2018.

Table 3. – Start-Up Data by Major Industry Cluster for Region 3

Major Industry Cluster	Number of Start-ups in Cluster	Number of Start-ups Surviving by 2017	Number of High Growth Start-ups in Cluster**	Start-up Employment Levels, 2017	Start-ups Industry Cluster Employment Concentration Index*
Agriculture & Food Processing	195	113	9	599	2.73
Business Services	544	291	28	1,246	0.69
Energy, Natural Resources, & Finished Products	109	57	6	524	2.08
Engineering, R&D, Testing & Technical Services	43	25	5	131	0.33
Financial & Insurance Services	123	59	3	162	0.40
Health Care Services	57	35	11	498	1.20
Information Technology & Communications Services	50	25	6	186	0.32
Life Sciences	26	15	0	87	0.56
Manufacturing	98	59	9	488	1.69
Ship Building, Aerospace, & Defense	1	1	0	5	0.11
Transportation, Distribution and Logistics	332	137	33	670	0.76

*Startups Employment Concentration Index represents specialization of startup activity in certain industry clusters given overall state trends. **Defined as greater than 25 percent annualized employment growth over the life of the company.

Patent activity is one way to measure the development impact of start-up companies. Patent awards have relatively stable year over year from 40 in 2014 to 41 in 2017. The overwhelming majority of patents issued to assignees in the region are to government organizations. Of the technology patents issued from 2010 to 2017, they address a relatively narrow range of needs. Table 4 shows the types of technology patents issued in the area.

Table 4. – Technology Class Patents Issued in Region 3, 2010-2017

Technology Class Area	Number of Patents
Network arrangements or protocols for real-time communications	9
Optical components or elements other than lenses	8

Source: U.S. Patent & Trademark Office data from Thomson Reuters Thomson Innovation patent analysis database

SCALE-UPS

Startups are making important contributions to all of Region 3's major industry clusters. However, just 30% of quarterly growth in traded sectors from 2013-2017 is being generated by early stage startups. So, scale-up of new businesses is weak. In 2010, 150 traded sector companies were launched in Region 3. In 2017, 64 were still in business (a 42.7% survival rate), and those companies created 502 jobs. Table 5 shows how the survival of traded-sector start-ups in the region and their employment changed over time.

Table 5. – Traded-Sector Start-Up Survival and Employment, 2007-2017⁴⁷

Founding Year of Startup Cohort	Number of Startups in Traded Sector Industries	Number of Startups Surviving by 2017	Survival Rate by 2017	Start-up Employment Levels 2017
2007	111	32	28.8%	219
2008	100	33	33.0%	200
2009	80	25	31.3%	202
2010	150	64	42.7%	502
2011	76	27	35.5%	147
2012	135	63	46.7%	343
2013	133	50	37.6%	246
2014	103	57	55.3%	453
2015	112	74	66.1%	326
2016	100	79	79.0%	508
2017	97	97	100%	510

⁴⁷ Data Source: Business Dynamics Research Consortium database.

Data Appendix

ANNUAL EMPLOYMENT CHANGE BY MAJOR INDUSTRY SECTOR AND PLANNING DISTRICT – 2014 TO 2018

Table A1 – Annual Change in Employment in GO Virginia Region 3 by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.1%	3.4%	-0.7%	-0.1%	3.5%
Agriculture, Forestry, Fishing and Hunting	6.4%	-0.9%	-2.5%	-1.4%	-1.4%
Arts, Entertainment, and Recreation	-8.2%	-5.2%	-3.7%	-0.2%	2.3%
Construction	1.7%	5.9%	5.4%	-4.2%	-3.8%
Educational Services	-3.8%	2.3%	1.8%	-4.1%	-1.4%
Finance and Insurance	-2.5%	1.2%	0.5%	1.0%	-2.6%
Health Care and Social Assistance	0.8%	3.1%	0.2%	0.2%	-1.9%
Information	-3.0%	2.2%	-3.3%	-4.0%	-7.0%
Manufacturing	0.6%	0.7%	1.7%	0.0%	-0.9%
Mining, Quarrying, and Oil and Gas Extraction	-1.3%	12.9%	6.9%	-1.6%	2.7%
Other Services (except Public Administration)	-0.1%	4.2%	3.3%	17.0%	14.2%
Professional, Scientific, and Technical Services	-5.0%	3.4%	13.0%	-16.4%	0.3%
Real Estate and Rental and Leasing	-1.8%	1.2%	-2.0%	5.3%	1.7%
Retail Trade	-0.2%	1.6%	1.4%	-1.6%	-0.2%
Transportation and Warehousing	-0.9%	0.4%	-2.7%	-0.5%	-3.6%
Utilities	8.8%	1.4%	0.7%	-2.1%	-6.0%
Wholesale Trade	1.3%	-2.3%	0.9%	1.6%	2.1%

