



VIRGINIA INITIATIVE FOR  
**GROWTH &  
OPPORTUNITY**  
IN EACH REGION

# GO VIRGINIA REGION 5 2023 GROWTH & DIVERSIFICATION PLAN REVIEW

REGION 5 SUPPORT ORGANIZATION

## HAMPTON ROADS EXECUTIVE ROUNDTABLE

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## PRIORITY INDUSTRY CLUSTERS

Region 5 identified six priority industry clusters in 2017 and reaffirmed the importance of these clusters in the 2019 biennial update of its Growth and Diversification Plan. The clean energy cluster was identified in the 2021 biennial update, in addition to the six previously identified clusters. These seven previously identified clusters are joined by a new priority industry cluster in Life Sciences. In this section, we provide a brief overview of the eight industry clusters, which are reaffirmed for 2023-25.

**Advanced Manufacturing** - An industry cluster that encompasses materials and food manufacturing in which research and development spending is in the 80<sup>th</sup> percentile (\$450 per worker or higher) and where more than 21% of occupations in the industry require a STEM education. There is substantial crossover in the region between firms that work in this industry cluster and significant advanced manufacturing assets as well. There was an average of 10,645 employees in this cluster in Region 5 in 2023 Q1 with an average annual wage of more than \$74,500.

**Clean Energy** - An industry cluster which spans firms engaged in activities in the renewable energy space, including solar and wind power manufacturing, construction, and generation. There were almost 24,000 employees in this cluster in Region 5 in 2023 Q1, with an average annual wage of about \$85,300.

**Cyber Security, Data Analytics and Modeling and Simulation** - An industry cluster that encompasses a range of activities, inclusive of cyber security data analytics/data engineering; and modeling and simulation. The cluster is characterized by rapid technological change. The changing needs of this cluster are also reflected in workforce demands, and these activities often overlap in the industry cluster. There were slightly more than 5,100 workers in this cluster in 2023 Q1 with an average annual wage over \$76,600.

**Life Sciences** – Region 5 is home to an emerging Life Sciences industry cluster, characterized by growing companies that fall under biotech research centers and biotech commercialization. On May 4, 2023, the Regional Council unanimously approved adding Life Sciences to the existing list of seven priority industry clusters. The following NAICS codes were identified and associated with the Life Science cluster:

- 3254** (325411, 325412, 325413, 325414) Pharmaceutical and Medical Manufacturing
- 3391** (339112, 339113, 339114, 339115) Medical Equipment and Supplies Manufacturing
- 5417** (541713, 541714, 541715) Scientific Research and Development Services
- 5622** Waste Treatment and Disposal
- 6215** (621511) Medical and Diagnostic Laboratories

See associated codes below related to the specific example companies/entities identified in Region 5:

- Canon Virginia (**3391**)
- Embody (recently acquired by Zimmer Biomet) (**5417**)
- ivWatch (**3391**)
- Instant Systems Inc. (**3391**)
- ReAlta Life Sciences (**5417**)
- LifeNet Health (**5417**)

- Schuelke Biomedical/Laser Services Inc. **(3391)**
- Eastern Shore Microbes **(5622)**

In addition to these existing companies in Region 5, *Princo LLC* plans to invest up to \$23.8 million to establish an 80,000 square-foot healthcare manufacturing facility in Norfolk, creating an expected 284 jobs. This joint venture of healthcare companies will bring the production of medical supplies from overseas to the U.S.

Jefferson Lab announced a new *Biomedical Research and Innovation Center (BRIC)* that will connect the facility's nuclear physics experiments with innovators who can apply them to medicine and other practical uses. This is a significant move towards innovative biomedical instrumentation and leverages their current expertise for particle accelerator and detector technologies. The *Hampton Roads Biomedical Research Consortium (HRBRC)* has been established as a joint initiative of ODU, EVMS, Sentara, and NSU to pursue biotech innovation with dual locations at VMASC/ODU and Assembly/757 Collab. The City of Virginia Beach and HRBRC are planning an innovation lab initiative to further grow young life science companies. Finally, the pending merger between ODU and EVMS will stimulate further opportunities for this cluster through training, talent development, and commercialization.

As of 2023 Q1, there were, on average, 6,951 employees in the Life Sciences cluster with annual average wages of \$107,437.

**Port Operations, Logistics and Warehousing** - An industry cluster that is broadly defined as economic activity focused on material moving, shipping services, and warehousing. In the first quarter of 2023, more than 19,000 workers were employed in this industry cluster with an average annual wage of over \$72,000, more than \$15,000 higher than the average annual wage in Region 5. Region 5 has an economic competitive advantage in this industry cluster, with an employment location quotient of 1.1.

**Shipbuilding and Ship Repair** - An obvious choice as a priority industry cluster for Region 5 given the visible concentration of firms engaged in this industry around the region. Region 5 has a history in this industry stretching back to the founding days of the nation and is a linchpin of the nation's military shipbuilding effort. There were almost 40,000 employees on average in 2023 Q1, earning an average salary of over \$81,000. The LQ of 43.1 illustrates the high concentration of Ship Repair and Ship Building related jobs in Region 5.

**Uncrewed Systems and Aerospace** - A key industry cluster that includes firms in aircraft manufacturing (including drones), aircraft parts manufacturing, robotic manufacturing, and aerospace engineering. There were approximately 14,500 employees in this cluster in 2023 Q1 with an annual average wage of almost \$94,000. Note the industry cluster revised name to "uncrewed" to reflect industry standards.

**Water Technologies** - An industry cluster that includes firms in architecture, engineering, and urban planning, as well as firms and institutions doing coastal and climate research. In 2023 Q1, there were more than 37,000 employees in this industry with an average annual wage approximately \$90,000.

## WHERE WE ARE – STATE OF THE REGIONAL ECONOMY:

The 2021 update of the Economic Growth & Diversification Plan occurred during the recovery from the COVID-19 pandemic and explored how the shock and subsequent recovery affected economic activity in the region.

Prior to the pandemic, growth in real Gross Domestic Product (GDP), individual employment, and nonfarm payrolls (jobs) had improved, but the region continued to lag the performance of the Commonwealth and the nation. The pandemic's economic shock largely dissipated the gains in employment and nonfarm payrolls of the previous decade, and data indicated the recovery in the region again lagged that of Virginia and the nation.

However, the economic recovery in Hampton Roads is good news. According to the recently released *State of the Region/Hampton Roads 2023 Report*, in 2021 Hampton Roads outperformed the Commonwealth and the nation in GDP. Now is the time to engage in concerted action to build upon the recovery to sustain a higher rate of growth over the remainder of the decade. Investing in key industry clusters, improving infrastructure and public education, and continuing to build a culture of entrepreneurship and innovation are the foundations of long-term growth. Coupled with improvements in regional collaboration and cooperation, these actions will position Hampton Roads for a more vibrant economic future.

A number of significant initiatives have been introduced in the region since 2021. Several major ones are noted below:

A new Clean Energy industry cluster employed more than 23,000 workers at an average annual wage of almost \$78,000 in the second quarter of 2021. However, as might be expected, the level of employment had largely been unchanged over the last decade, illustrating the need for Region 5 to invest in projects that would bolster growth in this industry. Given the growth potential of this industry cluster, Region 5 has become well positioned to be the home of the manufacturing and assembly of products in the Clean Energy cluster and could potentially become a hub for the OSW industry as it establishes itself in the United States. Another project supported with a GO Virginia grant in 2023 is *the Demonstration Site for Clean Energy Transition to Green Hydrogen (HRH2)* designed to scale up the clean energy industry in Region 5 through the use of green hydrogen production. By using the ongoing investments in offshore wind energy to produce green hydrogen, a storable gas fuel that can be generated using renewable energy sources such as wind power. A reliable, clean and sufficient supply of energy in Hampton Roads is critical to the health of the economy and continued growth of the maritime, defense, and aviation industrial base. The 2021 report indicated Region 5 had enormous comparative advantages, and if clean energy remained a focus, Region 5 could become a major center on the East Coast.

GO Virginia investments made in projects as the *Offshore Wind Supply Chain Hub* and the *Uncrewed Systems (UxS) Route Corridor Network Study* have set the region up for success in these target industry sectors. Fairwinds Landing, a maritime operations and logistics center supporting the region's offshore wind, defense and transportation industries, is set to occupy the 122-acre Lambert's Point Docks, which will be home to major tenants that support the Coastal Virginia

Offshore Wind farm under development by Dominion Energy 27 miles off the Virginia Beach coast. Virginia Institute for Space Flight & Autonomy (VISA) at ODU, Riverside Health System, Accomack-Northampton PDC and Drone-Up are partners on a \$ 1.877 million federal DOT grant award to fund the use of drones to deliver critical medical supplies on the Eastern Shore and Tangier Island. This award was the product of the GO Virginia planning grant VISA received to explore autonomous systems routes and corridors in Region 5.

Another significant initiative underway is the *National Excellence in Uncrewed Systems: Air, Land, Sea, Space and Digital Hub* industry cluster also known as NEXUS. This project, involving three states, is being led by the Hampton Roads Executive Roundtable. Over 100 businesses, organizations, institutions of higher education, and economic development partners joined together to propose this international center of excellence through industry expansion and engagement, coordinating and marketing of multi-domain test sites, commercialization and entrepreneurship, and workforce training and readiness. An application was submitted in August 2023 to the US EDA for a Tech Hubs grant to support this initiative. Even if not funded via EDA, NEXUS will serve as a blueprint for a regional cluster in this domain.

The 2021 plan cited innovation and entrepreneurship as a continuing challenge for Region 5. Data showed that Region 5 was more successful in attracting venture capital in 2019 and 2020 than earlier in the previously concluded decade. With the opening of the “Assembly” in Downtown Norfolk and the award of a large GO VA grant to support 757 COLLAB, Region 5 has considerable reason to expect a turnaround in start-up funding. To date, 757 COLLAB has already exceeded all deliverables projected at grant completion in 2024. In addition, 757 Collab is serving as a front-door for the region’s entrepreneurial ecosystem, which now includes an array of partners, such as Black BRAND, Innovate Hampton Roads, SBDC, REaKTOR, HIVE, BLOOM, RISE, and others in the region. Of note 757 Collab, Black BRAND, InnovateHR and SBDC aligned to submit an application to EDA for the “Build to Scale” grant that builds entrepreneurship capacity.

A concerted effort has been made to improve the portfolio of sites prepared for business expansion. Two GO Virginia grants will elevate 5 properties to a VBRSP Tier 4 level. Additionally, the establishment of the Eastern Virginia Regional Industrial Facilities Authority (EVRIFA) provides a regional mechanism to facilitate the development of needed and desired facilities in the region, partnering localities, and will enhance the economic base of the member localities on a cooperative basis.

There is an ongoing effort to define a ‘brand’ of the Richmond and Hampton Roads mega-region and to develop an interregional collaboration plan between Regions 4 and 5. This past year saw the incorporation of RVA757 Connects as a non-profit organization, building upon the growing collaboration between the two regions over the past few years. The organization has developed an action agenda that is reflective of this plan, including closing the I-64 Gap by widening the 29-mile stretch of I-64, creation of the Global Internet Hub funded through GO VA Regions 5 and 4, and other initiatives.

To grow the priority industry clusters, Region 5 needs an adequate and capable workforce. In 2022, the Hampton Roads Workforce Council (HRWC) was selected by the U.S. Economic

Development Administration as one of 32 awardees of the \$500 million Good Jobs Challenge — funded by President Biden’s American Rescue Plan. As part of this initiative, the Workforce Council received an \$11 million grant to lead the development and implementation of the **Hampton Roads Workforce Training System** — the region’s first structured workforce ecosystem that will focus on building a talent pipeline for priority industries.

Among its initiatives, HRWC established a model for talent pathways in maritime, aligning workforce demands with education and training partners. They intend to replicate the pathways model for other industry clusters in 2023 and beyond. The workforce was stressed prior to the COVID-19 pandemic due to a variety of factors. Now, with labor force participation down and the prospect of accelerating retirements in the near term, assuming that the right workers will be available at the right time with the right skills remains our focus in addition to addressing outmigration.

In 2022, the components of population change were closer to what they were prior to the COVID-19 pandemic. In 2022, almost 6,200 more residents left the region for domestic locations than moved to the region from other locations in the United State. The net outmigration of residents from Hampton Roads was partially offset by net positive migration from international locations than departures overseas. If not for the positive natural increase in the population, Hampton Roads would have lost population in 2022.

The challenge moving forward is not only to generate jobs to attract and retain residents but also to build upon the fact that many residents work in one locale and live in another. Regional efforts to improve transportation infrastructure and public transportation will facilitate the flow of workers, goods, and services across Hampton Roads. Continuing the regional conversations about workforce housing, the state of public education, and whether localities impose too many burdens on. Businesses are a step in the right direction.

To successfully meet and exceed our regional goals requires the alignment and active involvement of all key players in the region. Newly formed in 2023, the Hampton Roads Executive Roundtable provides strategic direction and thought leadership, working closely with the also newly formed Regional Organizations Presidents Council to better align and define implementation roles of all the regional economic development organizations and partners for growing the region’s economy. Addressing the gaps and opportunities identified in the Economic Growth & Diversification Plan requires commitment, coordination, and alignment we now have in place. It will be an ongoing process and not a one-time initiative.

## **SKILLS GAP ANALYSIS AND TALENT PATHWAYS – TARGETED INDUSTRY SECTOR PATHWAYS**

The 2021 EG&D Plan indicated over the next three years, Region 5 would likely experience workforce gaps in a number of occupations that are foundational to the growth of the key industry clusters. One example cited was more than 1 in 4 employees in the Water Technologies cluster was employed in a computer occupation in 2021 Q1, followed by the Cyber Security, Data Analytics, and Modeling and Simulation (11.4%), and Clean Energy (10.7%) industry clusters. The plan projected there will be an annual workforce gap of 176 workers in computer occupations over this period. Employers in Region 5 will not be able to close this gap unless they can attract talent from elsewhere; however, as also noted in the report, domestic outmigration remains a persistent issue for Region 5. If domestic migration were to increase over this period, the annual workforce gap in computer occupations may increase as individuals with computer occupation skills are in high demand across the United States.

The projected workforce gaps in the 2021 report were not limited to STEM occupations. Workers in business and operations occupations earned more than the regional average in 2021 Q1. These occupations include Business Operations Specialists, Operations Specialties Managers, and Financial Specialists. An annual workforce gap of 160 jobs among these three occupations over 2022 – 2025 was projected. As with computer occupations, the higher pay of these occupations is correlated with higher levels of skills and education and mobility. If the pace of growth and economic opportunities does not increase workforce gaps may widen, not narrow, in the coming years.

Two STEM fields, Mathematical Science and Engineers, will also have workforce gaps from 2022 to 2025. An annual average workforce gap of 33 Engineers and 25 Mathematical Science positions over this period was projected. These gaps are particularly concerning given previous Region 5 plans stressing the need to increase the supply of workers in these occupations. The data also illustrated that the number of awards in these fields has not increased significantly over the last five years. Thus, the workforce gap is likely to persist in the short-term unless the number of awards increases or Region 5 experiences an influx of highly skilled domestic migrants.

The workforce gap analysis highlighted the need for Region 5 to more closely align higher education outputs with the projected demands of employers, especially those in priority industry clusters. Creating higher paying jobs requires employer demand for workers and workers in sufficient numbers to fulfill those needs. The report also emphasized the region cannot depend on domestic migration to fulfill workforce gaps and may need to further boost regional workforce supply to offset the impact of domestic migration in the coming years. Closing these workforce gaps is crucial to promoting development in the identified key industry clusters.

In 2022, the Hampton Roads Workforce Council was awarded \$250,000 in Talent Pathway Initiative (TPI) funds to conduct a situational analysis and develop a regional talent pathway strategy for two priority clusters in Region 5: Cyber Security/Data Analytics/Modeling and Simulation and Unmanned Systems & Aerospace. The work currently underway will address the

need referenced in the 2021 report to align higher education outputs more closely with the projected demands of employers in these specific industry clusters.

The out-migration issue has become a priority for the Hampton Roads Executive Roundtable and other regional partners. Hampton Roads is unique in that the region attracts a large number of young adults but doesn't offer enough opportunities to retain them, losing a considerable number of those who are between 30 and 60 years of age. Regional partners led by the Hampton Roads Executive Roundtable are gathering data on the reasons for out-migration of talent and young growth companies as a precursor to regional solutions and initiatives.



**GOALS, STRATEGIES, AND HOW TO ACHIEVE THEM**

<u>TARGETED</u> <u>INDUSTRY (IES)</u>	<u>GOALS</u>	<u>STRATEGIES</u>	<u>OUTCOMES/</u> <u>IMPACT MEASURES</u>	<u>STRATEGIC</u> <u>PARTNERS</u>	<u>CURRENT</u> <u>PROJECTS</u> <u>UPDATES</u>	<u>LINKS</u>
<b>Uncrewed Systems and Aerospace</b>	Create a coordinated capacity for innovation in identified key industry clusters.	Study the region's aviation, aerospace and uncrewed systems assets. Assessment will offer suggestions to help position our (aviation industry) as an efficient and dynamic system prepared to meet the regions future aviation demands. The assessment will extend and expand on the HR Eastern Shore Autonomous Systems Strategic Playbook; the study will also investigate additional opportunities consistent with the G&D Plan.	<ul style="list-style-type: none"> <li>•Assess current conditions of the Aviation industry in Region 5.</li> <li>•Forecast future regional and national demands.</li> <li>•Recommendations that will allow the region's two international commercial services airports to thrive.</li> </ul>	Newport News/Hampton Airport Commission Norfolk Airport Commission Hampton Roads Alliance	<b>The Hampton Roads Regional Aviation, Aerospace, and Uncrewed Systems Assessment</b>	
<b>Uncrewed Systems and Aerospace</b>	Increase the pace of small and medium-sized enterprise (SME) job creation through the expansion of existing firms with a specific focus on the attraction of firms in the key industry cluster to the region	Engage with a variety of the region's entities/users to build a coalition to support, conduct and complete the study. VISA will engage with ODU Dragas Center for Economic Analysis and Policy, to quantify and ensure there is economic growth and job growth potential justification for the LCB UxS Route/Cooridor Network.	<ul style="list-style-type: none"> <li>•Partnership with Riverside Health Systems and DroneUp yields \$75K contract from VIPC to explore routes on Eastern Shore.</li> <li>•RECEIVED a \$1.9 M DOT SMART grant to support Drone Medical Package Delivery.</li> <li>•Working with Sec. of Defense to link across services.</li> </ul>	VISA (Virginia Institute for Spaceflight & Autonomy Virginia Unmanned Systems Center Riverside Health Systems DroneUP Accomack-Northampton Planning District Commission	<b>UxS Cooridor Planning Grant</b>	<a href="#">Riverside/DroneUp</a>
<b>Uncrewed Systems and Aerospace</b>	Close all skills, credentialing, and degree gaps in the key industry clusters' workforces by 2022 through intra-regional production and talent importation	Development of world's first near shore and shallow water hydro drone test and testing area. The test area will be open to all companies, research institutes and others wishing to test autonomous hydrodrone vehicles, technologies related to staff traning programs.	<ul style="list-style-type: none"> <li>•Designed cost effective autonomous ESM Hydrodrone compatible with ODU hydro drone.</li> <li>•Plans underway for ESM Hydrodrone Summer Camp at Eastern Shore Yacht.</li> <li>•Instructed students and faculty at ODU on how to assemble, operate and collect data using Hydrodrone.</li> </ul>	Accomack/Northampton Planning District Commission (ANPDC); Broadway Academy; ESVA Regional Navigable Waterways Committee (ESRNBC); Virginia Marine Resources Commission	<b>Eastern Shore Hydro Drone</b>	<a href="#">Easternshorepost</a>
<b>Port Operations Logistics &amp; Warehousing Advance Manufacturing Ship Building &amp; Ship Repair CyberSecurity Data Analytics &amp; Mod-Sim Life Sciences Water Technologies Uncrewed Systems &amp; Aerospace</b>	Increase the pace of small and medium-sized enterprise (SME) job creation through the expansion of existing firms with a specific focus on the attraction of firms in the key industry cluster to the region	<ul style="list-style-type: none"> <li>•Grow the regional economy and keep pace with the rest of Virginia and the US</li> <li>• Help diversify Region 5's economy through small and medium sized business creation</li> <li>• Fuel the creation of high-paying jobs</li> <li>• Operate as an umbrella entity to coordinate a deliberate innovation strategy</li> <li>• Help build a more inclusive regional economy</li> <li>• Increase awareness and regional reputation through coordinated storytelling</li> <li>• Address the persistent regional workforce development challenges</li> </ul>	<ul style="list-style-type: none"> <li>• <b>1128</b> jobs created</li> <li>• <b>62</b> internships created</li> <li>• <b>243</b> mentors engaged</li> <li>• <b>2789</b> entrepreneurs engaged</li> </ul>	Activation Capital TowneBank Ferguson Cox Communications City of Newport News City of Norfolk City of Hampton 757 Angels 757 Accelerate NavalXTechBridge	<b>757 Collab</b>	Startup Ecosystem

<u>TARGETED INDUSTRY (IES)</u>	<u>GOALS</u>	<u>STRATEGIES</u>	<u>OUTCOMES/ IMPACT MEASURES</u>	<u>STRATEGIC PARTNERS</u>	<u>CURRENT PROJECTS UPDATES</u>	<u>LINKS</u>
<b>Advanced Manufacturing</b>	Close all skills, credentialing, and degree gaps in the key industry clusters' workforces by 2022 through intra-regional production and talent importation	Development of a two-year course progression  Creation of a 10-week summer camp experience.  Distribution of SPARK course materials via JASON's Digital Platform  Teacher professional development	•Advisory Board reconstituted. •Modules 1 and 2 curricula in use for Engineering Drawing and Design. •Module 3 content complete. •Module 4 is activated online. •Development of asynchronous training is complete.	Portsmouth Public Schools JASON Learning	<b>SPARK (Setting Pathways that Activate Real-World Knowledge)</b>	<a href="#">JASON/SPARK</a>
<b>Port Operations Logistics &amp; Warehousing Advance Manufacturing Ship Building &amp; Ship Repair CyberSecurity Data Analytics and Mod-Sim</b>	Close all skills, credentialing, and degree gaps in the key industry clusters' workforces by 2022 through intra-regional production and talent importation	COVA MAP will multiply benefits across projects and accelerate the region's ascension to maritime leadership through: • Outreach programs • Workforce Development • Innovative Technology & Process Dev. • Improved coordination of regional maritime programs.	•Framework & delivery platform complete. • <b>464</b> students trained w/in Region 5. • <b>395</b> students trained outside Region 5. • <b>384</b> existed jobs retained/filled.	Maritime Industry Baselone Ecosystem City of Newport News Brooks Crossing Innovation Lab Hampton City Schools Old Dominion University	<b>COVA Map</b>	<a href="#">Virginia Business link</a>
<b>Ship Building &amp; Ship Repair</b>	Close all skills, credentialing, and degree gaps in the key industry clusters' workforces by 2022 through intra-regional production and talent importation	Three online courses (Welding Simular Use, Pipefitter, Fiber Optic Technician) will be created to meet the needs of the maritime industry.	•Kickoff meeting complete. •Welding simulators purchased, received and inspected.	ODU Research Foundation ODU Virginia Modeling, Analysis, and Simulation Center QED Systems Tidewater Community College	<b>MEET (Maritime Entry to Employment Training Program)</b>	<a href="#">ODU MEET</a>

## PROJECT DEVELOPMENT

*Please discuss how this 2023 Growth and Diversification Plan Review will impact project development. Please discuss current projects and how they relate to the Review.*

Since the first Region 5 *2017 Economic Growth and Diversification Plan*, the six priority industry clusters identified have not changed, except for the addition of Clean Energy and Life Sciences. These priority clusters have been embraced by our region’s colleges and universities, partners in the entrepreneurial ecosystem, localities, and other regional organizations. GO Virginia funds have been used to expand the growth in each cluster, focused on making sure companies have the talent and resources they need to grow.

All clusters embark on a lengthy journey of innovation, transformation, and economic growth through cluster-based economic development. We are at the stage with several clusters to formally organize them, with staff assigned to advance their unique ecosystems, including identifying resources for innovative solutions, talent development, a stable operating environment (regulations and policy), essential sites and infrastructure, and an exceptional quality of life.

The following projects were referenced in the review as opportunities that could dramatically advance elements of the 2023 Growth and Diversification Plan:

1. National Excellence in Uncrewed Systems: Air, Land, Sea, Space and Digital Hub (NEXUS) was formed and submitted as an EDA “Tech Hubs” application during summer, 2023. Led by the Hampton Roads Executive Roundtable, over 100 businesses, organizations, higher education, community, and other economic development partners from 3 states joined together to propose this international center of excellence for uncrewed/autonomous systems through industry expansion and engagement, coordination and marketing of multi-domain test sites, commercialization and entrepreneurship, and workforce training and readiness. The geography covers GO VA Region 5 (Including the VA Eastern Shore), Delaware, and Maryland’s Eastern Shore. NEXUS aligns with Region 5’s industry clusters and provides a solid opportunity to build out this industry cluster in the years ahead. Many key partners are unique to this region – NASA Langley Research Center, NASA Wallops, and JLab, as well as the U.S. Navy and other military installations and cybersecurity partners. While the EDA Tech Hubs grant opportunity was the focus, this industry cluster is evident for development using other Commonwealth and federal funding sources (GO Virginia as one example), and for alignment with Commonwealth priority clusters as well via VIPC and VEDP.
2. Scale-up – connect young growth companies and economic development.

Scale-ups and middle market companies are key drivers of job creation, productivity growth and innovation. At the same time, scale-ups play a crucial role in the innovative transformation of industries and sectors. Due to their fast growth, they can make a large and increasing impact on the development, application and diffusion of innovations, new

business models, and new concepts and practices within and across industries and markets. Because of these characteristics, scale-ups also play a vital role in the economic recovery of regions after a crisis. These effects are reinforced by the fact that scale-ups by themselves also have the potential to quickly recover from recessions.

Well-functioning scale-up ecosystems offer access to high-growth markets and a high-growth customer base. Equally important, they offer a “pathway” to resources needed for growth, such as sites for expansion, access to talent and training programs, tax incentives, industry engagement, additional financing, and other factors needed to leverage their growth – all resources often made available to larger companies for expansion and attraction to regions. Missing is a “scale-up concierge” system and pathway to connect these growth companies with additional economic development resources – and to avoid them being “recruited” away by other states. We already have a study underway through Fahrenheit to interview growth companies re their experiences here in Hampton Roads and how to address gaps in their access to this pathway of resources.

Therefore, an opportunity lies in connecting entrepreneurs and young companies to these related resources and to customer industries. Successful scale-up ecosystems foster dynamic interactions, collaborations and exchanges resulting in an active portfolio of partnerships, alliances and mergers and acquisitions. Through spillover and network effects, scaleups can leverage the benefits of location when they are near related industries, as we have in Region 5. There is also a need for specialized advice and fractional management talent pertaining to growth-related activities and elements of the organization in the scaling up process. Connecting entrepreneurs with other well-established industries can benefit and advance scale-up.

3. Talent development – The successful Targeted Talent Pipeline program model initiated by the Hampton Roads Workforce Council in the maritime industry will be applied to other priority clusters. Work is currently underway by the Hampton Roads Workforce Council with support from the GO Virginia-funded Talent Pathways Initiative. The focus is to apply the successful maritime model to the Cyber Security/Data Analytics/Mod-Sim and Uncrewed Systems & Aerospace priority industry clusters identified in the 2023 Economic Growth & Diversification Plan. We also have a study underway through Fahrenheit Partners to understand out-migration of young adults/talent, reasons for moving, and opportunities to address here in Hampton Roads.
4. Capture opportunities for more multi-regional projects where clusters cross multiple GO Virginia regions (i.e., NEXUS, I-64 Corridor Global Internet Hub). We see significant opportunity in multi-GO VA region applications for these key clusters, with benefit to the regions as well as to the Commonwealth. We have already discussed opportunities for NEXUS, life sciences, entrepreneurship, and scale-ups as examples.
5. Utilization of the Eastern Virginia Regional Industrial Facilities Authority (EVRIFA) to advance business-ready sites. EVRIFA has significant potential as a growth platform now

that more of the region's cities have joined, the organization is actively managed and led by the Hampton Roads Alliance, and there are site opportunities under discussion for partnerships.

6. Artificial Intelligence (AI) – Data Analytics/AI cluster Leveraging the Jefferson Lab Announcement. The major national, Commonwealth, and regional announcement in October 2023 of the new High Performance Data Facility (HPDF) at Jefferson Lab in Newport News (US Department of Energy (DOE) grant opens significant opportunities to anchor this AI/data science cluster. The Hampton Roads Executive Roundtable, ODU, and W&M have recently released a study, “A Strategic Pathway for Advancing Data Science/AI in Hampton Roads”, prepared by TEconomy Partners, which lays out recommendations for an applied data science hub for our key industries and defense/national partners, together with university partners, commercialization, and business expansion/applications of AI. This HPDF is the only one for the country and has significant potential for economic leverage in the years ahead. The Roundtable and “Friends of JLab”, a network of business, academic, and municipal leaders, will lead an effort to establish and grow this key industry cluster.

## **FUTURE PLANNING /G&D PLAN EFFORTS**

*Please describe how this 2023 Growth and Diversification Plan Review was facilitated. Please detail how Regional Council members and whether stakeholders were involved in the process.*

As the GO Virginia guiding document, the *Economic Growth & Diversification Plan* is embedded in the strategy and guides the initiatives of the Region 5 Council and multiple regional partners that are involved each time the plan is updated. An Executive Oversight Committee was created as part of the review of the 2023 Plan, comprised of leaders from the Hampton Roads Executive Roundtable and GO VA Region 5 Council. Other key groups actively engaged in the evaluation and implementation include the Regional Economic Development Directors (RED Team – the economic development directors from all of the region’s localities), and the diverse regional economic development organizations represented on the newly formed Regional Organizations Presidents Council (ROPC). Further, once approved we intend to socialize throughout the region through various means of stakeholder engagement, such as social media and our new website, community forums, presentations at organization meetings, and other events

Regional stakeholders are deeply involved in the process, and in the ongoing implementation of the Plan. Obtaining feedback from our local and regional partners remains a continuous process. For example, the Regional Council amended the 2021 Economic Growth & Diversification Plan in May 2023 to include Life Sciences as a priority cluster. The addition of this cluster came because of our partnership in the Competitive GO Virginia grant awarded to support Virginia Bio Connect. Life Science is an emerging cluster in our region, characterized by growing companies in Region 5 that include medical equipment and supplies manufacturing, scientific research and development services, and waste treatment and disposal, plus new entities such as the Hampton Roads Biomedical Research Consortium and the proposed merger of ODU and EVMS.

It is important to note that the Old Dominion University Dragas Center for Economic Analysis and Policy and the George Mason University Center for Regional Analysis were contracted by the Regional Council to produce the first Economic Growth & Diversification Plan in 2017. The Dragas Center has been engaged to produce the biennial updates that followed. The relationship between the annual State of the Hampton Roads Region Report produced by the Dragas Center has been valuable as it informs the work connected to the Economic Growth & Diversification Plan.



## **2023 Growth and Diversification Plan**

### **GO Virginia Region 5**

Prepared for the GO Virginia Region 5 Council  
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## Acknowledgments

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This report represents the required biennial update (2021-2023) of the GO Virginia Region 5 Growth and Diversification Plan. It was prepared for the Region 5 Council by the Dragas Center for Economic Analysis and Policy at Old Dominion University. The material in the report was reviewed, edited and recommended for approval by the State GO Virginia Board and by members of the Region 5 Council.

This plan update must acknowledge the creation of a truly collaborative region over the past seven-plus years and thank those many individuals and organizations for their efforts. Public discussion and work to create a path forward began in earnest with the onset of COVID-19 in the Spring of 2020. Building upon the previous extensive public process undertaken by the Hampton Roads Planning District Commission, a collaboration of regional governmental and business organizations began an intense year-long process to create a playbook called the 757 Recovery & Resilience Action Framework. This unprecedented effort was funded, in part, by a GO Virginia grant and actively engaged over 200 volunteers in 11 industry and topic committees. The effort led to the framework being rolled out as a high profile public/ media presentation in March of 2021. Since that time, the region has continued its collaboration among key key organizations, culminating in 2023 with establishment of several alignments to clarify roles and responsibilities for economic development. The “Hampton Roads Executive Roundtable” combined previous organizations Reinvent Hampton Roads and Hampton Roads Business Roundtable to provide strategic direction for the region and serve as the support organization for the Region 5 Council. The “Regional Organizations Presidents Council” (ROPC) was formed to align 10 major economic development organizations for coordination.

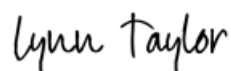
For this report update, these organizations played a leadership role in development and review. The Roundtable assembled a task force comprised of leaders from the Region 5 Council and the Roundtable. The ROPC provided updates, review, and strategic comments, and the region’s RED (Regional Economic Development) Team, comprised of the local economic development directors and coordinated through the Hampton Roads Alliance, also provided insights and commentary for the report. This region-wide participation builds an understanding of the important strategic recommendations in the plan and increases the level of ownership among the stakeholders and leaders.

We would like to thank the staff of the Hampton Roads Executive Roundtable for the coordination of this effort and the members of the GO Virginia Region 5 Council for their dedication to this important work for the long-term regional economic growth and sustainment of our region. We especially acknowledge GO Virginia co-founder and visionary, John O. “Dubby” Wynne, for dedicating his life to improving economic prosperity in Region 5 and throughout the Commonwealth of Virginia. We are committed to make sure his legacy continues.

Sincerely,



Mr. Thomas R. Frantz, Chair



Ms. Lynn Taylor, Vice-Chair



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## Executive Summary

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This report represents the 2023 biennial update of the Region 5 Economic Growth and Diversification Plan. To qualify to receive grants from the Virginia Growth and Opportunity Fund, a regional council is required to review an economic growth and diversification plan not less than biennially. The biennial update provides members of Region 5 an opportunity to gauge economic conditions in the region, update and amend priority industry clusters in the region, and assess existing and future economic challenges that could be addressed through GO Virginia funding.

The economic performance of Region 5 is best viewed as the recovery from the shocks of the Great Recession of 2007 to 2009, the caps on discretionary federal spending resulting from the Budget Control Act of 2011 and its subsequent modifications, and the economic shock and recovery from the onset of the COVID-19 pandemic in the spring of 2020. Over the last decade, Region 5's economic performance, whether measured by changes in Gross Domestic Product (GDP), individual employment, or nonfarm payrolls (jobs) lagged its peers, the state, and the nation. While Region 5's performance improved in the latter half of the last decade, this improvement did not regain ground lost in the aftermath of the Great Recession and caps on discretionary federal spending in the first half of the decade.

Region 5's economic performance this decade is the recovery from the severe economic shock in the spring of 2020. Approximately 1 in 8 jobs were lost in Region 5 between February 2020 and May 2020 and while Region 5 observed a sharp rebound from the trough in jobs, it still has yet to exceed the pre-pandemic peak in nonfarm payrolls. While jobs have yet to recover, the civilian labor force and individual employment exceeded their respective pre-pandemic peaks in 2023. The unemployment rate in Region 5 hovered near pre-pandemic levels, suggesting that some jobs remained unfilled due to the lack of slack in labor markets.

Given that labor force participation rates have declined over the last two decades at the state and national level, bringing residents of Region 5 'off the sidelines' is needed for improved economic performance.

In this biennial update, we find the economic fortunes of Region 5 improved in 2021 and 2022 and that Region 5 is likely to observe continued growth in 2023. However, if we examine the relative performance of Region 5, there is more work to be done. While Region 5 accounts for approximately 1 in 5 residents of the Commonwealth, its population growth this decade has, for all intents and purposes, been flat. Region 5 continues to experience negative net domestic migration and the absolute number of young adults ages 20 to 34 has declined after peaking in 2015. While a preponderance of Virginia's economic activity is located in the 'urban crescent' formed by Regions 4, 5, and 7, economic activity was increasingly concentrated along the I-95 corridor bounded by the Richmond area and Northern Virginia.

Region 5 occupies a distinctive role in the national security of the nation, and we estimate that direct Department of Defense (DoD) spending will exceed \$26 billion in 2023 and may top \$30 billion within the next five years. With tens of thousands of active-duty service members and federal civilian employees, we estimate that approximately \$4 out of every \$10 of economic activity in Region 5 is directly or indirectly caused by federal government expenditures. A shift in national security strategy or political disfunction in the halls of Congress could have dramatic consequences for federal spending and employment in Region 5 (as well as Region 7). Given rising levels of national debt and increasing interest costs, discretionary expenditures may come under increasing pressure over the remainder of the decade, even if there is not a significant recession or unexpected economic shock. Given Region 5's dependence on federal spending, it may be relatively more difficult to 'move the needle' on the top-line number of jobs in the region compared to Region 5's peer and aspirant regions.

A strategy to diversify economic activity in Region 5 is to ‘lean into’ its priority industry clusters to spur jobs and wage growth. Region 5’s comparative advantages result in industries related to energy, technology, and water. Advanced Manufacturing, Clean Energy, Port Operations, Logistics, and Warehousing, Ship Repair and Ship Building, Uncrewed Systems and Aerospace, and Water Technologies employed more than 100,000 workers at above average wages in the first quarter of 2023. These priority industry clusters had location quotients (a measure of comparative advantage) greater than 1 in 2023 Q1, that is, there were a higher proportion of jobs in these industry clusters in Region 5 than the national average.

As noted in previous Growth and Diversification reports, Region 5 will need a capable workforce to sustain and grow the priority industry clusters. There is good news in that the civilian labor force reached record levels in 2023, although domestic outmigration continues to undermine population growth. Region 5 has not made discernable progress in the number of STEM-related awards, specifically in Computer and Mathematics degrees. With the coming demographic cliff in higher education, promoting STEM enrollments is crucial for growth.

Another strategy to improve the availability of skilled labor is to import talent, however, this will likely remain difficult in the short-term as the relative economic performance of Region 5 lags its peers and aspirant regions. Region 5 has a distinct advantage, however, in that it is home to the last duty station for thousands of military service members who are concluding their terms of enlistment. These military separations represent an opportunity for Region 5 to acquire experienced talent at relatively low cost. The Virginia Beach – Norfolk – Newport News metropolitan area ranks 1<sup>st</sup> among large metropolitan areas in the United States for its share of the adult population that are veterans of military service. Military veterans are not only more educated, on average, than the non-veteran population, but also participate in the labor force at higher rates than their non-veteran counterparts.

Region 5 is not without challenges, however, and regional solutions are necessary to reap economies of scale. Previous work has illustrated that the cost of shelter in the Virginia Beach – Norfolk – Newport News area is relatively high when compared to incomes and that this acts as an impediment to firms and individuals thinking of locating in Region 5. Given that approximately half of workers in Region 5 work in one community and live in another, there is a strong regional rationale to work on workforce housing solutions.

We would be remiss not to report on promising developments in Region 5. We have observed a concerted effort by local organizations to identify opportunities for greater collaboration and, in some cases, integration. Regional planners and organizations continue to develop sites to provide locations for existing and new employers. Investments over the last decade in the Port of Virginia continue to reap benefits as the Port reported record levels of traffic in 2022. The tourism and hospitality industry had another record year in 2022 and is on track for a record year in 2023. The number of establishments in Region 5 has recovered more quickly than the state or the nation. The identification of key industry clusters should act as a guide star for conversations about economic development in the region.

Region 5 recently approved the addition of a new priority industry cluster in Life Sciences. As with a number of clusters, the Life Sciences cluster needs skilled workers (primarily in STEM disciplines) to grow. While Region 5 does not yet have a comparative advantage in the Life Sciences cluster and cluster employment is relatively small (approximately 7,000 jobs in 2023 Q1), we note that average wages in the cluster were about \$107,000 in 2023 Q1, about \$50,000 higher than the regional average. The ongoing merger between Old Dominion University (ODU) and Eastern Virginia Medical School (EVMS) is likely to result in economies of scale and scope that would spur growth in the Life Sciences cluster over the coming years.



The dominant themes of the 2023 biennial update are the recovery from the shock of 2020 and the need to diversify the regional economy to promote accelerated growth in the coming years. This does not mean that Region 5 is 'turning away' from its relationship with the federal government but rather seeking to provide additional sources of growth to increase the number of jobs and average wages in the region. These industry clusters will need a sustained strategy to increase STEM-related awards in the Region and to provide industrial sites ready for business. Housing costs remain a significant concern and the region should examine how a regional housing strategy would interact with plans for transportation within Region 5. While there are no 'quick fixes' for the region's economic performance, there are a number of potential strategies underway and under discussion that could reap significant benefits. Now is not the time to be timid, but rather choose to do the hard work to improve the fortunes of the residents and employers that call Region 5 home.

## Section 1: Introduction

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The third biennial update to the GO Virginia Program's required Growth and Diversification Plan reviews and builds upon the original August 2017 effort as well as the biennial updates of 2019 and 2021. These documents have served as the guiding economic growth and diversification record for Region 5. In the spirit of the language of the GO Virginia Board, the Growth and Diversification Plan serves to "... identify economic opportunities, needs, and challenges, establish priorities among those opportunities, and outline needed enhancements where GO Virginia grant funds can (a) support collaborative programs between at least two or more localities and (b) that will lead to the creation of more higher paying jobs."

In 2017, GO Virginia Region 5 submitted its initial Growth and Diversification Plan. The purpose of that plan was to provide data-driven recommendations to grow and diversify the economy in Region 5. In 2019, GO Virginia Region 5 produced its biennial update of the Growth and Diversification Plan. The update noted that the economic conditions in the region had improved since 2017 and was relatively optimistic about the economic performance of the region. The 2019 biennial update was centered on the theme of agility, that is, creating an economic environment that would be sufficiently agile to withstand potential contractions in federal government spending. The 2021 update occurred during the recovery from the COVID-19 pandemic economic shock and explored how the shock and subsequent recovery affected economic activity in the region. The 2021 update explicitly noted the need to increase economic diversification and build resilience. While Region 5 occupies a distinctive role in the national security of the nation, its dependence on federal government spending appears to limit its ability to generate robust private sector growth. Without job growth, residents will "vote with their feet" and seek their economic fortunes elsewhere.

The 2017 plan established, and 2019 and 2021 updates reaffirmed, three main economic goals for Region 5. In this biennial update, we assess progress towards these goals.

1. **Create a coordinated capacity for innovation in identified key industry clusters.**
2. **Increase the pace of small and medium-sized enterprise (SME) job creation through the expansion of existing firms with a specific focus on the attraction of firms in the key industry cluster to the region.**
3. **Close all skills, credentialing, and degree gaps in the key industry clusters' workforces by 2022 through intra-regional production and talent importation.**

The 2017 and 2019 reports identified and reaffirmed Region 5's focus on six key industry clusters. Between the 2019 and 2021 updates, increased regional awareness and activity around "clean energy" led to the conclusion that Region 5 should also focus on the sectors included in the clean energy space. The 2021 biennial update added the Clean Energy cluster to the six existing clusters. In the summer of 2023, in part spurred by the merger of Old Dominion University and Eastern Virginia Medical School, the GO Virginia Region 5 Council added Life Sciences as an aspirational cluster. In this report, we assess Region 5's performance with respect to job creation and firm diversity for the following key industry clusters:

- **Advanced Manufacturing**
- **Clean Energy**
- **Cyber Security, Data Analytics and Modeling and Simulation**
- **Life Sciences**
- **Port Operations, Logistics and Warehousing**
- **Shipbuilding and Ship Repair**
- **Uncrewed Systems and Aerospace**
- **Water Technologies**

The development of this latest update represents an important opportunity for the Regional Council to reflect upon the economic challenges and the priorities for the regional economy moving forward. Improving economic resiliency and diversification continues to be a prevailing theme for this report. Fostering private sector job creation and regional innovation is imperative given potential shifts in national security policy and military affairs that could undermine the region's comparative advantages in producing weapon systems and basing defense assets. This update highlights the need to diversify the economic base to foster growth independent of federal government spending. Diversification could come from growth in key industry clusters through the emergence of new firms and expansion of existing firms. Diversification could also entail existing government contractors finding commercial use applications for their products and services. The challenge for Region 5 is to identify and fund projects that not only move the region to a more diversified economy but also improve the economic resiliency of the region. Understanding where Region 5 stands is important to determine the path forward and to measure progress on that path.

The remainder of the document is organized as follows. Section 2 surveys the performance of Region 5's economy. Section 3 provides a review of the region's priority industry clusters. Section 4 examines workforce gaps by these clusters. Section 5 examines the portfolio of economic development sites in Region 5 and provides recommendations to increase the number and quality of sites. Section 6 provides an overview of recent developments in Hampton Roads that have had major impacts on our region. Section 7 discusses possible strategies and specific projects to address Region 5's economic challenges.

## Section 2: Data Update for Region 5

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A primary goal of the 2023 biennial update for Region 5's Growth and Diversification Plan is to assess the region's economic performance since the 2021 update. This period is characterized by the recovery from the COVID-19-related economic shock of 2020. The economic recovery is largely complete, and Region 5 is likely to experience economic growth in 2023 and 2024. While increases in federal spending have, in part, fueled Region 5's recovery, there are signs of improving economic performance in other industry sectors.

As a starting point for our assessment of economic conditions in Region 5, we update the economic challenges identified in the 2017 report, reaffirmed in the 2019 update, and examined in detail in the 2021 update. We now have sufficient data to examine the speed of recovery in Region 5 relative to other GO Virginia regions. We find that, while individual employment has recovered in Region 5, nonfarm payrolls (jobs) have yet to return to pre-pandemic levels. The continued dependence on federal government spending is a boon as long as federal spending continues to rise, however, the lack of fiscal discipline leads to the question of how long federal spending increases can be sustained in the medium-term.