Table A2 – Annual Change in Employment in the Commonwealth PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	-1.1%	4.4%	-1.0%	2.0%	6.8%
Agriculture, Forestry, Fishing and Hunting	5.9%	-0.6%	-5.2%	-3.7%	-5.6%
Arts, Entertainment, and Recreation	0.0%	3.3%	-10.8%	-6.0%	2.6%
Construction	0.3%	11.8%	9.4%	2.3%	-7.9%
Educational Services	-2.0%	6.2%	4.4%	-1.3%	-2.0%
Finance and Insurance	-2.9%	1.1%	-1.1%	3.8%	-2.4%
Health Care and Social Assistance	-0.4%	5.2%	0.7%	-0.8%	2.6%
Information	-0.5%	2.6%	-1.5%	-13.6%	-5.8%
Manufacturing	6.6%	2.3%	-0.6%	-1.5%	5.6%
Mining, Quarrying, and Oil and Gas Extraction	1.0%	7.2%	-2.9%	3.0%	2.9%
Other Services (except Public Administration)	7.8%	-4.1%	-11.3%	24.6%	19.3%
Professional, Scientific, and Technical Services	-6.7%	4.4%	8.7%	7.6%	-8.2%
Real Estate and Rental and Leasing	5.8%	-3.4%	3.6%	8.3%	6.4%
Retail Trade	-2.1%	1.0%	-0.1%	-1.8%	-0.4%
Transportation and Warehousing	6.2%	1.1%	0.8%	3.7%	-6.6%
Utilities	62.9%	5.0%	0.0%	0.9%	5.6%
Wholesale Trade	-1.1%	2.8%	3.8%	-2.6%	2.2%

Table A3 – Annual Change in Employment in the Southside PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	2.6%	2.8%	-3.5%	0.9%	0.5%
Agriculture, Forestry, Fishing and Hunting	2.4%	2.7%	-4.7%	1.6%	4.1%
Arts, Entertainment, and Recreation	-8.2%	-0.6%	2.5%	-0.5%	-3.0%
Construction	5.7%	8.3%	0.6%	-21.1%	-6.4%
Educational Services	-18.3%	4.8%	-4.6%	-29.3%	-6.0%
Finance and Insurance	0.4%	1.1%	-2.0%	-0.6%	-4.7%
Health Care and Social Assistance	0.6%	1.9%	-1.0%	-0.8%	-7.6%
Information	-5.8%	-4.0%	-4.9%	3.9%	-3.0%
Manufacturing	2.3%	3.2%	0.6%	0.3%	-1.0%
Mining, Quarrying, and Oil and Gas Extraction	3.6%	10.3%	18.8%	0.0%	2.6%
Other Services (except Public Administration)	1.5%	7.9%	5.9%	15.1%	15.1%
Professional, Scientific, and Technical Services	-2.8%	5.8%	10.7%	7.5%	-1.2%
Real Estate and Rental and Leasing	-4.7%	-9.8%	-1.2%	24.4%	11.8%
Retail Trade	-1.4%	1.6%	1.3%	-2.5%	1.1%
Transportation and Warehousing	-5.9%	-3.6%	-2.9%	-2.3%	-9.1%
Utilities	1.2%	-0.3%	-0.3%	-3.3%	-8.2%
Wholesale Trade	-0.5%	1.6%	0.9%	11.7%	9.4%