**As with previous Growth and Diversification reports, we find that (1) Region 5's economic growth has not kept pace with Virginia or the United States; (2) Region 5 is reliant on a small set of large firms in its key cluster areas; (3) Region 5 is not creating a workforce for the next-generation knowledge-based economy at a quick enough pace, and (4) Region 5 lacks a deliberate and comprehensive innovation strategy. Compared to previous reports, we find that Region 5's net job creation from small and young firms has increased in recent years, contrary to the trend observed at the national level. The open question remains whether Region 5 can bolster growth in key industry clusters to improve economic diversification and resilience.**

## **Challenge 1**

### ***Region 5's economic growth has not kept pace with Virginia or the United States.***

Region 5 is one of the three largest areas of economic activity in the Commonwealth of Virginia, accounting for approximately 17.5% of economic activity in Virginia in 2021. Region 7 (Northern Virginia) accounted for approximately 42.7% of all activity in the state in 2021, followed by Region 5 (17.5%), and Region 4 (South Central) (16.3%). These three regions form the “urban crescent” that accounted for 74.5% of all economic activity in the Commonwealth in 2010 and 76.4% of all economic activity in Virginia in 2021. However, Region 5's share of Virginia's population and economy has declined over the last two decades. The challenge is now to build on the economic recovery in 2021 and empower growth in the region to retain and attract talent. In this subsection, we examine how economic conditions have changed over the last decade, with a specific focus on the continued recovery from the COVID-19 pandemic.

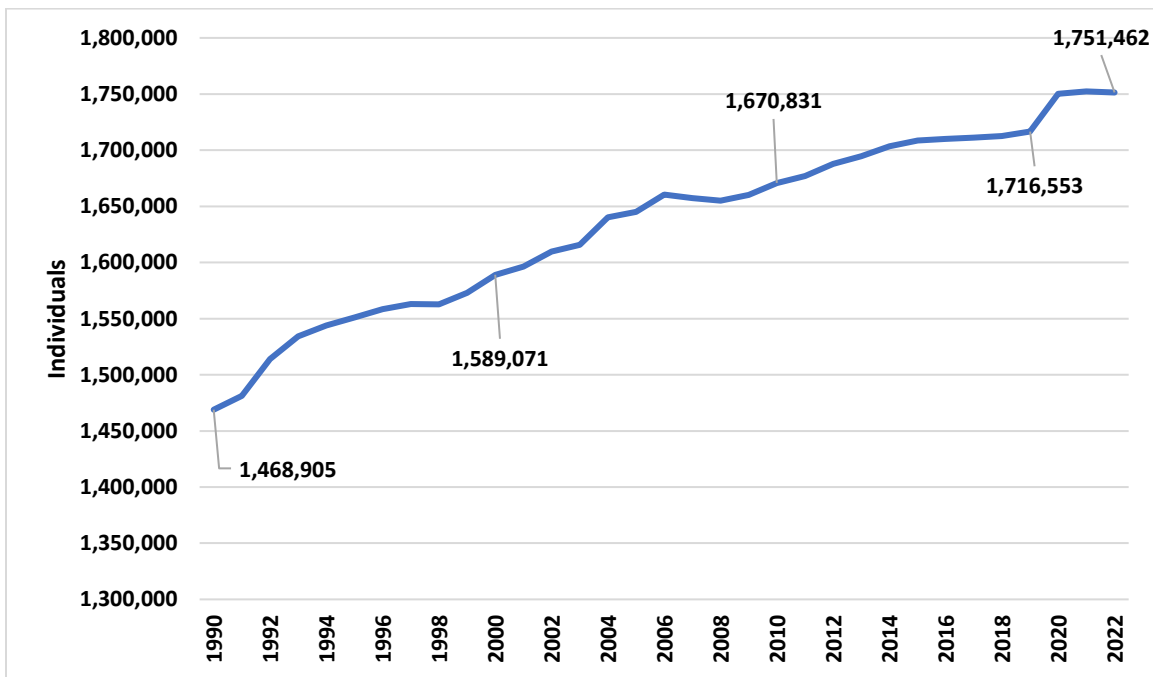
### **Population Growth in Region 5**

One signal of economic vitality is population growth. Jobs attract people, and people attract jobs. Rapid population growth may strain public school systems, transportation infrastructure, and the capacity of local public services, but these challenges are often offset by a growing tax base, increasing revenues, and an influx of new employers. On the other hand, areas with sluggish growth or declining population often observe slow to negative job growth, stagnant or declining tax bases, and mismatches between public services and the remaining population.

In 2010, the United States Census Bureau estimated there were approximately 1.67 million residents in Region 5 (Figure 1). By 2019, according to the U.S. Census' Population Estimates program, there were approximately 1.72 million residents in the region, 2.7% more than in 2010. The 2020 decennial Census “reset” the population estimates, and we estimate the 2022 population in Region 5 was approximately 1.75 million. The increase of 33,639 residents from 2019 to 2020 was almost certainly due to the decennial Census and not an influx of new residents

to the region. We note the latest population estimates suggest Region 5’s population declined by 894 residents from 2021 to 2022 after increasing by only 2,164 residents from 2020 to 2021. Whether or not the decline in population continues remains to be seen.

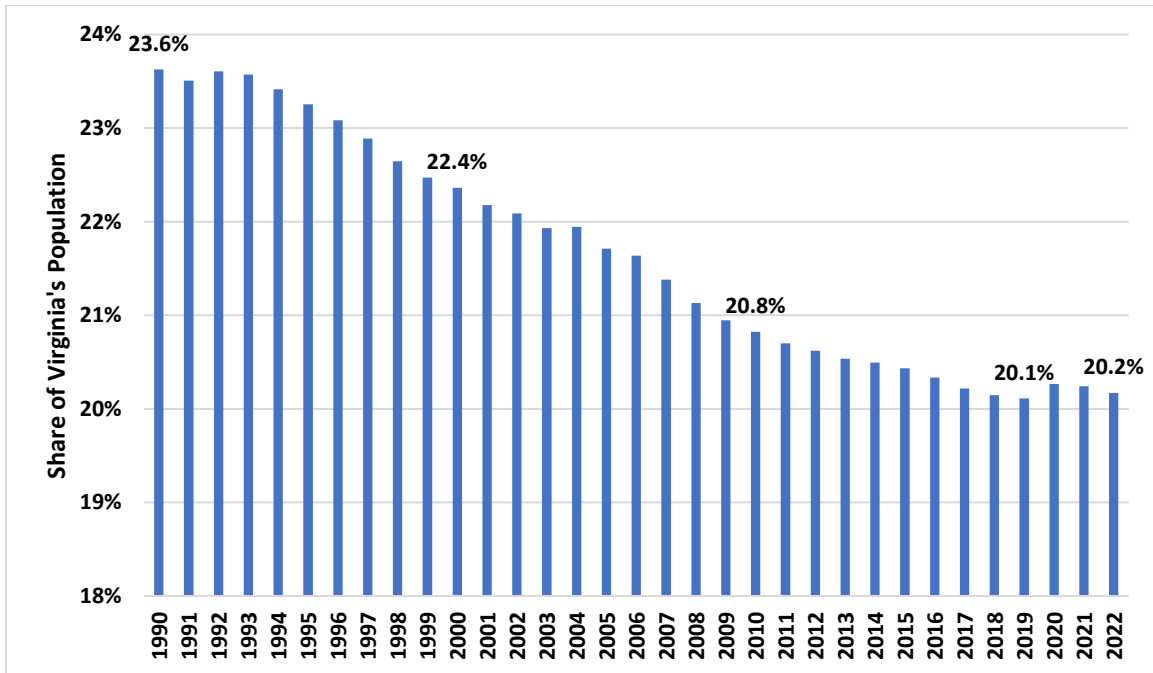
**Figure 1 – Total Population – Region 5  
1990 – 2022**



*Source: United States Census Bureau, Population Estimates, various years. Population estimates as of July 1st of the corresponding year. Estimates are aggregated from county level population estimates to ensure consistency with city and county level estimates and to align with GO Virginia region definitions. We note that the population estimates are consistent within decades and are adjusted each decennial Census.*

Region 5’s share of Virginia’s total population has also declined over the last three decades. In 1990, Region 5 accounted for about 23.6% of the state’s population (Figure 2). By 2000, this share had dipped to 22.4%, falling again to 20.8% in 2010. Over the last four years, Region 5’s share of the Commonwealth’s population has remained around 20.2%, not because of faster population growth in the region, but because the Commonwealth’s population growth has also slowed. If Region 5’s continues to go slower than the state or, worse, contracts in population, then its share of the state population will likely decline in the coming years.

**Figure 2 – Region 5’s Share of Virginia’s Population  
1990 – 2022**

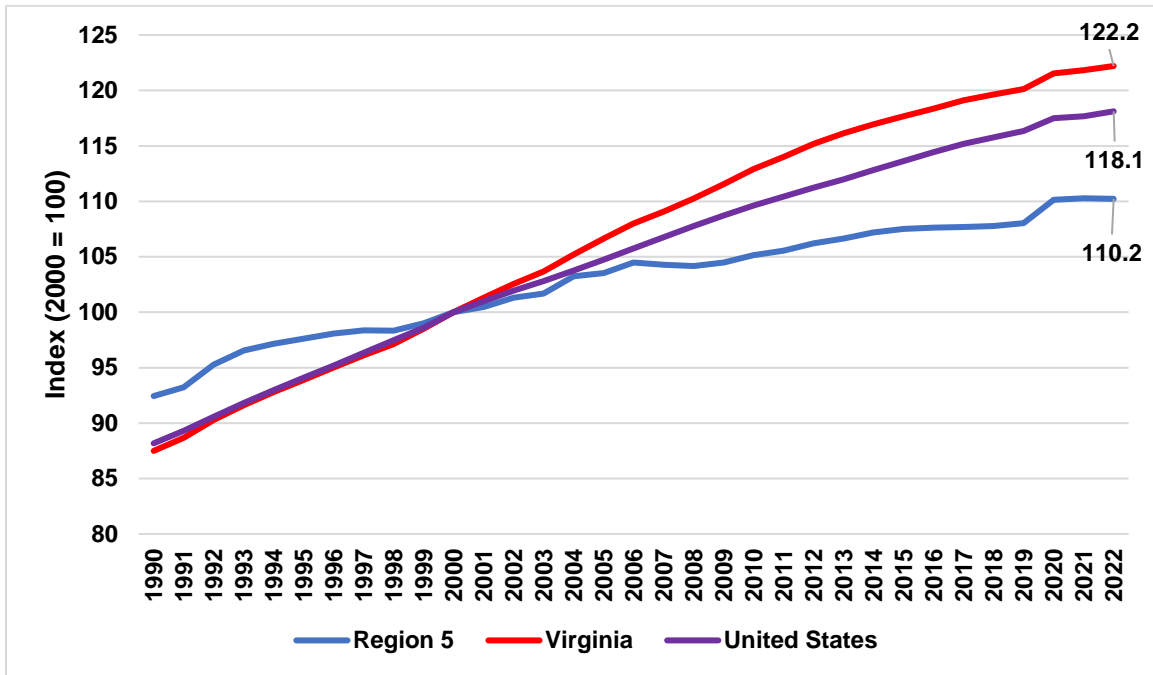


Source: United States Census Bureau, Population Estimates, various years. Population estimates as of July 1st of the corresponding year. Region 5 estimates are aggregated from county-level population estimates to ensure consistency with city and county-level estimates and to align with GO Virginia region definitions.

Figure 3 allows us to draw back and compare population growth in Region 5 with Virginia and the United States. It is important to note that population growth slowed each decade for Region 5, Virginia, and the United States. However, the average annual rate of population growth in Region 5 has been consistently slower than the state or the nation. From 2000 to 2022, Region 5’s total population increased by 10.2%. Over the same period, Virginia’s population increased by 22.2% while the nation’s population increased by 18.1%. If we focus on the current decade, we observe that the average annual rate of population growth for Region 5 was essentially zero (0.04%) while Virginia and the United States grew at an annual average rate of 0.3%, respectively. We must be careful to note the COVID-19 pandemic adversely impacted population growth and it is an open question of whether population growth will return to previously observed rates in the latter half of the current decade.



**Figure 3 - Index of Population Growth for the U.S., Virginia, and Region 5  
1990 – 2022**



Source: U.S. Census Bureau, 1990 Components of Population Change, 2000 Intercensal Estimates, 2009, 2019, and 2022 Population Estimates and Dragas Center for Economic Analysis and Policy. Estimates, where possible, are for July 1<sup>st</sup> for comparison purposes.

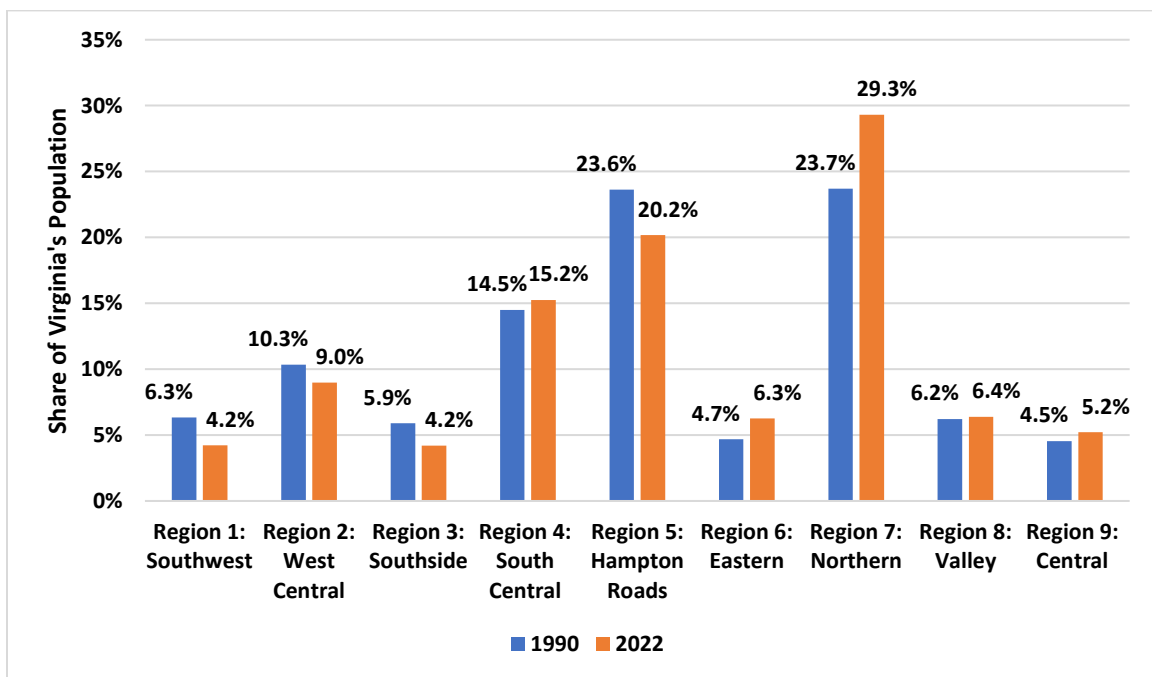
Region 5's slower rate of population growth relative to that of Regions 4 (South Central), 6 (Eastern), and 7 (Northern) has shifted the progression of the geographic population center of Virginia. Prior to 1960, the U.S. Census estimated that the geographic population center of Virginia was west of Richmond. In 1970, the geographic population center began a dramatic shift to the northeast.<sup>1</sup> In 2020, the estimated geographic population center in Virginia was near James Madison's Montpelier. By 2040, the geographic population center will likely be near Fredericksburg, and the Weldon Cooper Center estimates that one-half of the state's population will live in Northern Virginia.<sup>2</sup>

<sup>1</sup> U.S. Census Bureau. Historical State Centers of Population by State for 1810-2020 Censuses.

<sup>2</sup> University of Virginia Weldon Cooper Center for Public Service, Virginia Population Projections Map, Available at: <https://demographics.coopercenter.org/virginia-population-projections-interactive-map>

Relatively faster population growth in Regions 4, 6, and 7 has, in effect, pulled the population center of the Commonwealth towards an area bounded in the southwest by the Richmond metropolitan area and in the northeast by the Virginia portion of the Washington, D.C., metropolitan area. The disparities in population growth are evident in each region’s share of Virginia’s population (Figure 4). Regions that grew slower than Virginia (or lost population) saw their share of Virginia’s population decline while regions that grew faster than the Virginia average saw their shares grow.

**Figure 4 – GO Virginia Regions: Share of Virginia’s Population 2022**



Source: United States Census Bureau, Population Estimates, various years. Population estimates as of July 1st of the corresponding year. Region 5 estimates are aggregated from county level population estimates to ensure consistency with city and county level estimates and to align with GO Virginia region definitions.

**Table 1 - Population Growth for the U.S., Virginia, and Go Virginia Regions  
1990, 2000, 2010, 2020, and 2022**

Region	1990	2000	2010	2020	2022	1990-1999 Annual Growth	2000-2009 Annual Growth	2010-2019 Annual Growth	2020-2022 Annual Growth
Region 1: Southwest	393,511	398,740	401,784	370,586	366,695	0.2%	0.1%	-0.7%	-0.5%
Region 2: West Central	643,350	700,085	762,197	779,485	779,898	0.8%	0.8%	0.3%	0.0%
Region 3: Southside	366,116	387,778	383,733	365,657	364,703	0.6%	-0.1%	-0.6%	-0.1%
Region 4: South Central	900,854	1,036,200	1,177,724	1,302,426	1,323,751	1.4%	1.4%	0.9%	0.8%
<b>Region 5: Hampton Roads</b>	<b>1,468,905</b>	<b>1,589,071</b>	<b>1,670,831</b>	<b>1,750,192</b>	<b>1,751,462</b>	<b>0.8%</b>	<b>0.5%</b>	<b>0.3%</b>	0.0%
Region 6: Eastern	291,414	376,459	470,994	527,196	544,248	2.6%	2.3%	1.1%	1.6%
Region 7: Northern	1,472,561	1,829,631	2,245,500	2,550,646	2,545,650	2.1%	2.0%	1.3%	-0.1%
Region 8: Valley	386,523	445,222	509,080	547,562	554,733	1.4%	1.4%	0.7%	0.7%
Region 9: Central	282,699	336,206	401,856	442,721	452,479	1.7%	1.9%	1.0%	1.1%
Virginia	6,216,884	7,105,817	8,023,699	8,636,471	8,683,619	1.3%	1.2%	0.7%	0.3%
United States	248,790,925	282,162,411	309,321,666	331,511,512	333,287,557	1.2%	0.9%	0.7%	0.3%

*Source: U.S. Census Bureau, Annual Intercensal Population Estimates 1990-2019, Vintage 2022 Population Estimates and Dragas Center for Economic Analysis and Policy. Percentages may not sum to 100 percent due to rounding. Estimated annual growth is the Compound Annual Growth Rate. Estimates, where possible, are for July 1<sup>st</sup> for comparison purposes. Resident population of the United States.*

Table 2 displays the population growth rates for the localities in Region 5. Virginia Beach, the largest city in the Region, grew at an average annual rate of 0.7% from 1990 to 1999. In the first decade of the century, average annual population growth in Virginia Beach fell to 0.2% and then increased slightly to 0.3% from 2010 to 2019. However, Virginia Beach lost population this decade, with the resident population falling from 459,646 in 2020 to 455,618 in 2022.

Chesapeake has, over the last three decades, moved from the fourth largest city in Region 5 to the second largest city in the region. As with Virginia Beach, as its population increased, its average annual rate of population growth slowed, from 2.8% (1990 to 1999) to 1.1% (2000 to 2009), to 1.0% (2010 to 2019), and finally to 0.5% (2020 to 2022). Suffolk also experienced rapid growth over the last three decades, with population growing at an average rate of 2.0% (1990 to 1999), 3.0% (2000 to 2009), 0.9% (2010 to 2019), and then increasing to 2.0% (2020 to 2022). Suffolk has now eclipsed Portsmouth in size and could, if growth continues, approach the size of Hampton by the 2030s.

While Chesapeake and Suffolk experienced above average population growth rates over the last decade, the populations of Norfolk and Portsmouth declined absolutely. Hampton's population declined from 2000 to 2020 but increased slightly this decade. A declining population is a signal that residents are "voting with their feet" about economic and social conditions. A declining population erodes the property tax base, degrades the business climate, and signals to investors and businesses that opportunities are better elsewhere.

Among the smaller localities in Region 5, Isle of Wight County, James City County, Williamsburg, and York County grew faster than Region 5 over the last decade. James City County continued to post the highest average annual population growth rates in Region 5, growing at an annual average rate of 1.4% from 2010 to 2019 and 1.7% from 2020 to 2022. Williamsburg and York County saw their populations grow at an average annual rate of 1.0% and 0.5%, respectively, from 2010 to 2019. From 2020 to 2022, Williamsburg's population grew by 1.4%

while York County's population maintained an average annual rate of population growth of 0.8%. On the other hand, the smaller localities of Accomack County, Northampton County, and Southampton County observed absolute population declines over the last decade. Franklin City, which saw its population contract at an average annual rate of 0.8% from 2010 to 2019, has seen its population increase at an average annual rate of 0.6% from 2020 to 2022. The population of Franklin City in 2022, however, was still smaller than in 2010.

Why are some localities growing while others are contracting? The continued shift of the U.S. population from rural to urban areas may help explain the declining populations of some smaller localities, but fails to explain the fortunes of Hampton, Norfolk, and Portsmouth. For large, urban areas of Region 5, economic opportunities are closely aligned with population growth. A declining population also presents a challenge for a region that wants to spur private sector job creation. If talent is leaving some cities in the region, workforce gaps may develop and persist, inhibiting the ability of the private sector to fill available jobs and create new jobs. Region 5 appears to be in a negative cycle of development where slow job growth erodes population growth which, in turn, further erodes prospects for robust economic growth.

**Table 2 - Population Growth for Region 5 and Region 5 Localities  
1990, 2000, 2010, 2020, and 2022**

<b>Region</b>	<b>1990</b>	<b>2000</b>	<b>2010</b>	<b>2020</b>	<b>2022</b>	<b>1990-1999</b>	<b>2000-2009</b>	<b>2010-2019</b>	<b>2020-2022</b>
Accomack County	31,803	38,215	33,148	33,388	33,191	1.9%	-1.5%	-0.3%	-0.3%
Chesapeake City	153,335	200,224	223,556	249,803	252,488	2.8%	1.1%	1.0%	0.5%
Franklin City	8,444	8,269	8,579	8,149	8,247	0.2%	0.3%	-0.8%	0.6%
Hampton City	134,245	146,054	137,415	137,276	138,037	0.9%	-0.6%	-0.2%	0.3%
Isle Of Wight County	25,178	29,849	35,316	38,702	40,151	1.7%	1.9%	0.6%	1.9%
James City County	35,037	48,536	67,661	78,478	81,199	3.3%	3.5%	1.4%	1.7%
Newport News City	172,324	180,236	180,888	186,033	184,306	0.5%	0.0%	-0.1%	-0.5%
Norfolk City	261,425	234,986	242,999	237,738	232,995	-1.2%	0.3%	0.0%	-1.0%
Northampton County	13,089	13,025	12,409	12,208	11,900	0.0%	-0.5%	-0.6%	-1.3%
Poquoson City	11,033	11,582	12,148	12,472	12,582	0.5%	0.5%	0.1%	0.4%
Portsmouth City	103,833	100,337	95,451	97,954	97,029	-0.3%	-0.6%	-0.1%	-0.5%
Southampton County	17,035	17,493	18,640	17,952	17,932	0.3%	0.7%	-0.6%	-0.1%
Suffolk City	52,220	64,216	84,813	94,697	98,537	2.0%	3.0%	0.9%	2.0%
Virginia Beach City	395,542	426,918	438,859	459,646	455,618	0.7%	0.2%	0.3%	-0.4%
Williamsburg City	11,701	12,012	13,727	15,468	15,909	0.3%	1.5%	1.0%	1.4%
York County	42,661	57,119	65,222	70,228	71,341	3.0%	1.5%	0.5%	0.8%
<b>Hampton Roads</b>	<b>1,468,905</b>	<b>1,589,071</b>	<b>1,670,831</b>	<b>1,750,192</b>	<b>1,751,462</b>	<b>0.8%</b>	<b>0.5%</b>	<b>0.3%</b>	0.0%

*Source: U.S. Census Bureau, 1990 Components of Population Change, 2000 Intercensal Estimates, 2009, 2019, and 2022 Population Estimates and Dragas Center for Economic Analysis and Policy. Percentages may not sum to 100 percent due to rounding. Estimated annual growth is the Compound Annual Growth Rate. Estimates, where possible, are for July 1<sup>st</sup> for comparison purposes. Resident population of the United States.*

## Components of Population Change in Region 5

Population change is driven by three components: the natural increase in the population (births minus deaths), net domestic migration (domestic arrivals minus domestic departures), and net international migration (international arrivals minus international departures). Regions that are growing typically have more births than deaths and inflows of new residents that are greater than outflows of current residents.

We first review the components of population change for the previous decade before focusing on the data for the current decade (Figure 5).<sup>3</sup> We first note that the estimates for 2010 represent the change from the decennial Census date (April 1, 2020) to June 30, 2019. From April 1, 2010 to June 30, 2019, the natural increase of the population in Region 5 was 78,144. Births outnumbered deaths in each year of the previous decade, however, after peaking in 2012 at 10,173, the natural increase declined in each subsequent year. In 2019, there were 6,295 more births than deaths in Region 5, the lowest natural increase in the population for the decade.

From April 1, 2010 to June 30, 2019, there were 36,675 more international migrants to Region 5 than residents who departed Region 5 for international destinations. As with the natural increase in the population, net international migration peaked at 7,585 in 2012 and declined to 1,199 in 2019. The decline in international migration from 2016 to 2019 was, in part, to a shift in immigration policies at the federal level.

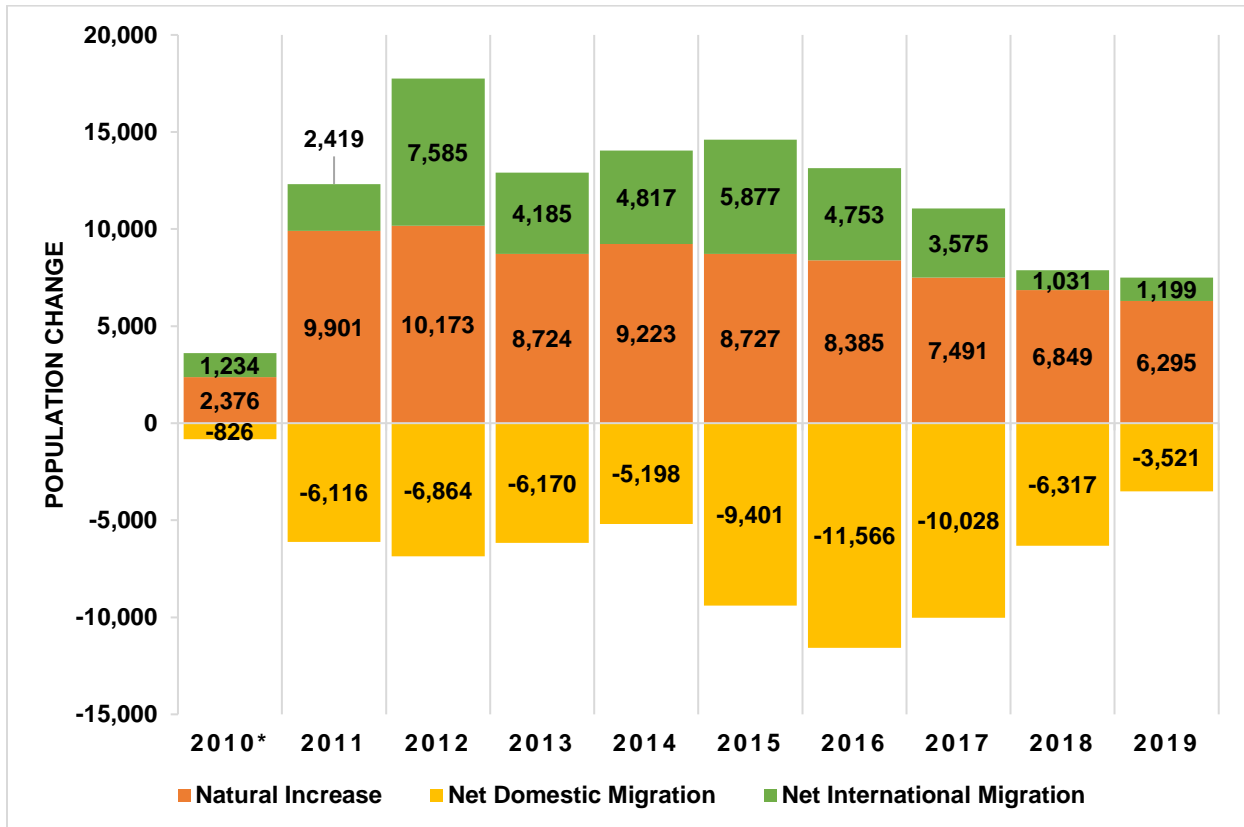
Figure 5 reveals that net domestic migration from April 1, 2010 to June 30, 2019 was negative. In total, there were 66,007 more domestic departures from Region 5 than domestic arrivals over this period. In 2016, 11,566 more residents of Region 5 left for other domestic locations than arrived from other parts of the nation. In 2019, net domestic migration remained

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<sup>3</sup> We remind the reader that the population estimates program “resets” with each decennial Census and present the data from 2019 and 2022 Population Estimates program in one figure for presentation purposes. The components of population change estimate the change in population from July 1 to June 30, thus, the estimates for 2019 represent the change in the population components from July 1, 2018 to June 30, 2019. The one exception is the decennial year, where the estimates represent April 1 to June 30.

negative, however, it was only -3,521 individuals. While this may have appeared to be good news, as we will see, the negative net domestic migration trend continued in the current decade.

**Figure 5 - Components of Population Change for Region 5  
April 1, 2010 – June 30, 2019**



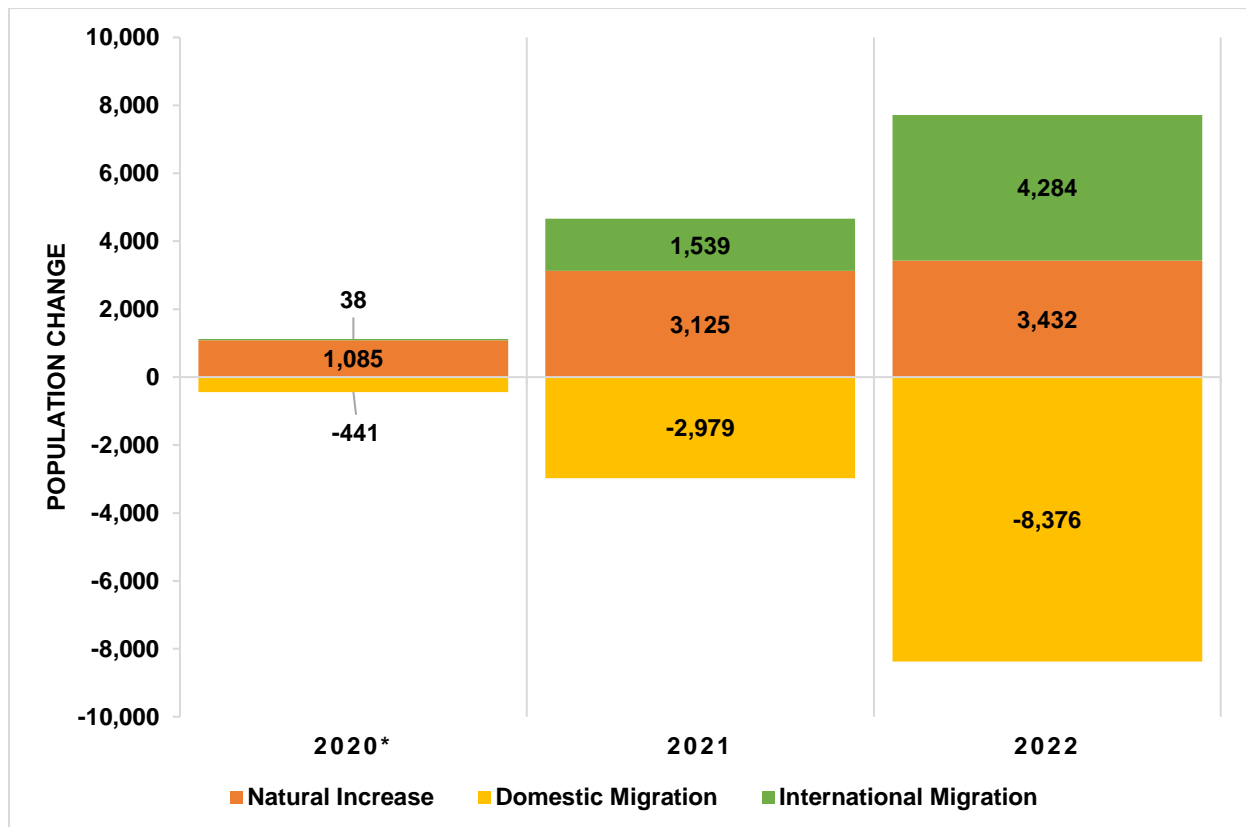
Source: U.S. Census Bureau, 2019 Components of Change Estimates and Dragas Center for Economic Analysis and Policy. With the exception of 2010, the data represent the change from July 1 of the preceding year to June 30 of the current year. \*The data for 2010 represent the change from April 1, 2010, to June 30, 2010. Population residual estimates not included.

Turning to the current decade, we remind the reader that the estimates for 2020 are for April 1, 2020 to June 30, 2020. In 2021 and 2022, the natural change in the population in Region 5 increased by 3,125 and 3,432, respectively, however, these levels were less than those observed in the previous decade. Negative net domestic migration flows increased to -2,979 in 2021 and to -8,376 in 2022, the highest levels of net domestic outmigration observed since 2017. Net international migration also increased to 1,539 in 2021 and again to 4,284 in 2022 but was not sufficient to offset the flows of residents leaving for other domestic locations in the United



States. Net negative domestic migration was large enough to eclipse the natural change in the population and net international migration, leading to a decline in the overall population of Region 5 in 2022.

**Figure 6 - Components of Population Change for Region 5  
April 1, 2020 – June 30, 2022**



Source: U.S. Census Bureau, 2022 Components of Change Estimates and Dragas Center for Economic Analysis and Policy. With the exception of 2020, the data represent the change from July 1 of the preceding year to June 30 of the current year. \*For 2020, the data represent the change from April 1, 2020 to June 30, 2020. Population residual estimates not included.

As illustrated in Table 3, from 2010 to 2019, two regions in Virginia, (Southwest) and Region 3 (Southside), saw absolute declines in total population over this period as deaths outnumbered births (negative natural increase), domestic departures outnumbered domestic arrivals (negative net domestic migration), and low levels of positive net international migration. Region 2 (West Central) also observed more deaths than births, but the negative natural decrease in the population was offset by positive domestic and international migration. Among the larger GO Virginia Region 5: 2023 Growth and Diversification Plan Biennial Update

regions in Virginia, Region 5 was joined by Region 7 (Northern) and Region 1 (Southwest) in experiencing negative net domestic migration from 2010 to 2019. Combined, Region 5 and Region 7 saw over 151,000 more domestic departures than arrivals over this period. While some of these departures were for other locations in the Commonwealth, some residents left the state entirely, as evidenced by Virginia's negative domestic migration of -71,103 from April 1, 2010 to June 30, 2019. Unlike Region 5, Region 7's negative domestic migration was completely offset by its net positive international migration.

Table 4 highlights the components of population change for the GO Virginia regions and the Commonwealth from April 1, 2020 to June 30, 2022. Region 1 (Southwest), Region 3 (Southside), and Region 7 (Northern) lost population this decade, although for different reasons. Regions 1, 2 (West Central), 3, and 8 (Valley) observed more deaths and births over the period but, in the case of Regions 2 and 8, net positive domestic and international migration offset the negative natural change in the population. Regions 5 and 7 continued to observe negative net domestic migration which was offset partially by positive net international migration. Virginia saw its population increase as negative net domestic migration was fully offset by net positive international migration flows and a positive natural increase in the population.

**Table 3 - Components of Population Change**

**April 1, 2010 – June 30, 2019**

<b>Region</b>	<b>Natural Increase</b>	<b>Domestic Migration</b>	<b>International Migration</b>	<b>Population Residual</b>	<b>Population Change</b>
Region 1: Southwest	-13,186	-12,834	441	-51	-25,630
Region 2: West Central	-594	5,206	14,430	-362	18,680
Region 3: Southside	-11,331	-9,788	1,324	-58	-19,853
Region 4: South Central	38,569	35,256	27,806	-88	101,543
<b>Region 5: Hampton Roads</b>	<b>78,144</b>	<b>-66,007</b>	<b>36,675</b>	<b>-220</b>	<b>48,592</b>
Region 6: Eastern	16,744	26,138	5,525	-79	48,328
Region 7: Northern	218,310	-85,840	160,069	1,741	294,280
Region 8: Valley	6,141	17,934	7,802	-43	31,834
Region 9: Central	10,525	18,832	7,469	-130	36,696
<b>Virginia</b>	<b>343,322</b>	<b>-71,103</b>	<b>261,541</b>	<b>710</b>	<b>534,470</b>

*Source: U.S. Census Bureau, 2019 Components of Change Estimates and Dragas Center for Economic Analysis and Policy. According to the U.S. Census Bureau, the population residual is equal to the change that cannot be attributed to any specific demographic component of population change.*

**Table 4 - Components of Population Change**

**April 1, 2020 – June 30, 2022**

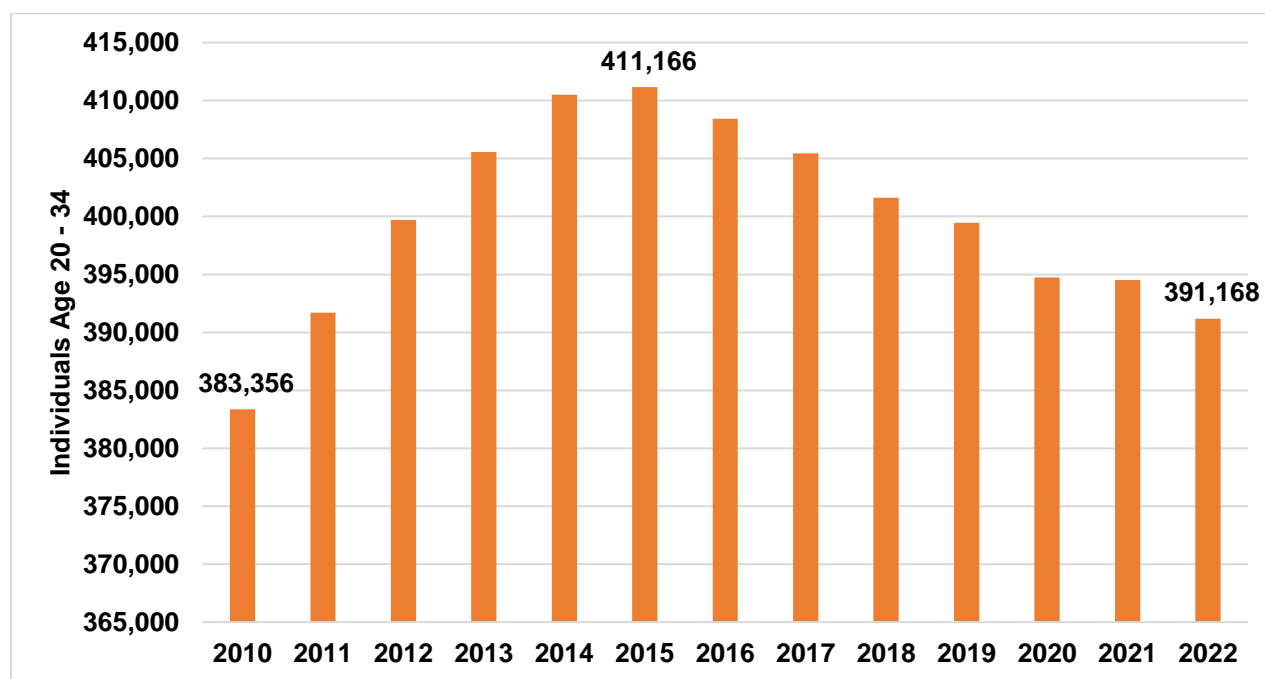
<b>Region</b>	<b>Natural Increase</b>	<b>Domestic Migration</b>	<b>International Migration</b>	<b>Population Residual</b>	<b>Population Change</b>
Region 1: Southwest	-6,904	2,264	267	86	-4,287
Region 2: West Central	-5,562	3,333	2,360	102	233
Region 3: Southside	-5,558	3,603	528	83	-1,344
Region 4: South Central	2,277	14,547	6,169	296	23,289
<b>Region 5: Hampton Roads</b>	<b>7,642</b>	<b>-11,796</b>	<b>5,861</b>	<b>563</b>	<b>2,270</b>
Region 6: Eastern	1,038	16,273	1,448	-175	18,584
Region 7: Northern	36,064	-73,717	32,426	518	-4,709
Region 8: Valley	-1,662	7,344	2,037	11	7,730
Region 9: Central	595	8,374	1,666	-166	10,469
<b>Virginia</b>	<b>27,930</b>	<b>-29,775</b>	<b>52,762</b>	<b>1,318</b>	<b>52,235</b>

*Source: U.S. Census Bureau, 2022 Components of Change Estimates and Dragas Center for Economic Analysis and Policy. According to the U.S. Census Bureau, the population residual is equal to the change that cannot be attributed to any specific demographic component of population change.*

## Population Change Among Adults Ages 20 to 34 Years in Region 5

Whether a region can retain and attract younger individuals is key to economic growth. Inflows of younger individuals are a signal of the attractiveness of a region not only in terms of economic opportunities, but also with respect to quality of life.<sup>4</sup> These inflows are needed as older generations retire from the workforce. Figure 7 illustrates the population of individuals ages 20 to 34 in Region 5 from 2010 to 2022. From 2010 to 2015, the number of younger adults increased in the region, growing from 383,356 (22.9% of the population) to 411,166 in 2015 (24.1% of the population). However, from 2016 to 2022, the population of individuals ages 20 to 34 in Region 5 has declined, falling to 391,168 individuals (22.3% of the population) in 2022.

**Figure 7 - Population Age 20 – 34 in Region 5  
2010 – 2022**

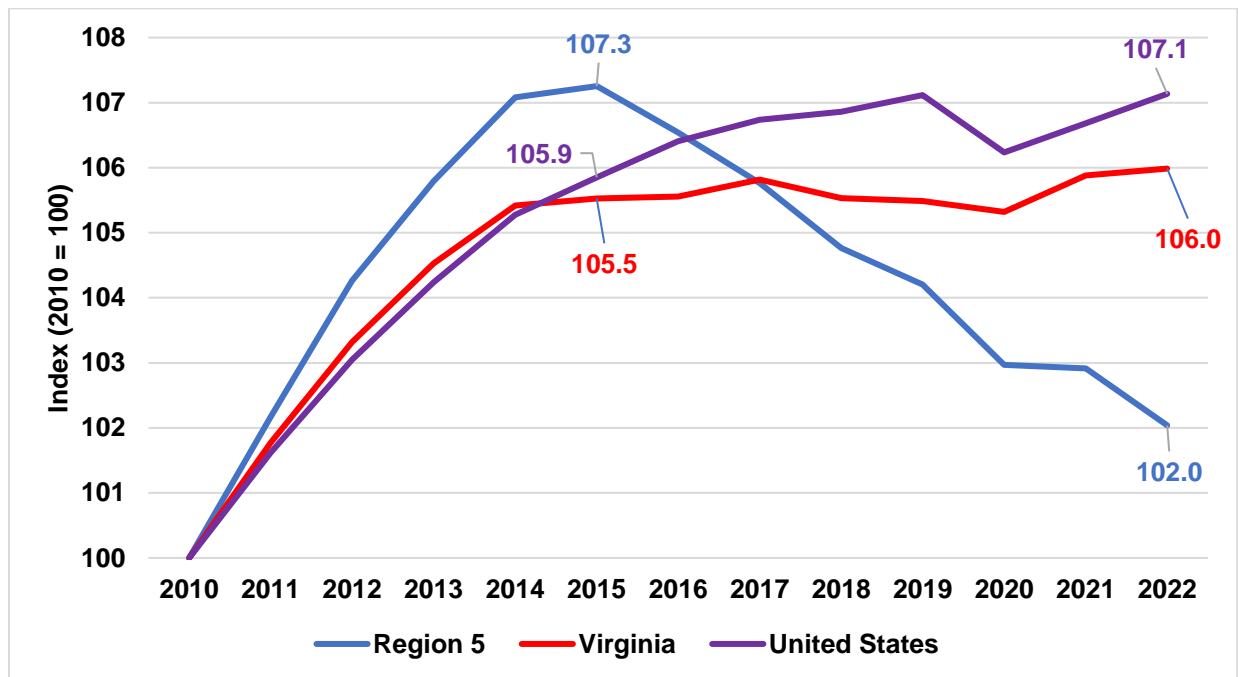


Source: U.S. Census Bureau, 2019 and 2022 Components of Change Estimates and Dragas Center for Economic Analysis and Policy.

<sup>4</sup> Individuals in “Gen Z” were born between 1997 and 2012 while “Millennials” were born between 1981 and 1996. ‘Gen X’ spans birth years 1965 to 1980 while ‘Baby Boomers’ span two time periods, 1946 to 1954 and 1955 to 1964.

Comparing Region 5’s performance in attracting and retaining residents ages 20 to 34 relative to that of Virginia and the nation provides two parts of the story (Figure 8). From 2010 to 2015, Region 5’s population age 20 to 34 years old grew faster than that of the Commonwealth or the United States. Since 2015, however, there was a reversal of fortune. In 2015, Region 5’s population of adults age 20 to 34 was 7.3% larger than 2010; by 2020, this population was only 2.0% larger than 2010. We note that this is not because other segments of the population grew quickly, but because the absolute number of adults age 20 to 34 in Region 5 fell from the peak observed in 2015. Over the same period, i.e. from 2015 to 2020, the population of adults age 20 to 34 grew by 0.5 percentage points in Virginia and 1.2 percentage points for the United States.