Table A4 – Annual Change in Employment in the West Piedmont PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.2%	3.4%	0.4%	-1.0%	3.7%
Agriculture, Forestry, Fishing and Hunting	10.6%	-4.2%	2.3%	-1.6%	-2.0%
Arts, Entertainment, and Recreation	-9.2%	-9.3%	-6.6%	1.0%	6.0%
Construction	0.7%	2.6%	5.9%	0.1%	-1.1%
Educational Services	-2.4%	0.1%	1.4%	-2.2%	-0.6%
Finance and Insurance	-3.3%	1.3%	1.8%	0.7%	-1.9%
Health Care and Social Assistance	1.2%	2.9%	0.4%	0.9%	-1.3%
Information	-2.5%	4.8%	-3.2%	-4.1%	-9.0%
Manufacturing	-0.5%	-0.1%	2.2%	0.1%	-1.6%
Mining, Quarrying, and Oil and Gas Extraction	-12.1%	34.5%	23.1%	-12.5%	2.4%
Other Services (except Public Administration)	-2.9%	5.7%	6.7%	15.8%	12.6%
Professional, Scientific, and Technical Services	-5.1%	2.6%	14.6%	-27.2%	3.5%
Real Estate and Rental and Leasing	-2.6%	5.5%	-3.4%	-0.2%	-2.6%
Retail Trade	0.6%	1.8%	1.8%	-1.3%	-0.5%
Transportation and Warehousing	1.3%	3.4%	-3.5%	-0.4%	1.1%
Utilities	2.3%	3.0%	3.6%	-1.4%	-9.9%
Wholesale Trade	2.4%	-4.5%	0.1%	0.5%	0.1%

CUMULATIVE EMPLOYMENT CHANGE BY MAJOR INDUSTRY SECTOR AND PLANNING DISTRICT – 2014 TO 2018

Table A5 – Cumulative Change in Employment in GO Virginia Region 3 by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.1%	4.5%	3.8%	3.7%	7.4%
Agriculture, Forestry, Fishing and Hunting	6.4%	5.4%	2.8%	1.3%	-0.1%
Arts, Entertainment, and Recreation	-8.2%	-13.0%	-16.2%	-16.4%	-14.5%
Construction	1.7%	7.7%	13.5%	8.8%	4.7%
Educational Services	-3.8%	-1.6%	0.1%	-4.0%	-5.3%
Finance and Insurance	-2.5%	-1.2%	-0.8%	0.2%	-2.4%
Health Care and Social Assistance	0.8%	3.9%	4.1%	4.3%	2.3%
Information	-3.0%	-0.9%	-4.1%	-7.9%	-14.4%
Manufacturing	0.6%	1.3%	3.0%	3.0%	2.1%
Mining, Quarrying, and Oil and Gas Extraction	-1.3%	11.5%	19.1%	17.2%	20.4%
Other Services (except Public Administration)	-0.1%	4.1%	7.6%	25.9%	43.8%
Professional, Scientific, and Technical Services	-5.0%	-1.7%	11.1%	-7.1%	-6.8%
Real Estate and Rental and Leasing	-1.8%	-0.6%	-2.6%	2.5%	4.3%
Retail Trade	-0.2%	1.4%	2.8%	1.1%	0.9%
Transportation and Warehousing	-0.9%	-0.5%	-3.2%	-3.7%	-7.2%
Utilities	8.8%	10.4%	11.1%	8.8%	2.3%
Wholesale Trade	1.3%	-1.0%	-0.1%	1.5%	3.6%

Table A6 – Cumulative Change in Employment in the Commonwealth PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	-1.1%	3.3%	2.2%	4.3%	11.4%
Agriculture, Forestry, Fishing and Hunting	5.9%	5.2%	-0.3%	-3.9%	-9.3%
Arts, Entertainment, and Recreation	0.0%	3.3%	-7.8%	-13.3%	-11.1%
Construction	0.3%	12.2%	22.8%	25.6%	15.6%
Educational Services	-2.0%	4.1%	8.7%	7.3%	5.2%
Finance and Insurance	-2.9%	-1.8%	-2.9%	0.9%	-1.5%
Health Care and Social Assistance	-0.4%	4.8%	5.6%	4.8%	7.5%
Information	-0.5%	2.0%	0.5%	-13.2%	-18.3%
Manufacturing	6.6%	9.1%	8.4%	6.7%	12.7%
Mining, Quarrying, and Oil and Gas Extraction	1.0%	8.3%	5.2%	8.3%	11.5%
Other Services (except Public Administration)	7.8%	3.4%	-8.3%	14.3%	36.3%
Professional, Scientific, and Technical Services	-6.7%	-2.6%	5.9%	13.9%	4.6%
Real Estate and Rental and Leasing	5.8%	2.2%	5.8%	14.6%	21.9%
Retail Trade	-2.1%	-1.2%	-1.3%	-3.1%	-3.4%
Transportation and Warehousing	6.2%	7.3%	8.1%	12.2%	4.7%
Utilities	62.9%	71.0%	71.0%	72.6%	82.3%
Wholesale Trade	-1.1%	1.6%	5.5%	2.7%	5.0%