**Figure 8 - Age 20 – 34 Population Growth, United States, Virginia, and Region 5  
2010 – 2022**



Source: U.S. Census Bureau, 2019 and 2022 Components of Change Estimates and Dragas Center for Economic Analysis and Policy.

One possible explanation for the reversal of Region 5’s fortunes with respect to younger adults is the relatively tepid pace of economic growth in the previous decade. Net domestic

migration, which was negative over the decade, was likely driven, in part, by younger adults.<sup>5</sup> We can reasonably conclude that part of the domestic outmigration from Region 5 was younger individuals. Whether these individuals were seeking better economic fortunes, an improved quality of life, or cultural amenities is not known. The outright decline of younger individuals over the last five years is a troubling development for the economic prospects of the region and will likely impede efforts to close workforce gaps and invigorate private sector growth.

Table 5 illustrates the change in the population age 20 to 34 for GO Virginia regions, Virginia, and the United States from 2010 to 2019 and 2020 to 2022.<sup>6</sup> From 2010 to 2019, Region 1 (Southwest) and Region 3 (Southside) experienced an absolute decline of the adult population age 20 to 34. On the other hand, Region 4 (South Central), Region 6 (Eastern), and Region 9 (Central) grew faster than the state or national average. The smaller increases in the young adult population for two of the most populous regions (Region 5 and Region 7) in the Commonwealth partly explain why Virginia experienced slower growth in the population of adults age 20 to 34 from 2010 to 2019.

In the current decade, two regions, Region 5 and Region 7, have experienced absolute declines in the population of adults age 20 to 34. This decline is troubling as these two regions made up almost 50% of Virginia's population in 2022. The good news is that other regions in the Commonwealth gained young adults from 2020 to 2022, and these gains offset the losses in Region 5 and Region 7. Drawing back, Virginia's population of adults age 20 to 34 grew slower than the nation last decade and this decade, a concerning development for economic growth in the Commonwealth in the future.

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<sup>5</sup> While the U.S. Census does estimate migration data with respect to age and racial characteristics, the latest data are for 2011 – 2015 and likely do not reflect the current environment.

<sup>6</sup> We remind the reader that the population estimates are consistent within decades and are “reset” each decennial Census.

**Table 5 - Age 20 – 34 Population, Virginia and GO Virginia Regions  
2010 - 2020**

<b>Region</b>	<b>2010 Population Ages 20 – 34</b>	<b>2019 Population Ages 20 – 34</b>	<b>2020 Population Ages 20 – 34</b>	<b>2022 Population Ages 20 – 34</b>	<b>Annual Growth 2010 – 2019</b>	<b>Annual Growth 2020 - 2022</b>
Region 1: Southwest	67,692	62,370	61,548	62,172	-0.9%	0.5%
Region 2: West Central	155,187	165,958	164,278	166,439	0.7%	0.7%
Region 3: Southside	64,341	63,265	63,428	64,353	-0.2%	0.7%
Region 4: South Central	238,886	267,159	271,932	277,572	1.3%	1.0%
<b>Region 5: Hampton Roads</b>	<b>383,356</b>	<b>399,472</b>	<b>394,728</b>	<b>391,168</b>	<b>0.5%</b>	<b>-0.5%</b>
Region 6: Eastern	84,813	97,873	98,508	102,203	1.6%	1.9%
Region 7: Northern	497,740	515,021	513,569	512,091	0.4%	-0.1%
Region 8: Valley	99,533	105,689	105,903	107,834	0.7%	0.9%
Region 9: Central	78,769	85,193	85,310	86,480	0.9%	0.7%
<b>Virginia</b>	<b>1,670,317</b>	<b>1,762,000</b>	<b>1,759,204</b>	<b>1,770,312</b>	<b>0.6%</b>	<b>0.3%</b>
<b>United States</b>	<b>63,664,529</b>	<b>68,194,912</b>	<b>67,635,647</b>	<b>68,207,079</b>	<b>0.8%</b>	<b>0.4%</b>

Source: U.S. Census Bureau, 2019 and 2022 Components of Change Estimates and Dragas Center for Economic Analysis and Policy.



## Gross Domestic Product at the Metropolitan Level

Nominal and real (inflation-adjusted) Gross Domestic Product (GDP) is a gauge of economic performance at the regional, state, and national level. GDP estimates are available quarterly at the national and state level, with lags of one and six months, respectively. At the metropolitan statistical and county level, GDP estimates are typically lagged one year, and these estimates are subject to substantial revision in the coming years. County level GDP estimates also do not aggregate to metropolitan area estimates, so our best measure of regional economic performance is at the Metropolitan Statistical Area (MSA) level. With these important caveats in mind, we first examine the economic performance of the Virginia Beach – Norfolk – Newport News (“Hampton Roads”) MSA.<sup>7</sup> Recently released estimates of Gross Domestic Product for Counties and MSAs by the Bureau of Economic Analysis (BEA) on December 8, 2022, include revised estimates for 2001-2020 and new data for 2021.

The shock and recovery from the COVID-19 pandemic is evident in Table 6, with real economic activity contracting by 2.5% in Hampton Roads from 2019 to 2020 and then expanding by 6.3% from 2020 to 2021. We estimate that real GDP grew by 2.4% in the region from 2021 to 2022 and forecast that real GDP will grow by 2.0% from 2022 to 2023. There are two immediate observations from the data: (1) real GDP growth in 2021 was sufficient to set a record for economic activity, and (2) if our forecasts contain a kernel of truth, Hampton Roads will experience its third consecutive year of economic growth in 2023 with a strong likelihood of a fourth consecutive year of growth in 2024. The region has not observed three consecutive years of real

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<sup>7</sup> The Virginia Beach – Norfolk – Newport News MSA consists of the following cities: Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg. The counties in the MSA are Camden County (North Carolina), Currituck County (North Carolina), Gates County (North Carolina), Gloucester County, Isle of Wight County, James City County, Mathews County, Southampton County, and York County. This geographic definition is slightly different than the Go Virginia Region 5 cities and counties. Where possible we will examine data at the Region 5 level, but, occasionally, we fall back on the MSA for certain data.

GDP growth since the Great Recession of 2007 - 2009. This turn of events is welcome news for a region that has struggled with anemic growth over the previous decade.

**Table 6 - Nominal and Real Gross Domestic Product in Millions of Dollars  
Hampton Roads, 2001 – 2023**

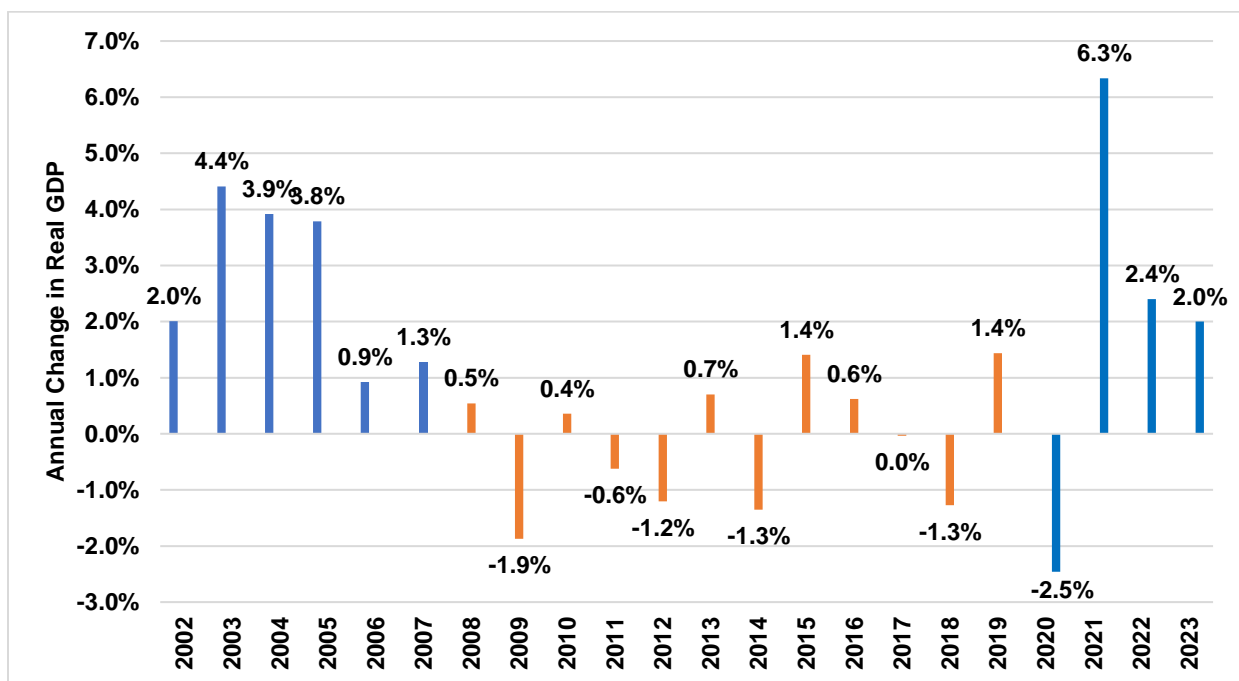
	<b>Nominal GDP</b>	<b>Real GDP (Base Year – 2012)</b>	<b>Year-over-Year Change in Real GDP</b>
<b>2001</b>	\$56,929	\$73,393	
<b>2002</b>	\$59,704	\$74,864	2.0%
<b>2003</b>	\$63,921	\$78,165	4.4%
<b>2004</b>	\$68,089	\$81,228	3.9%
<b>2005</b>	\$72,734	\$84,303	3.8%
<b>2006</b>	\$75,630	\$85,081	0.9%
<b>2007</b>	\$78,859	\$86,173	1.3%
<b>2008</b>	\$80,833	\$86,640	0.5%
<b>2009</b>	\$81,382	\$85,019	-1.9%
<b>2010</b>	\$82,540	\$85,326	0.4%
<b>2011</b>	\$83,077	\$84,794	-0.6%
<b>2012</b>	\$83,770	\$83,770	-1.2%
<b>2013</b>	\$85,988	\$84,359	0.7%
<b>2014</b>	\$86,702	\$83,221	-1.3%
<b>2015</b>	\$90,208	\$84,393	1.4%
<b>2016</b>	\$92,190	\$84,916	0.6%
<b>2017</b>	\$93,558	\$84,887	0.0%
<b>2018</b>	\$94,310	\$83,807	-1.3%
<b>2019</b>	\$97,950	\$85,010	1.4%
<b>2020</b>	\$97,716	\$82,921	-2.5%
<b>2021</b>	\$107,068	\$88,176	6.3%
<b>2022*</b>	\$116,597	\$90,292	2.4%
<b>2023*</b>	\$124,759	\$92,098	2.0%

Source: U.S. Bureau of Economic Analysis and Dragas Center for Economic Analysis and Policy.  
\*2022 estimate and 2023 forecast provided by the Dragas Center for Economic Analysis and Policy.

Figure 9 shows the annual change in real GDP for the Hampton Roads MSA from 2002 to 2023. From 2001 to 2007, the real GDP grew at an annual average rate of 2.4%, outpacing Virginia and the United States as rapid increases in defense spending in the region fueled growth. The decade following the Great Recession of 2007 – 2009 saw no discernable growth in real GDP in Hampton Roads. In 2010, real GDP was \$85.3 billion. In 2019, real GDP was \$85.0 billion. In

the first half of the previous decade, the lingering impacts of the Great Recession, coupled with declines in federal spending in the region and a lackluster private job creation, contributed to the region’s anemic economic performance. In the second half of the last decade, federal spending in the region increased, however, private sector job creation continued to lag that the state and the nation.

**Figure 9 - Growth in Real Gross Domestic Product  
Virginia Beach-Norfolk-Newport News, VA-NC Metropolitan Statistical Area  
2002 – 2023\***

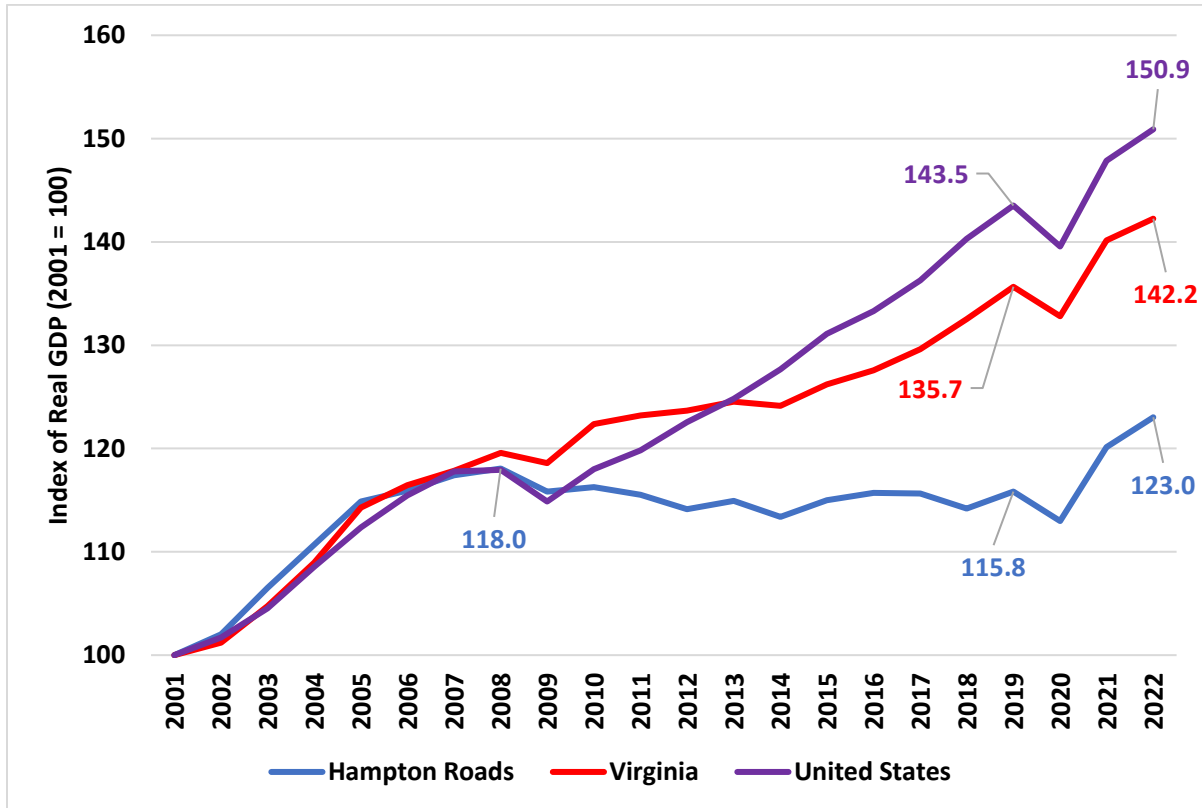


Source: U.S. Bureau of Economic Analysis. Real GDP in chained 2012 dollars. Annual percentage change in real GDP. \*2022 estimate and 2023 forecast provided by the Dragas Center for Economic Analysis and Policy.

Figure 10 compares real economic growth in the Hampton Roads MSA, Virginia, and the United States from 2001 to 2022. From 2001 to 2008, real GDP in Hampton Roads grew by 18.0%, approximately the same as the nation and 1.5 percentage points less than the Commonwealth. The next decade, however, saw real GDP contract in Hampton Roads such that real economic activity was only 15.8% larger in 2019 than it was in 2001, a decline of 2.2 percentage points from 2008. In 2019, real economic activity in Virginia was 16.1 percentage

points higher than 2008. For the United States, real GDP was 25.6 percentage points higher in 2019 than 2008.

**Figure 10 - Index of Real GDP  
Hampton Roads Metropolitan Statistical Area, Virginia, and the United States  
2001 – 2022\***



Source: U.S. Bureau of Economic Analysis. Real GDP in 2012 chained dollars. \*2022 estimate for Hampton Roads provided by the Dragas Center for Economic Analysis and Policy.

The shock of 2020 and subsequent recovery are evident in Figure 9. We estimate that, at the end of 2022, real economic activity in Hampton Roads was 7.2 percentage points higher than 2019, eclipsing the performance of Virginia (6.6 percentage points) and nearing that of the United States (7.4 percentage points). The open question now is whether the region can sustain this level of economic performance over the coming years or whether it will return to the “start-stop” pattern of economic growth observed during the previous decade.

## Gross Domestic Product Across GO Virginia Regions

In Table 7, we use BEA estimates of county level GDP to estimate GDP for each GO Virginia region. As with the metropolitan level estimates of GDP, the county level estimates are subject to revision and are published with a significant lag. As national and state GDP data are published quarterly, county level estimates will not typically sum to state or national level estimates. While lagged, the estimates allow us to compare economic performance across and within GO Virginia regions. The estimates in Table 7 show that the economic center of gravity in the Commonwealth has shifted towards Regions 4 and 7 over the past decade. Region 7 (Northern) accounted for approximately 42.7% of economic activity in Virginia in 2021, almost 3 percentage points higher than 2010. Region 4's share of economic activity increased by 1.2 percentage points over this period while Region 5's share decreased by 2.2 percentage points.

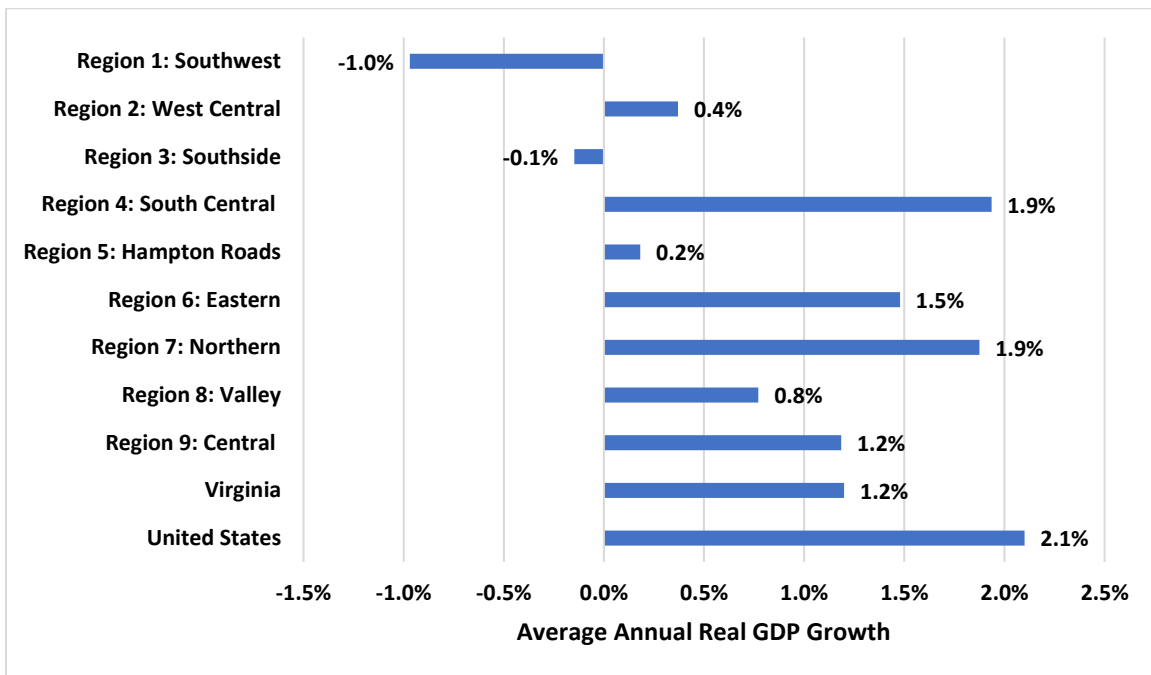
**Table 7 - Real Gross Domestic Product, Virginia and GO Virginia Regions  
2010 and 2021  
Billions of 2012 Dollars**

Region	2010	Share of Virginia's 2010 GDP	2021	Percent of Virginia's 2021 GDP
Region 1: Southwest	\$13.4	3.0%	\$12.0	2.4%
Region 2: West Central	\$31.0	7.0%	\$32.2	6.4%
Region 3: Southside	\$11.1	2.5%	\$11.0	2.2%
Region 4: South Central	\$66.7	15.1%	\$82.3	16.3%
<b>Region 5: Hampton Roads</b>	<b>\$86.4</b>	<b>19.6%</b>	<b>\$88.2</b>	<b>17.4%</b>
Region 6: Eastern	\$15.4	3.5%	\$18.1	3.6%
Region 7: Northern	\$175.8	39.8%	\$215.7	42.7%
Region 8: Valley	\$23.1	5.2%	\$25.1	5.0%
Region 9: Central	\$18.4	4.2%	\$20.9	4.1%
Virginia	\$441.2	--	\$505.3	--

*Source: U.S. Bureau of Economic Analysis, Gross Domestic Product by County, 2019 and Dragas Center for Economic Analysis and Policy. Real GDP in 2012 chained dollars. Percentages may not sum to 100 percent due to rounding.*

In Figure 11, we compare the average annual rate of GDP growth from 2010 to 2021 across GO Virginia regions. Over this period, Region 4 and Region 7 grew at an annual average rate of 1.9%, slightly less than the average rate of 2.1% for the nation and 0.7 percentage points higher than the Commonwealth. Region 6 also grew faster than the state average, while Region 9 grew at the same rate as Virginia. Region 5’s economic performance was third worst, only better than Region 3 (-0.1%) and Region 1 (-1.0%).

**Figure 11 – GO Virginia Regions, Real GDP Growth, 2010 – 2021**



Source: U.S. Bureau of Economic Analysis, *Gross Domestic Product by County, 2021* and Dragas Center for Economic Analysis and Policy. Real GDP in 2012 chained dollars. Percentages may not sum to 100 percent due to rounding. Estimated annual growth is the compound annual growth rate.

Table 8 displays the GDP estimates for localities within Region 5. In 2010, Norfolk (23.5%), Virginia Beach (21.6%), Newport News (12.1%), and Chesapeake (10.6%) accounted for 67.7% of economic activity in the region in 2010. Adding in Hampton (7.6%), Portsmouth (5.9%), and Suffolk (4.2%) encompassed 85.5% of economic activity in 2010. Including James City County and Williamsburg yielded 90.4% of real GDP in 2010. By 2021, Norfolk, Virginia Beach, Newport News, and Chesapeake accounted for 68.9% of activity in the region. Including Hampton,

Portsmouth, and Suffolk covered 86.6% of real GDP in 2021 and the addition of James City County and Williamsburg encompassed 92.6% of all economic activity in Region 5 in 2021. In other words, in 2021, almost \$0.93 every dollar of economic activity in 2019 occurred in these localities, and the share has increased since 2010. While Region 5 is geographically diverse, economic activity is increasingly concentrated in Region 5's larger independent cities.