Table A7 – Cumulative Change in Employment in the Southside PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	2.6%	5.4%	1.7%	2.7%	3.2%
Agriculture, Forestry, Fishing and Hunting	2.4%	5.1%	0.2%	1.8%	5.9%
Arts, Entertainment, and Recreation	-8.2%	-8.7%	-6.4%	-6.9%	-9.8%
Construction	5.7%	14.4%	15.2%	-9.1%	-14.9%
Educational Services	-18.3%	-14.3%	-18.3%	-42.2%	-45.7%
Finance and Insurance	0.4%	1.5%	-0.6%	-1.1%	-5.8%
Health Care and Social Assistance	0.6%	2.5%	1.5%	0.7%	-7.0%
Information	-5.8%	-9.5%	-13.9%	-10.5%	-13.2%
Manufacturing	2.3%	5.5%	6.1%	6.4%	5.4%
Mining, Quarrying, and Oil and Gas Extraction	3.6%	14.3%	35.7%	35.7%	39.3%
Other Services (except Public Administration)	1.5%	9.5%	16.0%	33.5%	53.7%
Professional, Scientific, and Technical Services	-2.8%	2.8%	13.8%	22.3%	20.8%
Real Estate and Rental and Leasing	-4.7%	-14.0%	-15.0%	5.7%	18.1%
Retail Trade	-1.4%	0.2%	1.6%	-0.9%	0.1%
Transportation and Warehousing	-5.9%	-9.3%	-11.9%	-14.0%	-21.8%
Utilities	1.2%	0.9%	0.6%	-2.7%	-10.7%
Wholesale Trade	-0.5%	1.0%	1.9%	13.8%	24.5%

Table A8 – Cumulative Change in Employment in the West Piedmont PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.2%	4.6%	5.0%	4.0%	7.8%
Agriculture, Forestry, Fishing and Hunting	10.6%	5.9%	8.3%	6.6%	4.5%
Arts, Entertainment, and Recreation	-9.2%	-17.7%	-23.1%	-22.4%	-17.7%
Construction	0.7%	3.3%	9.4%	9.4%	8.3%
Educational Services	-2.4%	-2.2%	-0.8%	-3.0%	-3.6%
Finance and Insurance	-3.3%	-2.0%	-0.3%	0.4%	-1.5%
Health Care and Social Assistance	1.2%	4.2%	4.5%	5.5%	4.1%
Information	-2.5%	2.1%	-1.2%	-5.2%	-13.8%
Manufacturing	-0.5%	-0.5%	1.7%	1.8%	0.2%
Mining, Quarrying, and Oil and Gas Extraction	-12.1%	18.2%	45.5%	27.3%	30.3%
Other Services (except Public Administration)	-2.9%	2.6%	9.5%	26.9%	42.9%
Professional, Scientific, and Technical Services	-5.1%	-2.6%	11.6%	-18.7%	-15.9%
Real Estate and Rental and Leasing	-2.6%	2.8%	-0.8%	-0.9%	-3.5%
Retail Trade	0.6%	2.4%	4.3%	2.9%	2.4%
Transportation and Warehousing	1.3%	4.8%	1.1%	0.7%	1.8%
Utilities	2.3%	5.3%	9.2%	7.6%	-3.1%
Wholesale Trade	2.4%	-2.2%	-2.1%	-1.6%	-1.5%

ANNUAL WAGE CHANGE BY MAJOR INDUSTRY SECTOR AND PLANNING DISTRICT – 2014 TO 2018

Table A9 – Annual Change in Nominal Weekly Wages in GO Virginia Region 3 by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.5%	3.5%	3.6%	2.3%	2.8%
Agriculture, Forestry, Fishing and Hunting	5.2%	5.3%	3.2%	3.9%	2.0%
Arts, Entertainment, and Recreation	2.0%	18.5%	1.7%	13.8%	-14.3%
Construction	5.2%	4.3%	7.1%	-0.5%	3.2%
Educational Services	1.2%	0.6%	0.0%	1.4%	2.2%
Finance and Insurance	2.6%	3.0%	2.8%	6.1%	5.1%
Health Care and Social Assistance	0.9%	2.0%	3.2%	2.0%	3.2%
Information	-1.1%	3.7%	1.2%	2.8%	-3.3%
Manufacturing	3.8%	1.5%	0.2%	0.5%	5.3%
Mining, Quarrying, and Oil and Gas Extraction	1.4%	4.5%	9.0%	-3.0%	-4.2%
Other Services (except Public Administration)	5.3%	2.2%	0.5%	-1.7%	-2.2%
Professional, Scientific, and Technical Services	-5.1%	5.4%	-0.3%	17.1%	2.5%
Real Estate and Rental and Leasing	2.1%	2.7%	-9.1%	-0.3%	6.3%
Retail Trade	2.2%	1.6%	1.1%	2.4%	1.9%
Transportation and Warehousing	4.6%	5.4%	5.1%	0.2%	4.7%
Utilities	4.9%	1.9%	-2.6%	5.7%	9.7%
Wholesale Trade	7.0%	3.8%	3.2%	2.5%	4.6%

Table A10 – Annual Change in Nominal Weekly Wages in the Commonwealth PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	2.0%	2.4%	6.2%	-1.1%	2.6%
Agriculture, Forestry, Fishing and Hunting	5.8%	5.5%	1.9%	3.7%	4.4%
Arts, Entertainment, and Recreation	-6.0%	100.4%	-33.8%	-5.2%	0.0%
Construction	4.7%	5.1%	8.3%	2.9%	1.1%
Educational Services	3.4%	0.3%	2.2%	1.7%	3.9%
Finance and Insurance	3.4%	1.0%	3.1%	9.9%	4.0%
Health Care and Social Assistance	2.3%	0.8%	1.1%	4.4%	2.3%
Information	-6.2%	13.5%	13.6%	-16.7%	4.1%
Manufacturing	0.6%	5.7%	2.2%	3.9%	-1.1%
Mining, Quarrying, and Oil and Gas Extraction	4.7%	-0.4%	2.0%	4.8%	0.2%
Other Services (except Public Administration)	3.7%	8.8%	-2.2%	-8.1%	-4.7%
Professional, Scientific, and Technical Services	5.2%	9.2%	15.6%	-6.3%	6.6%
Real Estate and Rental and Leasing	6.9%	2.9%	6.5%	10.8%	2.0%
Retail Trade	2.3%	-3.5%	-1.3%	1.9%	-0.8%
Transportation and Warehousing	2.8%	9.8%	4.7%	3.9%	3.7%
Utilities	-4.8%	3.1%	-0.4%	2.9%	2.2%
Wholesale Trade	-1.2%	1.6%	0.0%	3.2%	1.8%

Table A11 – Annual Change in Nominal Weekly Wages in the Southside PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	3.0%	2.9%	0.8%	2.0%	3.9%
Agriculture, Forestry, Fishing and Hunting	7.3%	6.0%	6.5%	4.6%	1.9%
Arts, Entertainment, and Recreation	4.2%	9.8%	-2.3%	4.1%	4.9%
Construction	4.7%	6.0%	6.0%	-7.4%	4.4%
Educational Services	-7.8%	-6.8%	-4.3%	-32.4%	-4.7%
Finance and Insurance	0.3%	7.0%	3.3%	8.9%	7.2%
Health Care and Social Assistance	-0.1%	4.6%	4.9%	3.4%	3.8%
Information	-0.8%	2.0%	4.9%	0.1%	-17.1%
Manufacturing	5.7%	-1.6%	0.6%	1.8%	3.5%
Mining, Quarrying, and Oil and Gas Extraction	-8.7%	9.5%	10.0%	-7.6%	-0.5%
Other Services (except Public Administration)	5.4%	-0.7%	2.6%	0.2%	-6.8%
Professional, Scientific, and Technical Services	3.8%	14.5%	9.0%	2.2%	-4.7%
Real Estate and Rental and Leasing	2.8%	9.5%	-1.3%	3.9%	9.6%
Retail Trade	1.7%	-0.2%	2.1%	3.0%	2.0%
Transportation and Warehousing	0.8%	6.1%	2.9%	3.5%	3.9%
Utilities	7.6%	0.6%	-4.1%	8.1%	10.2%
Wholesale Trade	4.1%	3.5%	6.4%	9.5%	7.6%