**Table 8 - Real Gross Domestic Product by Region 5 Locality  
2010 and 2021  
Millions of Dollars**

Location	2010	Share of 2010 GDP	2021	Share of 2021 GDP	Estimated Annual Growth
Accomack County	\$2,681	3.1%	\$1,712	1.9%	-4.0%
Isle Of Wight County	\$1,827	2.1%	\$1,207	1.4%	-3.7%
Northampton County	\$550	0.6%	\$407	0.5%	-2.7%
Chesapeake City	\$9,143	10.6%	\$9,697	11.0%	0.5%
Hampton City	\$6,582	7.6%	\$6,112	6.9%	-0.7%
Newport News City	\$10,457	12.1%	\$12,906	14.6%	1.9%
Norfolk City	\$20,304	23.5%	\$17,545	19.9%	-1.3%
Portsmouth City	\$5,136	5.9%	\$5,616	6.4%	0.8%
Suffolk City	\$3,644	4.2%	\$3,860	4.4%	0.5%
Virginia Beach City	\$18,632	21.6%	\$20,599	23.4%	0.9%
James City+ Williamsburg, VA	\$4,226	4.9%	\$5,306	6.0%	2.1%
Southampton+ Franklin, VA	\$694	0.8%	\$708	0.8%	0.2%
York + Poquoson, VA	\$2,550	3.0%	\$2,498	2.8%	-0.2%
<b>Region 5</b>	<b>\$86,426</b>		<b>\$88,173</b>		

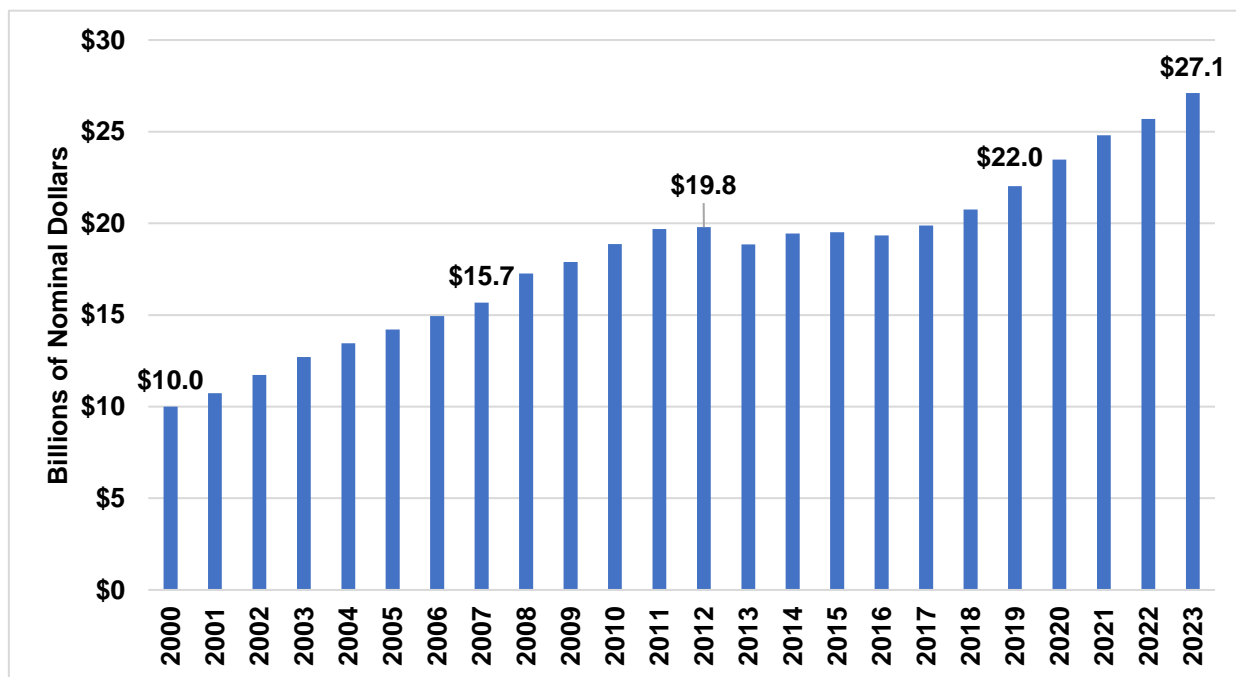
*Source: U.S. Bureau of Economic Analysis, Gross Domestic Product by County, 2021 and Dragas Center for Economic Analysis and Policy. Real GDP in 2012 chained dollars. Percentages may not sum to 100 percent due to rounding. When necessary, the BEA combines localities to produce GDP estimates. Estimated annual growth is the Compound Annual Growth Rate.*

### **Defense Spending and Federal Employment in Region 5**

Figure 12 displays direct nominal Department of Defense (DoD) spending in the Hampton Roads MSA from 2000 to 2023. DoD spending in the region increased by 56.9% from 2000 to

2007, fueling the surge in economic activity observed in this period. DoD spending increased by another 26.3% from 2007 to 2012, when nominal DoD spending in Region 5 peaked at \$19.8 billion. The passage of the Budget Control Act of 2011 and the imposition of discretionary spending caps, however, resulted in an approximately \$1 billion decline in direct DoD spending in 2013. DoD spending in the region did not return to 2012 levels until 2017. From 2017 to 2023, we estimate that direct DoD spending in the Hampton Roads metropolitan area increased by 36.3%, reaching an estimated \$27.1 billion in 2023.

**Figure 12 – Nominal Direct Department of Defense Spending in Hampton Roads  
Billions of Nominal Dollars  
2000 –2023\***



Source: Department of Defense and Dragas Center for Economic Analysis and Policy. \*Data for 2021 through 2023 are our estimates.

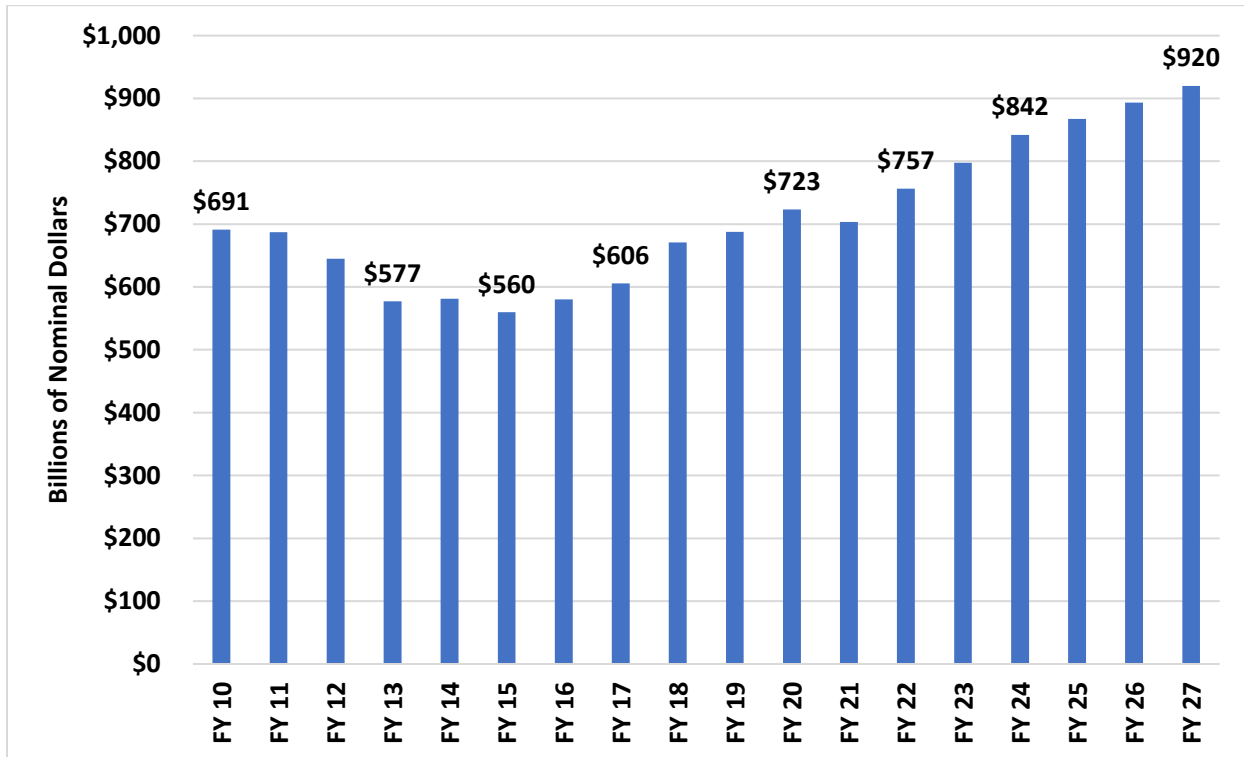
In the short term, we expect that DoD spending will continue to increase. In FY 2022, DoD’s base budget was \$756.6 billion, increasing to \$797.7 billion in FY 2023. We note that President Biden proposed a base DoD budget of approximately \$773 billion, and this was viewed as too low by authorizers and appropriators in Congress. With supplemental appropriations to assist Ukraine, the base DoD budget is likely to exceed \$800 billion in FY

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2023. The DoD budget request for FY 2024 submitted as part of the President’s budget proposal was \$842 billion.<sup>8</sup>

**Figure 13 – Nominal Department of Defense Discretionary Budget Authority  
Billions of Nominal Dollars  
Fiscal Year 2010 – Fiscal Year 2027**



Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University; Office of the Secretary of Defense (Comptroller) Department of Defense, Defense Budget Materials – FY 2023.

Total national defense spending in the President’s budget was \$880 billion for FY 24, rising to \$926 billion by FY 27. By 2033, national defense spending in this proposal was projected to rise to approximately \$1.06 trillion. We note that the Fiscal Responsibility Act of 2023 does not constrain national defense spending, and given rising geopolitical tensions in Europe and Asia, the possibility exists that the DoD base budget will exceed \$1 trillion in nominal dollars this decade. While increases in defense spending are typically good news for Hampton Roads, we should also recognize that “trees don’t grow to the sky.” In other

<sup>8</sup> [https://www.whitehouse.gov/wp-content/uploads/2023/03/budget\\_fy2024.pdf](https://www.whitehouse.gov/wp-content/uploads/2023/03/budget_fy2024.pdf)

words, at some point, the rise in DoD spending will stall, if not decline outright, echoing the drawdown after the end of the Cold War.

An important transmission mechanism of federal spending into the region is the employment of military personnel. The BEA estimates military employment at the county level, and we can aggregate these estimates to the regional level.<sup>9</sup> However, in 2021, the BEA released revised estimates to its employment statistics. While the military employment data remained unchanged from 2001 to 2015, there was a significant change in the estimates from 2016 onward. The revised estimates now classify military personnel by place of work and are based on estimates provided by the Defense Manpower Data Center (DMDC). Deployed personnel are no longer counted as employed in a region even though they may be stationed in a region. A sailor, for example, that is stationed on a ship that is based in Norfolk but is deployed overseas for an extended period, would not be counted as employed in Region 5. Given the number of active-duty personnel in Region 5 and that many of these personnel are deployed at some point during their residence in the region, this change negatively impacted estimates of military personnel employed in the region.

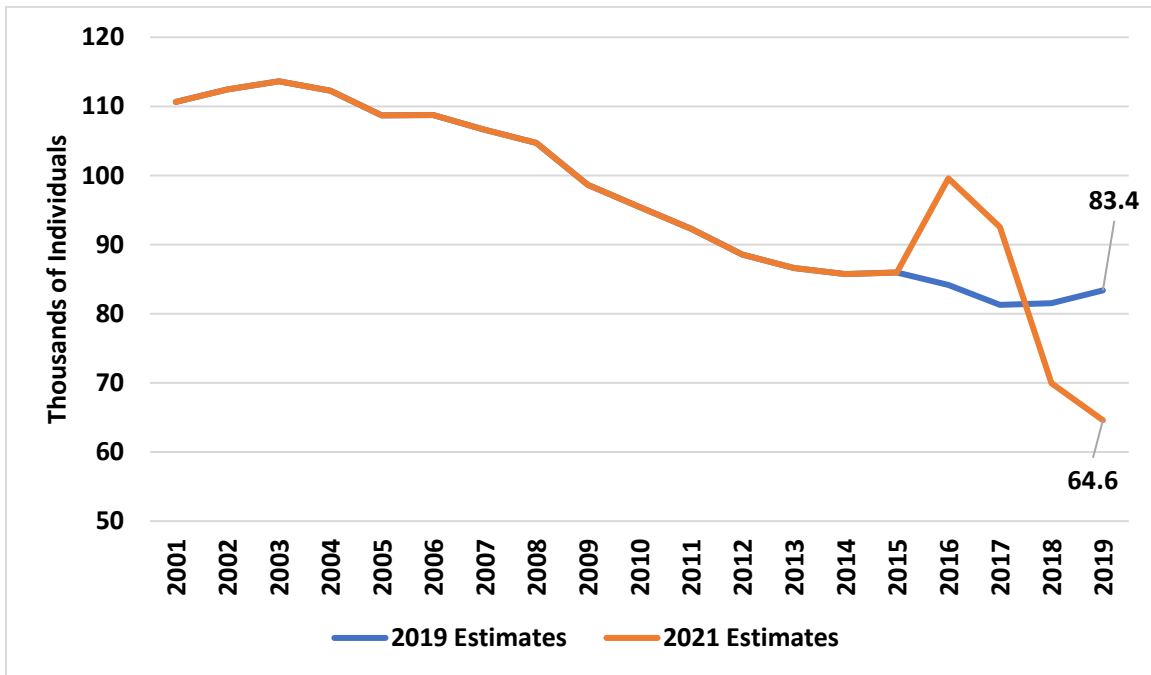
The change in methodology was not trivial. We illustrate the divergence of the new estimates from the previous series in Figure 14. The 2019 data, for example, estimated that there were 83,400 active-duty personnel in Region 5. The 2021 estimates lowered this number to 64,600. Obviously, if there were approximately 19,000 fewer soldiers, sailors, airmen, and Marines in Region 5, it would be noticeable. Our conversations with the BEA uncovered this error and, at some point, the estimates will be revised to reflect active-duty service members stationed but deployed elsewhere. Until this correction occurs, we do not present the BEA estimates for

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<sup>9</sup> For more information on how the BEA estimates employment and how these estimates differ from BLS and Census estimates, see <https://www.bea.gov/help/faq/104>.

military employment and compensation as they may not accurately reflect the presence of active-duty service members in the region.

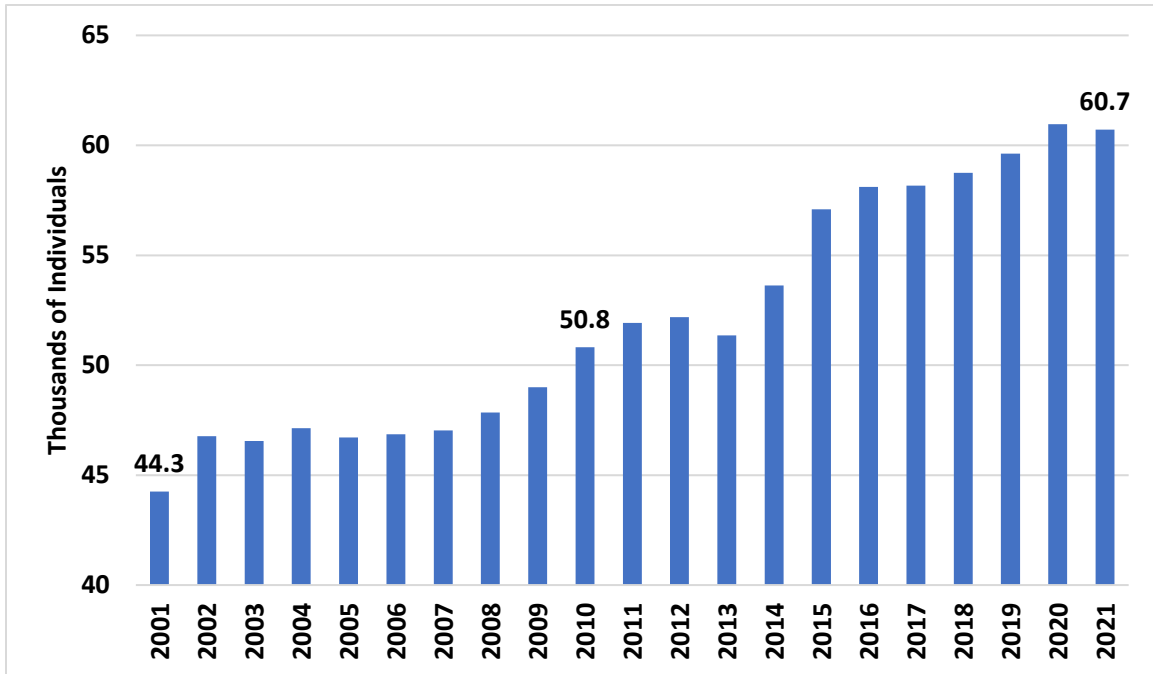
**Figure 14 – 2019 and 2021 Estimates of Military Employment in Region 5  
Thousands of Individuals  
2001 – 2019**



Source: U.S. Bureau of Economic Analysis, CAEMP25N, Total Full-Time and Part-Time Employment by NAICS Industry, and Dragas Center for Economic Analysis and Policy.

Federal civilian employment, on the other hand, was not impacted by BEA's change in methodology. We thus present these estimates to highlight the impact of the federal government on civilian employment across the Commonwealth. Figure 15 presents federal civilian employment in Region 5 from 2001 to 2021. From 2001 to 2011, federal civilian employment in Region 5 grew by 17.3%. The pace of federal civilian employment growth in the region did not slow significantly in the subsequent decade. From 2011 to 2021, federal civilian employment in Region 5 grew by 16.9%. Given that federal civilian employees typically have higher education and compensation levels than their private sector counterparts, the growth in federal civilian employment has been a boon to economic activity in the region.

**Figure 15 – Federal Civilian Employment in Region 5  
Thousands of Individuals  
2001 – 2021**



Source: U.S. Bureau of Economic Analysis, CAEMP25N, Total Full-Time and Part-Time Employment by NAICS Industry, and Dragas Center for Economic Analysis and Policy.

Total compensation measures wages and salaries as well as employer contributions to defined benefit plans. Increasing levels of total compensation are an indicator of rising wages and salaries in a region. Increasing levels of total compensation may also represent a shift in the composition of jobs towards higher paying jobs, another positive indicator of economic performance. As the military employment estimates are adversely impacted by the change in BEA methodology, we focus on federal civilian employment and compensation in Table 9.

Table 9 illustrates, not surprisingly, that Region 5 and Region 7 accounted for 79.1% of all federal civilian employment in Virginia in 2021. Regions 4, 5, and 7, which form the “urban crescent,” had 87.5% of all federal civilian employees in Virginia in 2021. In other words, almost 9 out of 10 federal civilian workers in Virginia were employed in Regions 4, 5, and 7 in 2021. In 2021, the average compensation of all employees in the Commonwealth was \$84,890. In the same year, the average compensation of federal civilian employees was \$146,810. Average GO Virginia Region 5: 2023 Growth and Diversification Plan Biennial Update

federal civilian compensation was more than twice that of average civilian compensation in Regions 6, 8, and 9. In Regions 5 and 7, however, federal civilian compensation was 65% and 47% higher respectively than average compensation for these regions in 2021.

**Table 9 - Federal Civilian Employment in GO Virginia Regions and Virginia, 2021**

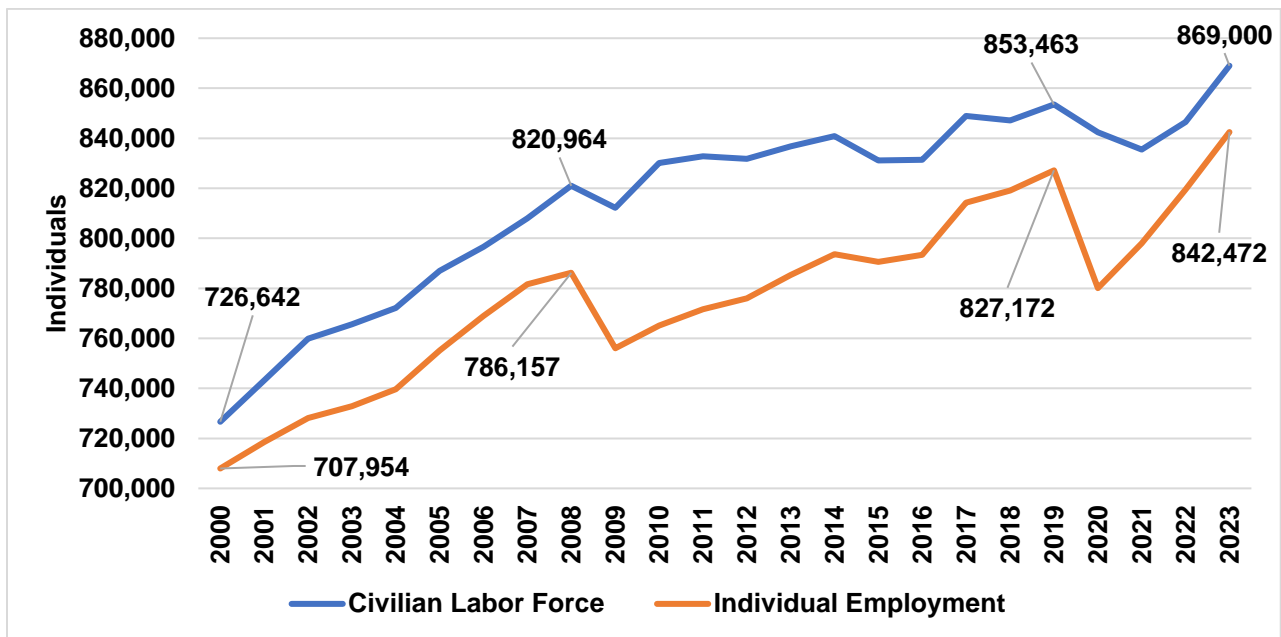
	<b>Federal Civilian Employment</b>	<b>Share of Virginia Total</b>	<b>Average Federal Civilian Compensation</b>	<b>Average Civilian Compensation</b>
Region 1: Southwest	1,471	0.7%	\$103,264	\$54,068
Region 2: West Central	4,815	2.3%	\$116,503	\$64,230
Region 3: Southside	1,049	0.5%	\$95,876	\$54,481
Region 4: South Central	17,401	8.4%	\$127,303	\$78,652
<b>Region 5: Hampton Roads</b>	<b>60,709</b>	29.5%	<b>\$123,973</b>	<b>\$75,141</b>
Region 6: Eastern	11,903	5.8%	\$165,270	\$70,603
Region 7: Northern	102,239	49.6%	\$164,615	\$111,988
Region 8: Valley	3,847	1.9%	\$127,748	\$62,483
Region 9: Central	2,582	1.3%	\$155,551	\$74,511
<b>Virginia</b>	<b>206,016</b>	---	<b>\$146,810</b>	<b>\$84,980</b>

Region 5's dependence on federal civilian and military employment is highlighted by the simple realization that the private sector would need to significantly boost job growth if federal employment contracted in the coming years. In other words, a reduction in federal civilian personnel would require the private sector to create almost 1.7 new jobs for every lost federal civilian employee to maintain total compensation. Given the region's recent economic performance, it is doubtful that such job creation would occur without significant structural changes in the regional economy.

## Individual Employment Growth in Region 5

Robust growth in individual employment is a clear signal of the economic performance of a region.<sup>10</sup> Figure 16 displays the change in the civilian labor force and individual employment in Region 5 from 2000 to 2023. From 2000 to 2008, the civilian labor force and individual employment increased at an average annual rate of 1.5% and 1.3%, respectively. While the civilian labor force increased in the aftermath of the Great Recession, growth was slower, averaging only 0.5% a year from 2010 to 2019. Individual employment, however, grew by 1.2% per year over the same period.