Table A12 – Annual Change in Nominal Weekly Wages in the West Piedmont PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	0.8%	4.0%	3.8%	3.3%	2.5%
Agriculture, Forestry, Fishing and Hunting	3.2%	3.5%	2.5%	3.1%	-1.4%
Arts, Entertainment, and Recreation	2.4%	16.4%	10.6%	18.7%	-22.7%
Construction	5.4%	3.3%	7.4%	1.2%	3.6%
Educational Services	1.4%	1.4%	-1.2%	3.4%	1.3%
Finance and Insurance	3.2%	2.3%	2.4%	4.2%	4.8%
Health Care and Social Assistance	0.8%	1.4%	3.2%	0.7%	3.7%
Information	0.3%	2.6%	-3.3%	8.4%	1.9%
Manufacturing	3.9%	1.9%	-0.1%	-0.1%	6.5%
Mining, Quarrying, and Oil and Gas Extraction	-0.4%	19.7%	22.0%	-14.0%	-19.6%
Other Services (except Public Administration)	5.4%	1.4%	1.6%	-0.7%	0.0%
Professional, Scientific, and Technical Services	-9.8%	1.0%	-7.2%	25.8%	5.5%
Real Estate and Rental and Leasing	1.6%	0.3%	-12.8%	-3.4%	6.3%
Retail Trade	2.3%	3.5%	1.5%	2.3%	2.7%
Transportation and Warehousing	8.4%	3.6%	6.8%	-3.4%	5.9%
Utilities	0.2%	5.4%	0.0%	2.0%	15.3%
Wholesale Trade	10.2%	4.6%	3.4%	0.7%	4.5%

CUMULATIVE WAGE CHANGE BY MAJOR INDUSTRY SECTOR AND PLANNING DISTRICT – 2014 TO 2018

Table A13 – Cumulative Change in Nominal Weekly Wages in GO Virginia Region 3 by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.5%	5.0%	8.8%	11.3%	14.4%
Agriculture, Forestry, Fishing and Hunting	5.2%	10.8%	14.4%	18.9%	21.3%
Arts, Entertainment, and Recreation	2.0%	20.9%	22.9%	39.9%	19.9%
Construction	5.2%	9.7%	17.6%	16.9%	20.6%
Educational Services	1.2%	1.8%	1.8%	3.1%	5.4%
Finance and Insurance	2.6%	5.7%	8.6%	15.3%	21.2%
Health Care and Social Assistance	0.9%	2.9%	6.1%	8.3%	11.8%
Information	-1.1%	2.5%	3.7%	6.6%	3.1%
Manufacturing	3.8%	5.4%	5.6%	6.2%	11.8%
Mining, Quarrying, and Oil and Gas Extraction	1.4%	6.0%	15.5%	12.0%	7.4%
Other Services (except Public Administration)	5.3%	7.7%	8.2%	6.3%	3.9%
Professional, Scientific, and Technical Services	-5.1%	0.0%	-0.2%	16.8%	19.7%
Real Estate and Rental and Leasing	2.1%	4.9%	-4.6%	-4.9%	1.1%
Retail Trade	2.2%	3.8%	4.9%	7.4%	9.5%
Transportation and Warehousing	4.6%	10.2%	15.8%	16.0%	21.5%
Utilities	4.9%	6.9%	4.1%	10.1%	20.8%
Wholesale Trade	7.0%	11.1%	14.7%	17.5%	22.9%