**Figure 16 –Civilian Labor Force and Individual Employment in Region 5  
2000 – 2023\***



Source: U.S. Bureau of Labor Statistics, *Local Area Unemployment Statistics, 1990 – 2023* and Dragas Center for Economic Analysis and Policy. Annual average of monthly non-seasonally adjusted data.

\*Data for 2023 represents the average of each series from January through June.

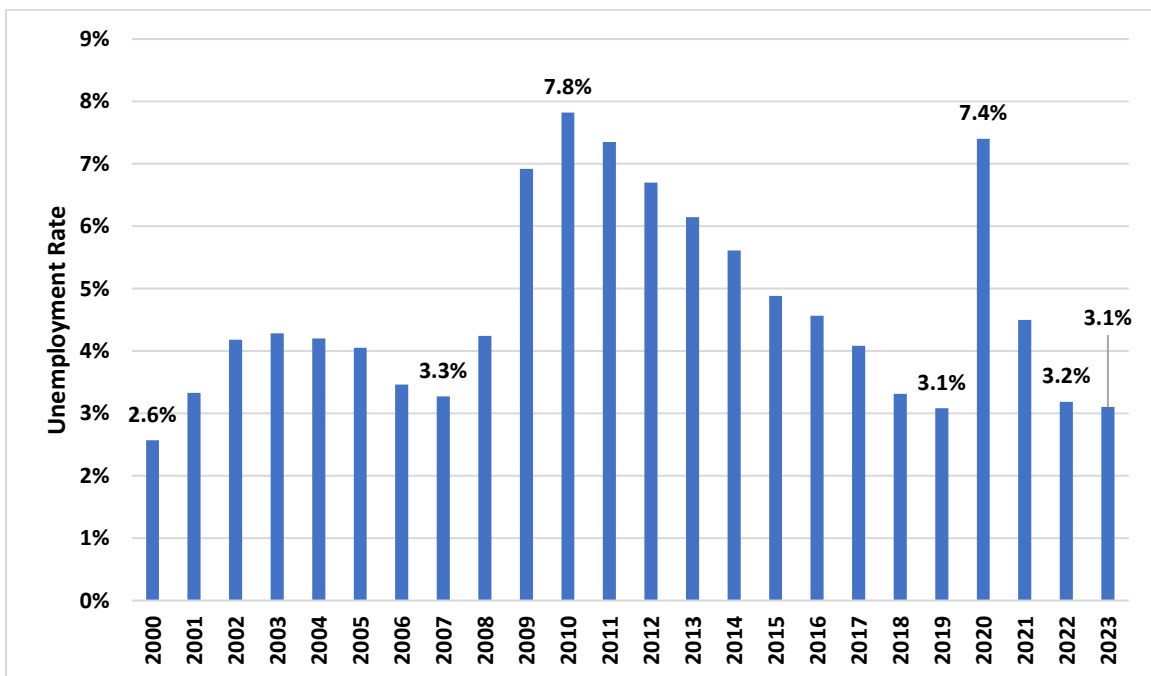
The COVID-19 pandemic and associated restrictions on business and social activity negatively impacted the civilian labor force and individual employment in 2020. The civilian labor

<sup>10</sup> Individual employment estimates are obtained for the Current Population Survey's reference week. Individuals are considered employed if they meet any of the following criteria: (1) worked at least 1 hour as a paid employee, (2) worked at least 1 hour in their own business, profession, trade, or farm, (3) were temporarily absent from their job, business or farm, and (4) worked without pay for a minimum of 15 hours in a business or farm owned by a family member.

force continued to shrink in 2021 even while individual employment started to recover from the shock of 2020. In 2022, the civilian labor force rebounded off the lows of 2021 and individual employment recovered from the shock of 2020. In the first six months of 2023, individual employment continued to increase, and the civilian labor force and individual employment in Region 5 expanded past pre-pandemic levels.

Figure 17 illustrates the average annual unemployment rate in Region 5 from 1990 through the first five months of 2023. Of note is that the average annual unemployment rate in 2010 was higher than 2020 because the impact of the Great Recession persisted much longer than that of the COVID-19 recession. In other words, while the shock of 2020 was significantly larger than the Great Recession, the recovery was also much faster. In 2022, the average annual unemployment rate in Region 5 was 3.2% and averaged 3.1% for the first six months of 2023.

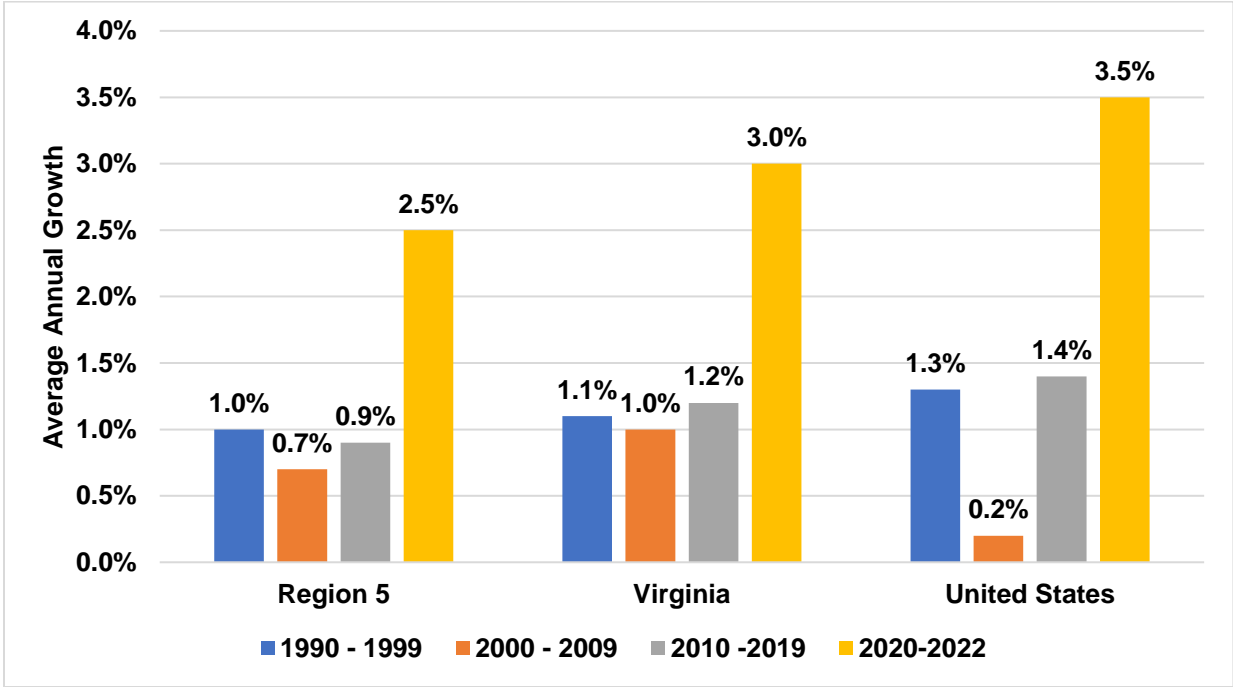
**Figure 17 – Average Annual Unemployment Rate in Region 5  
1990 – 2023\***



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 1990 – 2023 and Dragas Center for Economic Analysis and Policy. Annual average of monthly non-seasonally adjusted data.  
\*Data for 2023 represents the average of each series from January through June.

Figure 18 illustrates the average annual growth in individual employment for Region 5, Virginia, and the United States by decade from 1990 to 2022. Our first observation is that the average rate of individual employment growth was lower in Region 5 when compared to Virginia in each decade. Second, while individual employment in Region 5 grew faster than the nation, on average, from 2000 to 2009, this did not last, with individual employment growth lagging in Region 5 from 2010 to 2019. Lastly, when we compare the growth in individual employment from 2020 to 2022, we must keep in mind that individual employment in 2020 was lower due to the COVID-19 pandemic. Growth rates appear to be higher but, in fact, are capturing the shock of 2020. Even with this in mind, the average growth rate of individual employment in Region 5 lagged that of the Commonwealth and the nation from 2020 to 2022.

**Figure 18 – Annual Growth in Employment, Region 5, Virginia, and the United States 1990 – 2022**



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 1990 – 2023 and Dragas Center for Economic Analysis and Policy. Annual average of monthly non-seasonally adjusted data. Average annual growth rate is the Compound Annual Growth Rate.



Table 10 illustrates the average annual rate of individual employment growth among GO Virginia regions by decade from 1990 to 2022. We note again that the most current estimates are biased upward due to the negative shock of the COVID-19 pandemic in 2020, however, these estimates also allow us to compare the speed of the recovery across GO Virginia regions. In the first decade of this century, Region 5’s performance was, for all intents and purposes, in the middle of the pack. From 2010 to 2019, Region 5’s average annual growth in individual employment was only better than three other regions (Region 1, 2, and 3). In the current decade, Region 5’s average rate of individual employment growth is only better than Region 1. In other words, while individual employment has recovered in Region 5 from the shock of 2020, Region 5’s performance pales in comparison to many other regions in Virginia.

**Table 10 - Employment Growth, GO Virginia Regions and Virginia  
1990 – 2022**

	<b>Annual Employment Growth 1990-1999</b>	<b>Annual Employment Growth 2000-2009</b>	<b>Annual Employment Growth 2010-2019</b>	<b>Annual Employment Growth 2020 - 2022</b>
Region 1: Southwest	0.2%	0.2%	-0.3%	2.2%
Region 2: West Central	0.8%	0.0%	0.5%	2.8%
Region 3: Southside	0.0%	-0.9%	0.6%	2.6%
Region 4: South Central	1.1%	0.7%	1.7%	3.5%
<b>Region 5: Hampton Roads</b>	<b>1.0%</b>	<b>0.7%</b>	<b>0.9%</b>	<b>2.5%</b>
Region 6: Eastern	2.6%	2.2%	1.5%	3.0%
Region 7: Northern	1.4%	1.6%	1.6%	3.1%
Region 8: Valley	1.5%	0.8%	1.3%	3.1%
Region 9: Central	1.3%	1.7%	1.6%	3.3%
<b>Virginia</b>	<b>1.1%</b>	<b>1.0%</b>	<b>1.2%</b>	<b>3.0%</b>
<b>United States</b>	<b>1.3%</b>	<b>0.2%</b>	<b>1.4%</b>	<b>3.5%</b>

*Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 1990 – 2023 and Dragas Center for Economic Analysis and Policy. Annual average of monthly non-seasonally adjusted data. Annual growth rate is the Compound Annual Growth Rate.*

## **Employment Growth Among Region 5's Localities**

Table 11 illustrates the annual average employment growth rate for the jurisdictions within Region 5. Five jurisdictions, Chesapeake, Isle of Wight County, James City County, Suffolk, and York County, have shown consistent employment growth exceeding 1% per year since 1990. From 2010 to 2019, James City County's employment grew at an average annual rate of 2.0%, followed by Chesapeake at 1.6%. Suffolk's individual employment grew by 1.5% over this period followed by Williamsburg (1.2%), York County (1.1%), and Isle of Wight County (1.0%). On the other hand, Northampton County saw employment contract at an annual average rate of 1.2%.

Table 11 also captures the shock and recovery from the COVID-19 pandemic. Individual employment grew in Northampton by 3.8% from 2020 to 2022, followed by James City County, Suffolk, Virginia Beach, Chesapeake, York County, Williamsburg, Hampton, Portsmouth, Newport News, and Norfolk; each of these areas saw an employment growth of 2.5% or 2.6%. Poquoson and Isle of Wight County grew at 2.4% from 2020 to 2022. The performance of Accomack County (1.2%) and Southampton (0.3%) is troubling while individual employment in Franklin city appears not to have grown at all from 2020 to 2022.

**While the recovery in 2022 and into 2023 is good news for the cities and counties in Region 5, the performance of the region lagged many of its peers over the past and current decade. We remind the reader that Region 5's lagging performance occurred even while federal spending increased in the region, suggesting that a reliance on the federal government is not a panacea for the ills that plague Region 5's economic performance. Improving private sector growth through targeted investments and policies that promote Region 5's key industry clusters continues to be a recommended course of action.**

**Table 11 - Employment Growth in Region 5 Localities  
1990 – 2022**

	<b>Employment Growth 1990-1999</b>	<b>Employment Growth 2000-2009</b>	<b>Employment Growth 2010-2019</b>	<b>Employment Growth 2020-2022</b>
Accomack County	-0.4%	0.5%	0.4%	1.2%
Chesapeake City	3.4%	1.3%	1.6%	2.6%
Franklin City	1.5%	0.3%	0.7%	0.0%
Hampton City	0.4%	-0.1%	0.3%	2.6%
Isle of Wight County	2.0%	2.2%	1.0%	2.4%
James City County	3.3%	3.3%	2.0%	2.5%
Newport News City	0.6%	0.9%	0.5%	2.6%
Norfolk City	-1.9%	0.0%	0.6%	2.6%
Northampton County	-0.7%	0.9%	-1.2%	3.8%
Poquoson City	0.6%	0.3%	0.6%	2.4%
Portsmouth City	-0.5%	0.0%	0.4%	2.6%
Southampton County	1.2%	0.3%	0.3%	0.3%
Suffolk City	2.6%	3.2%	1.5%	2.5%
Virginia Beach City	1.3%	0.3%	0.8%	2.6%
Williamsburg City	1.0%	0.8%	1.2%	2.6%
York County	3.9%	1.0%	1.1%	2.6%
<b>Region 5</b>	<b>1.0%</b>	<b>0.7%</b>	<b>0.9%</b>	<b>1.2%</b>

*Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 1990 – 2023 and Dragas Center for Economic Analysis and Policy. Annual average of monthly non-seasonally adjusted data. Annual growth rate is the Compound Annual Growth Rate.*

**Per Capita Income in Region 5**

Per capita income is a measure of the average income earned by residents of a region. Faster growth in per capita income is a signal that a region is not only growing but growing through the creation of higher paying jobs. Regions that lag in per capita income growth may have slower employment growth, or the composition of employment is tilted towards lower paying jobs. If individuals vote with their feet about economic opportunities, they will tend to seek out regions that offer increasing economic opportunity, an opportunity that is measured, in part, by per capita income growth over time.

Region 5’s real per capita income lagged behind both Virginia and the United States in absolute terms and average growth over the last decade (Table 12). While Region 5’s real per capita income grew more rapidly in the first decade of the century, annual growth lagged considerably in the recently concluded decade, especially when compared to the United States. If there is a modicum of good news, it is that, from 2019 to 2021, the increase in real income in Region 5 outpaced Virginia and the nation. In 2021, nominal per capita income in Region 5 was \$57,851, \$6,222 lower than the United States and \$8,454 lower than the Commonwealth.

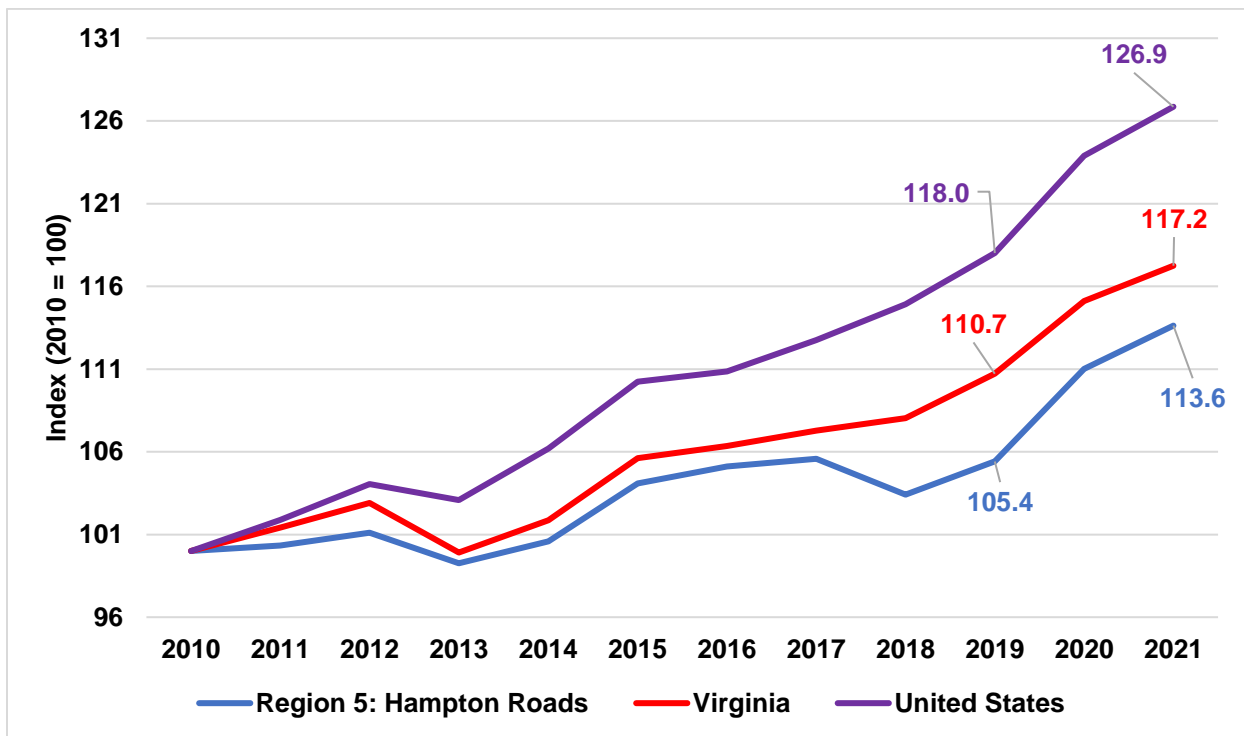
**Table 12 - Per Capita Income and Growth in Real Per Capita Income United States, Virginia, and GO Virginia Region 5, 1990-2021**

	<b>2021 Nominal Per Capita Income</b>	<b>Real Income Growth 1990-1999</b>	<b>Real Income Growth 2000-2009</b>	<b>Real Income Growth 2010-2019</b>	<b>Change in Real Income 2019-2021</b>
<b>Region 5</b>	\$57,851	1.1%	1.5%	0.6%	7.8%
<b>Virginia</b>	\$66,305	1.6%	0.9%	1.1%	5.9%
<b>United States</b>	\$64,073	1.5%	0.3%	1.9%	7.5%

*Source: U.S. Bureau of Economic Analysis, Personal Income by County, Table CAINC1 and National Income and Product Accounts, and Dragas Center for Economic Analysis and Policy. Annual growth rate is the Compound Annual Growth Rate. Base year for real per capita income is 2012.*

Figure 19 shows how a slower rate of annual growth results in Region 5 falling behind the Commonwealth and the United States. From 2010 to 2019, real per capita income in Region 5 increased by 5.4%. Over the same period, real per capita income increased by 10.7% in the Commonwealth and 18.0% in the nation. Simply put, Region 5 failed to keep pace with the state or nation, and this relatively poor economic performance has translated into lower population growth, real GDP growth, and real per capita income growth. While real personal incomes grew faster in Region 5 than the state or nation this decade, this faster pace was insufficient to close the growth gap from the previous decade. In 2021, real personal income per capita for Region 5 was 13.6% higher than 2010, but was 3.6 percentage points less than the Commonwealth and 13.3 percentage points below the nation.

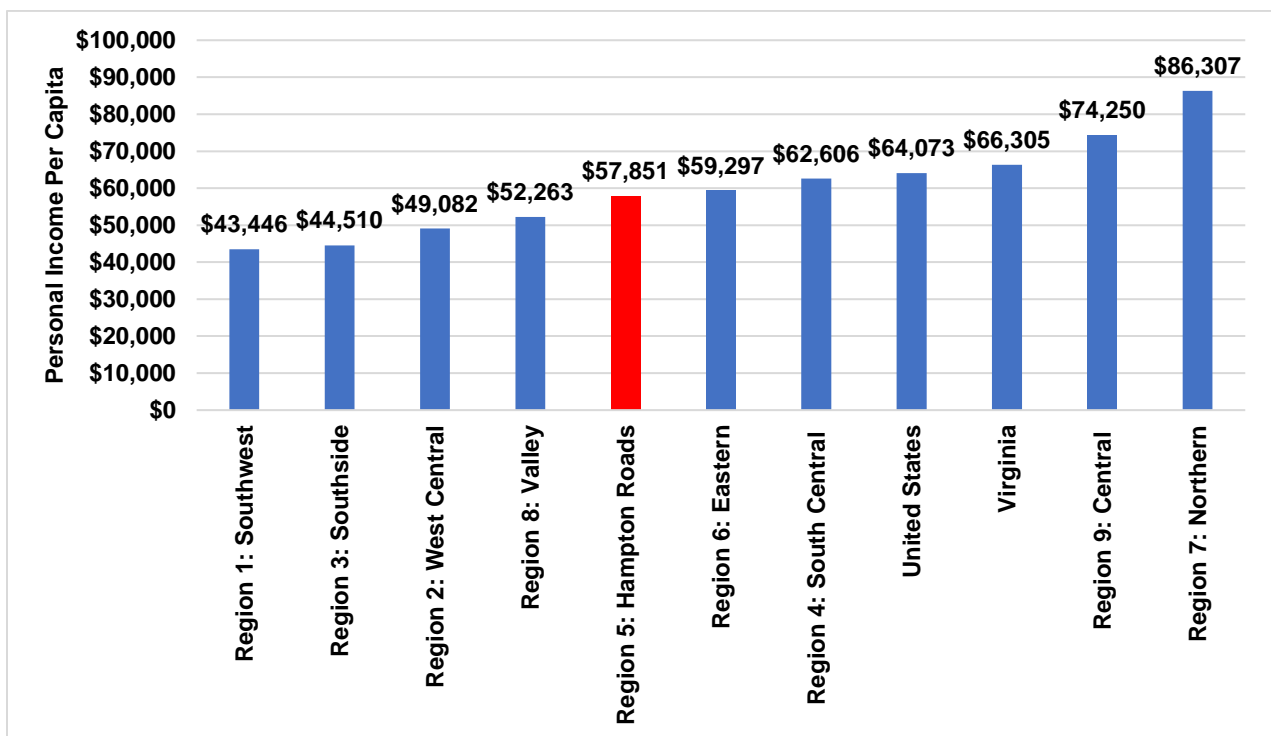
**Figure 19 – Change in Per Capita Income in Region 5, Virginia, and the United States 2010 – 2021**



Source: U.S. Bureau of Economic Analysis, Personal Income by County, Table CAINC1 and National Income and Product Accounts, and Dragas Center for Economic Analysis and Policy. Base year for real per capita income is 2012.

Figure 20 displays 2021 per capita income for the GO Virginia regions, Virginia, and the United States. Region 5's 2021 per capita income ranks fifth among the nine regions. Not surprisingly, Region 7 has the highest level of personal income per capita (\$86,307) in 2021, followed by Region 9 (\$74,250) and Region 4 (\$66,305). From 2019 to 2021, the change in real per capita income was highest for Region 3 (12.9%), Region 1 (11.3%), and Region 2 (8.1%). Even with this higher growth, however, per capita incomes in these regions lag considerably behind those in Regions 4, 9, and 7.