Table A14 – Cumulative Change in Nominal Weekly Wages in the Commonwealth PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	2.0%	4.4%	10.8%	9.6%	12.4%
Agriculture, Forestry, Fishing and Hunting	5.8%	11.6%	13.6%	17.8%	23.0%
Arts, Entertainment, and Recreation	-6.0%	88.3%	24.6%	18.1%	18.1%
Construction	4.7%	10.0%	19.2%	22.7%	24.0%
Educational Services	3.4%	3.7%	5.9%	7.7%	11.9%
Finance and Insurance	3.4%	4.4%	7.7%	18.3%	23.0%
Health Care and Social Assistance	2.3%	3.1%	4.2%	8.8%	11.3%
Information	-6.2%	6.4%	20.9%	0.7%	4.8%
Manufacturing	0.6%	6.4%	8.7%	13.0%	11.8%
Mining, Quarrying, and Oil and Gas Extraction	4.7%	4.3%	6.3%	11.5%	11.7%
Other Services (except Public Administration)	3.7%	12.9%	10.4%	1.5%	-3.3%
Professional, Scientific, and Technical Services	5.2%	14.8%	32.7%	24.3%	32.5%
Real Estate and Rental and Leasing	6.9%	10.0%	17.1%	29.7%	32.3%
Retail Trade	2.3%	-1.3%	-2.5%	-0.6%	-1.5%
Transportation and Warehousing	2.8%	12.8%	18.1%	22.8%	27.2%
Utilities	-4.8%	-1.9%	-2.3%	0.6%	2.8%
Wholesale Trade	-1.2%	0.5%	0.5%	3.7%	5.5%

Table A15 – Cumulative Change in Nominal Weekly Wages in the Southside PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	3.0%	5.9%	6.8%	8.9%	13.1%
Agriculture, Forestry, Fishing and Hunting	7.3%	13.8%	21.1%	26.7%	29.1%
Arts, Entertainment, and Recreation	4.2%	14.3%	11.7%	16.2%	21.9%
Construction	4.7%	10.9%	17.6%	8.9%	13.7%
Educational Services	-7.8%	-14.0%	-17.7%	-44.4%	-47.0%
Finance and Insurance	0.3%	7.3%	10.9%	20.7%	29.3%
Health Care and Social Assistance	-0.1%	4.4%	9.6%	13.3%	17.5%
Information	-0.8%	1.1%	6.1%	6.2%	-12.0%
Manufacturing	5.7%	4.0%	4.6%	6.6%	10.3%
Mining, Quarrying, and Oil and Gas Extraction	-8.7%	0.0%	10.0%	1.6%	1.1%
Other Services (except Public Administration)	5.4%	4.6%	7.3%	7.6%	0.2%
Professional, Scientific, and Technical Services	3.8%	18.8%	29.6%	32.4%	26.2%
Real Estate and Rental and Leasing	2.8%	12.6%	11.1%	15.4%	26.5%
Retail Trade	1.7%	1.4%	3.6%	6.7%	8.9%
Transportation and Warehousing	0.8%	6.9%	10.0%	13.8%	18.3%
Utilities	7.6%	8.2%	3.8%	12.2%	23.7%
Wholesale Trade	4.1%	7.7%	14.7%	25.5%	35.1%

Table A16 – Cumulative Change in Nominal Weekly Wages in the West Piedmont PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	0.8%	4.8%	8.9%	12.5%	15.3%
Agriculture, Forestry, Fishing and Hunting	3.2%	6.8%	9.5%	12.9%	11.3%
Arts, Entertainment, and Recreation	2.4%	19.3%	32.0%	56.6%	21.0%
Construction	5.4%	8.9%	17.0%	18.4%	22.7%
Educational Services	1.4%	2.8%	1.6%	5.1%	6.5%
Finance and Insurance	3.2%	5.6%	8.1%	12.7%	18.1%
Health Care and Social Assistance	0.8%	2.2%	5.5%	6.3%	10.3%
Information	0.3%	2.8%	-0.5%	7.9%	9.9%
Manufacturing	3.9%	5.8%	5.7%	5.6%	12.4%
Mining, Quarrying, and Oil and Gas Extraction	-0.4%	19.3%	45.5%	25.1%	0.5%
Other Services (except Public Administration)	5.4%	6.9%	8.6%	7.9%	7.9%
Professional, Scientific, and Technical Services	-9.8%	-8.9%	-15.4%	6.4%	12.3%
Real Estate and Rental and Leasing	1.6%	1.9%	-11.2%	-14.2%	-8.8%
Retail Trade	2.3%	5.9%	7.4%	9.9%	12.8%
Transportation and Warehousing	8.4%	12.3%	20.0%	15.9%	22.7%
Utilities	0.2%	5.6%	5.6%	7.8%	24.3%
Wholesale Trade	10.2%	15.2%	19.2%	20.0%	25.4%