**Figure 20 - Nominal Per Capita Income, U.S., Virginia, and GO Virginia Regions 2021**



Source: U.S. Bureau of Economic Analysis, Personal Income by County, Table CAINC1, National Income and Product Accounts, and Dragas Center for Economic Analysis and Policy.

Table 13 displays 2021 nominal per capita income and annual average growth rates in real per capita income for localities in Region 5. While Accomack County, Southampton County, and Northampton County posted the highest per capita income growth rates for Region 5 from 2010 to 2019, we must note that each of these localities lost population from 2010 to 2019 and

continued to lose population this decade. Thus, the increase in per capita income is driven more by population change rather than the increased economic activity for these jurisdictions.

The combined jurisdiction of James City County and Williamsburg had the highest per capital income level in 2021 (\$71,981), followed by the combined area of York and Poquoson at \$66,561. Virginia Beach, the largest jurisdiction in Region 5, had the next highest level of per capita income at \$63,942 in 2021. Chesapeake, the second largest jurisdiction in Region 5, saw nominal per capital income rise to \$56,742 in 2021.

Region 5's economic performance over the last two decades has left much to be desired. Regional population growth, GDP growth, and employment growth lagged the other regions that comprise the urban crescent of the Commonwealth. Even though federal spending (and specifically defense spending) in Region 5 increased over the last decade, these gains did not translate into higher levels of economic growth. With the recovery from the COVID-19-induced recession of 2020 largely complete, the open question remains whether Region 5's economic performance will return to that of the previous decade. Relying on the status quo is unlikely to generate improvements in economic performance, and Region 5 needs to "lean into" its existing strengths to improve private sector job creation independent of federal government spending. Without long-term structural changes to the regional economy, a shift in national security priorities towards the Pacific or a change in national spending priorities would further undermine the region's economic performance.

**Table 13 - Per Capita Income in Region 5 Localities  
1990-2021**

Location	2021 Nominal Per Capita Income	Real Income Growth 1990-1999	Real Income Growth 2000-2009	Real Income Growth 2010-2019	Change in Real Income 2019-2021
Accomack County	\$57,520	0.2%	3.3%	2.2%	12.5%
Isle Of Wight County	\$63,005	1.7%	2.7%	0.5%	6.8%
Northampton County	\$63,928	1.3%	2.6%	3.1%	11.0%
Chesapeake City	\$56,742	1.1%	1.8%	0.1%	7.6%
Hampton City	\$49,233	1.0%	0.9%	0.0%	11.1%
Newport News City	\$47,448	0.0%	1.7%	-0.1%	11.5%
Norfolk City	\$46,923	1.1%	0.8%	0.1%	9.9%
Portsmouth City	\$47,944	0.4%	2.1%	-0.2%	14.3%
Suffolk City	\$59,309	1.6%	2.6%	0.5%	7.8%
Virginia Beach City	\$63,942	1.1%	0.9%	0.9%	6.1%
James City + Williamsburg, VA	\$71,981	2.9%	1.1%	0.8%	4.3%
Southampton + Franklin, VA	\$49,843	1.1%	0.3%	2.2%	10.7%
York + Poquoson, VA	\$66,561	0.6%	1.9%	0.5%	4.7%
<b>Region 5</b>	<b>\$57,851</b>	<b>1.1%</b>	<b>1.5%</b>	<b>0.6%</b>	<b>7.8%</b>

*Source: U.S. Bureau of Economic Analysis, Personal Income by County, Table CAINC1, National Income and Product Accounts, and Dragas Center for Economic Analysis and Policy. Annual growth rate is the Compound Annual Growth Rate. Base year for real per capita income is 2012. When necessary, the BEA combines localities.*



## **Challenge 2**

### ***Region 5 is Overly Reliant on a Small Set of Large Firms in its Key Cluster Areas.***

Of all the challenges set forth in the 2017 Region Growth and Diversification Plan, Challenge 2 was identified as the most critical for the region's future success. Region 5 is home to tens of thousands of military personnel and DoD civilian employees working on 18 military installations throughout the region. Numerous private sector firms in the region play a key role in the manufacturing, maintenance, and support of the nation's military assets. Region 5's role is not limited to its relationship with the DoD. There are more Coast Guard personnel stationed in Region 5 than any other location in the United States. Jefferson Lab, one of the nation's premier federal research laboratories, is located in Newport News. NASA Langley Research Center, which focuses on aeronautical research, is located in Hampton. In all, there are 16 federal departments and agencies with a significant presence in Region 5.

Indeed, a strength and weakness of Region 5 is its relationship with the federal government and, in particular, the DoD. With an estimated \$27 billion in direct DoD spending in Region 5 in 2022, the total economic impact of DoD spending likely exceeded \$40 billion. In other words, 4 out of every 10 dollars of economic activity in Region 5 is directly or indirectly influenced by DoD spending. The dependence on federal, and in particular, DoD spending means that the economic fortunes of the region are determined, in large part, by the policies and politics in Washington, D.C. The large inflows of federal spending to the region also incentivize firms to increase in size due to the demands of the federal government and the need to navigate the federal contracting system. These large firms are among the largest employers in Region 5 and tend to dominate the industries in which they operate.

To examine the question of industry concentration, we compare an industry's share of employment in Region 5 with its share of national employment.<sup>11</sup> These "location quotients" (LQs) provide insight into whether an industry has a smaller, equal, or larger share of regional employment relative to the national average.<sup>12</sup> If an industry in Region 5 has a LQ of 2, for example, the industry's share of regional employment is twice the national average. In other words, the industry is two times as concentrated in the region than the national average. We can also examine wage location quotients (WQs) which examine whether an industry has a smaller, equal, or larger share of regional wages relative to the national average.

Location quotients are useful for a variety of reasons. First, location quotients can be used to identify industries that have higher-than-average per capita employment. Second, industries with high location quotients are typically exporting goods and services outside the region. These industries import money into a region and typically generate a higher economic impact than firms that circulate money within a region. Third, industries with declining location quotients may be losing their competitive advantage, thus location quotients can serve as a signal of a region's declining (or improving) economic fortunes. Lastly, we must consider the overall size of each industry's employment in the region. A high LQ is a signal of concentration, but the impact of the industry on the regional economy is dependent on the level of employment. A high-wage industry with an LQ of 2 that employs 10,000 people will typically have a greater impact than a low-wage industry with an LQ of 5 that only employs 500 people.

Figure 21 presents a selection of industries, defined by 2-digit and 3-digit North American Industry Classification System (NAICS) codes, for Region 5 by location quotient (LQ). Machinery Manufacturing immediately stands out with a LQ of 3.3; that is, Machinery Manufacturing's share

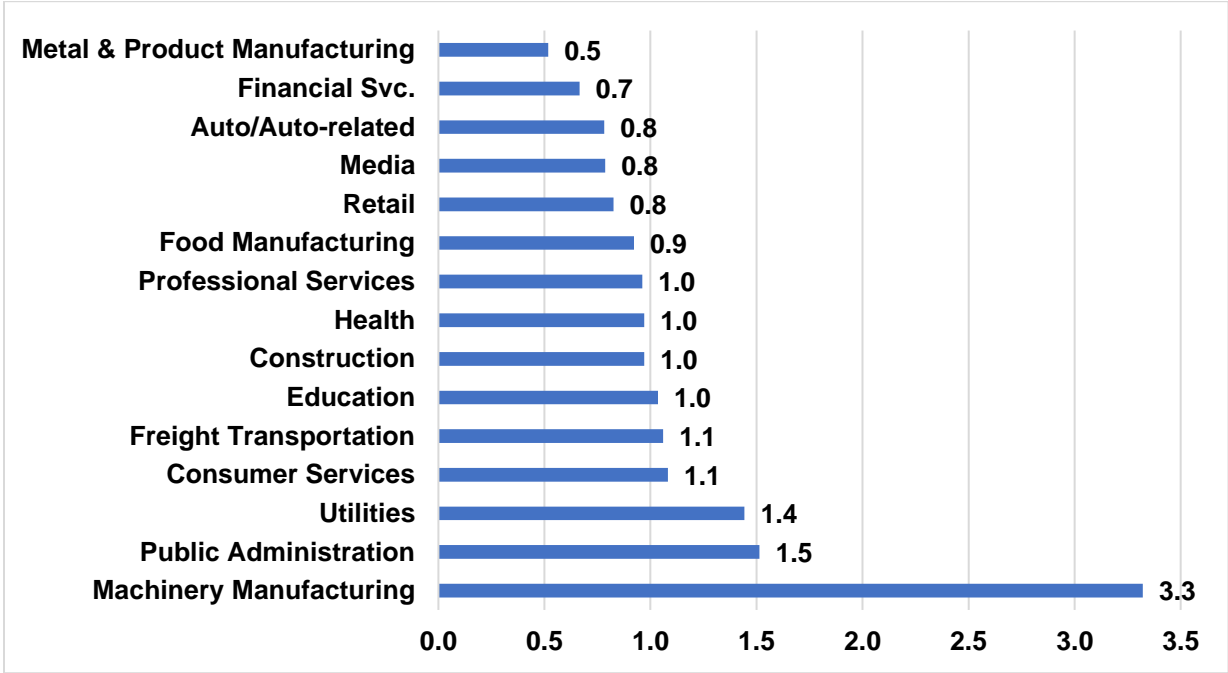
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<sup>11</sup> A location quotient is equal to the ratio of local concentration to national concentration. Local concentration is equal to an industry's employment to total employment in a region. Likewise, national concentration is equal to an industry's employment to total employment nationally.

<sup>12</sup> For more information, see Bureau of Economic Analysis, "QCEW Location Quotient Details" available at: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>

of regional employment was 3.3 times higher than the national average in the first quarter of 2023. In the same quarter, public administration had a LQ of 1.5, which is not entirely surprising given the role of the federal government in the regional economy. Utilities and Consumer Services had LQs greater than 1 but, as we discuss below, a high LQ in the Consumer Services industry is not beneficial for the growth of high-wage jobs in Region 5.

**Figure 21 – Employment Location Quotients for Region 5 Selected Industries (2-digit NAICS and 3-digit NAICS), 2023 Q1**



Source: JobsEq, Industry Clusters for Region 5 as of 2023 Q1. Data as of 2023 Q1 and based on a four-quarter moving average.

Table 14 presents location quotients, average employment and wages, and average annual employment growth from 2013 Q1 to 2023 Q1 for Region 5. Machinery manufacturing had the highest LQ (3.3), that is, this industry is more concentrated in Region 5 than the national average. On the other hand, Education has an LQ of 1.0, but this industry has observed a decline in employment over the previous decade. Public Administration has an LQ of 1.5, which is not surprising given the role that the federal government plays in Region 5’s economy. We note that average salaries for Public Administration are higher than the regional average.

**Table 14 – Employment, Wages, and Location Quotients in Region 5  
Selected Industries (2-digit NAICS and 3-digit NAICS), 2022 Q4**

Industry	Employment	Average Wages	Average Annual Employment Growth	Employment Location Quotient
Auto/Auto-related	10,121	\$53,008	0.0%	0.8
Construction	46,545	\$62,695	1.1%	1.0
Consumer Services	131,866	\$29,817	0.8%	1.1
Education	81,097	\$47,322	-1.3%	1.0
Financial Services	21,128	\$86,410	-0.6%	0.7
Food Manufacturing	8,638	\$54,595	-1.1%	0.9
Freight Transportation	23,611	\$68,425	1.9%	1.1
Health	110,378	\$60,694	0.8%	1.0
Machinery Manufacturing	47,756	\$78,516	1.2%	3.3
Media	4,583	\$46,149	1.4%	0.8
Metal & Product Manufacturing	2,951	\$64,043	1.4%	0.5
Professional Services	123,866	\$72,258	0.6%	1.0
Public Administration	54,687	\$81,187	0.8%	1.5
Retail	51,518	\$51,202	0.1%	0.8
Utilities	5,137	\$60,632	0.5%	1.4

*Source: JobsEq, Industry Clusters for Region 5 as of 2023Q1 and the Dragas Center for Economic Analysis and Policy. Average annual employment growth is from 2013 Q1 to 2023 Q1.*

Consumer services in Region 5 has an employment LQ of 1.1 and employed an average of approximately 132,000 individuals in the first quarter of 2023. Leisure and hospitality services are within the Consumer Services cluster, and Region 5 is a travel and tourism destination. However, average wages in Consumer Services were only \$29,817 in the first quarter of 2023. In other words, while consumer services proportionally employ more people in Region 5 than the United States, average wages in this industry are relatively low. Employment growth in this industry yields less in terms of overall compensation than growth in, for example, the Professional Services or Public Administration industries. In other words, Region 5 had to create 2.7 Consumer Service industry jobs to equal the compensation of one Public Administration job in 2023 Q1.

While the health industry cluster had an employment LQ of 1.0 in 2023 Q1, its growth over the last decade suggests that an opportunity exists to gain a significant competitive advantage (in fact, since the last update, the LQ of this cluster has increased from 0.9 to 1.0). The health cluster was the third largest in terms of employment in 2023 Q1, behind only Consumer Services and Professional Services. Employment in the health industry cluster, however, grew by approximately 0.9% from 2013 Q1 to 2023 Q1, faster than Professional Services (0.6%) or Public Administration (0.8%).

The GO Virginia Region 5 Council approved the addition of a Life Sciences cluster to the key industry clusters for Region 5. Table 15 presents the industries in the Life Sciences cluster, annual average wages as of 2023 Q1, and LQs for each industry. As of 2023 Q1, there were, on average, 6,951 employees in the Life Sciences cluster with annual average wages of \$107,437. The Scientific Research and Development Services sector (NAICS 5417) averaged approximately 5,000 employees over the last four quarters, accounting for most of the employment in the industry cluster. Average wages in the Scientific Research and Development Services sector were \$125,166, well above mean and median wages for Region 5. The LQ for this section was 1.10, signaling a small comparative advantage. This suggests that Region 5 can “lean into” this sector and grow the Life Sciences cluster over the coming decade.

**Table 15 – Industries in the Life Sciences Industry Cluster**

NAICS	Industries	Employment	Average Annual Wages	Location Quotient
3254	Pharmaceutical and Medicine Manufacturing	24	\$95,194	0.01
3391	Medical Equipment and Supplies Manufacturing	591	\$63,478	0.36
5417	Scientific Research and Development Services	4,992	\$125,166	1.10
5622	Waste Treatment and Disposal	796	\$61,824	1.36
6215	Medical and Diagnostic Laboratories	548	60,187	0.69
	Life Sciences Cluster	6,951	\$107,437	0.69

*Source: JobsEq and Dragas Center for Economic Analysis and Policy. Data as of 2023 Q1 and based on a four-quarter moving average. Average annual employment growth is from 2013 Q1 to 2023 Q1.*

Table 16 presents location quotients, wages, and employment for the priority industry clusters for Region 5.<sup>13</sup> The Advanced Manufacturing cluster had the second highest LQ (2.6) in 2023 Q1. The employment LQ of 2.6 suggests that Region 5 has a competitive advantage in the cluster. Average annual wages in the cluster were \$74,530 in 2023 Q1, about \$17,000 more than the regional average. However, employment in the cluster grew by only 2.3% from 2013 Q1 to 2023 Q1, 1.8 percentage points below the regional average.

The Uncrewed Systems and Aerospace Cluster had an employment LQ of 1.8 in 2023 Q1, suggesting that the region has a competitive advantage in the cluster. Average annual wages were \$93,681 in 2023 Q1, well above the regional average of \$57,128. Over the last decade, cluster employment grew by 9.1%, more than double the average growth for the region. Adding jobs in this cluster will provide a more significant boost to regional wages than jobs added in industries such as Consumer Services or Retail Trade.

Water Technologies has an employment LQ of 1.2 and an average annual wage of \$89,897, significantly above the regional average. There were more than 38,000 jobs in this cluster in 2023 Q1, approximately double the Port Operations cluster. The Port Operations cluster which has an employment LQ of 1.1 and an average annual wage of \$72,333 in 2023 Q1. Over the last decade, employment in the Water Technologies cluster grew by 7.1% while the Port Operations cluster saw employment increase by 34.6%.

The 2021 biennial update included the new Clean Energy industry cluster. The Clean Energy cluster had 24,363 jobs in 2023 Q1 with an average annual wage of \$85,329. As with the other key industry clusters, average wages in the cluster were higher than the regional average.

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<sup>13</sup> These clusters are based on the clusters determined as priorities by the Region 5 council and presented starting on page 33 of Region 5's Economic Growth and Diversification Plan (<https://www.dhcd.virginia.gov/sites/default/files/Docx/gova/region-five/region-5-growth-diversification-plan.pdf>)

In 2031, average wages in the Clean Energy cluster were \$85,329, almost \$30,000 higher than the regional average. Over the last decade, employment in the cluster grew by 13.3%, significantly higher than the 4.1% increase in employment observed across the region.

Of the priority clusters identified in previous reports, the Cyber Security, Data Analytics, and Modeling and Simulation cluster and the newly identified Life Sciences cluster had LQs below 1 in 2023 Q1. While the Cyber Security cluster has observed growth over the last decade, employment in the Life Sciences cluster has, for all intents and purposes, remained at the same level as observed in 2013 Q1. We opine that these clusters have significant potential, if Region 5 is able to invest in the environment within which these clusters operate. Life Sciences, for example, is likely to benefit significantly from the merge of EVMS and ODU. The increased emphasis on Cyber Security and Data Analytics across higher education programs in the region is a positive signal of future awards in the STEM-related fields that support this cluster. Growing these clusters will require effort, however, and we recommend specific, actionable strategies to foster measurable development that can be implemented in the short-term.



**Table 16 - Location Quotients and Employment for Priority Clusters in Region 5  
2023 Q1**

<b>Clusters</b>	<b>Employment</b>	<b>Average Wages</b>	<b>Change in Employment 2013 Q1 – 2023Q1</b>	<b>Employment Location Quotient</b>
Advanced Manufacturing	10,637	\$74,530	2.3%	2.6
Clean Energy	24,363	\$85,329	13.3%	1.2
Cyber Security, Data Analytics and Mod-Sim	5,230	\$76,512	63.8%	0.6
Life Sciences	7,054	\$107,437	0.7%	0.7
Port Operations, Logistics, and Warehousing	18,861	\$72,333	34.6%	1.1
Ship Repair and Ship Building	40,158	\$81,386	10.9%	43.1
Uncrewed Systems and Aerospace	14,822	\$93,681	9.3%	1.8
Water Technologies	38,278	\$89,897	7.1%	1.2
All Industries	787,431	\$57,128	4.1%	---

*Source: JobsEq and Dragas Center for Economic Analysis and Policy. Data as of 2023 Q1 and based on a four-quarter moving average. Annual employment growth is from 2013 Q1 to 2023 Q1.*

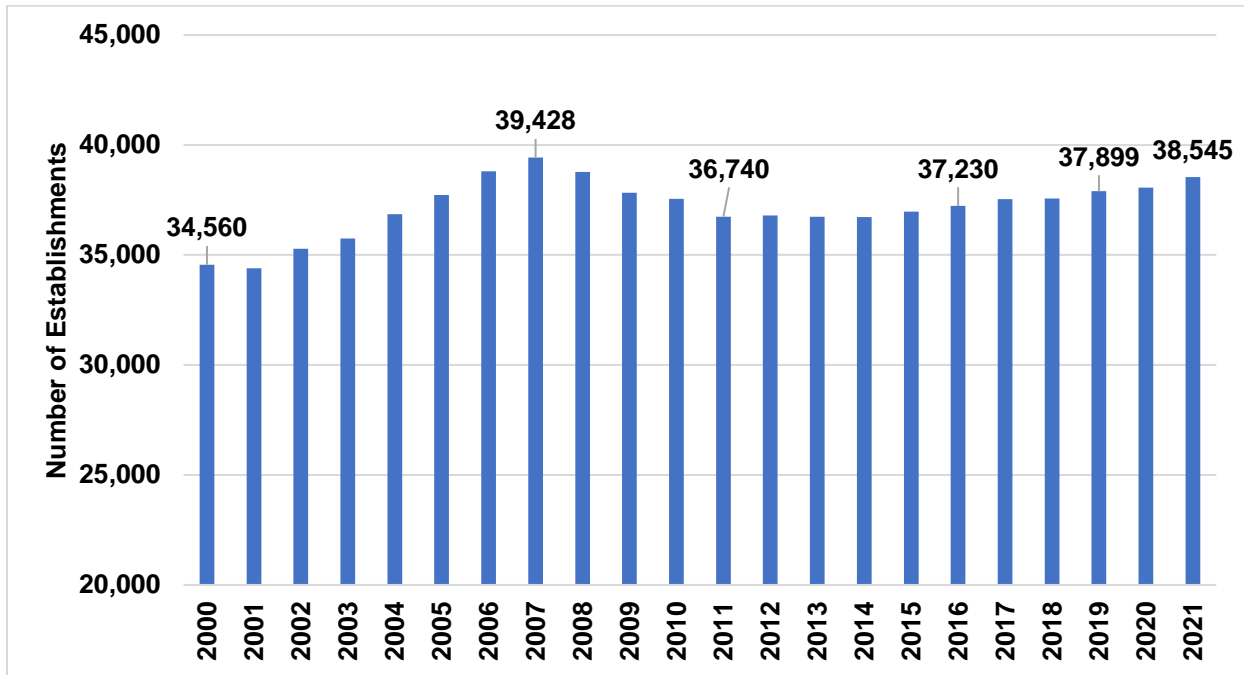
**Challenge 3**  
***Region 5 is Creating Small and Medium-Sized Enterprises (SMEs) at a Pace Far Below its Peer Metro Areas.***

An establishment is a single physical location where business is conducted or where services or industrial operations are performed. A region's economic activity is not only reflected in the value of output and the number of individuals employed by businesses, but also in whether the number of establishments is growing over time. Businesses, like individuals, can vote about economic opportunities in a region by expanding or contracting the number of establishments. A region that is gaining establishments is typically the location of improving economic conditions. Likewise, a decline in the number of establishments is correlated with a deterioration of the economic fortunes of a region.

Figure 22 illustrates that, at the start of the century, establishment growth in Region 5 mirrored the pace of growth in the regional economy. From 2000 to 2007, the number of establishments in Region 5 increased by 14.1%, from 34,560 to 39,428. As the regional economic conditions worsened in the aftermath of the Great Recession, the number of establishments fell from 39,428 in 2007 to 36,740 in 2011, a decline of 6.8%. The number of establishments increased by 3.2% from the trough in 2011 to 2019, however, the number of establishments in 2019 was still 3.9% below the 2007 peak.

While initial survey data during the COVID-19 pandemic suggested that the number of establishments had declined due to restrictions on economic and social activity, the establishment data for Region 5 contains good news. The number of establishments in Region 5 grew in 2020 and 2021. In 2021, there were 38,545 reported establishments in the region, a number not observed since 2008. Continuing the growth in the number of establishments is likely to spur job creation in Region 5 which, in turn, could boost regional economic activity over the coming years. Given the prospects for growth in 2023 and into 2024, there is a distinct possibility that the number of establishments will approach the previous record set in 2007.

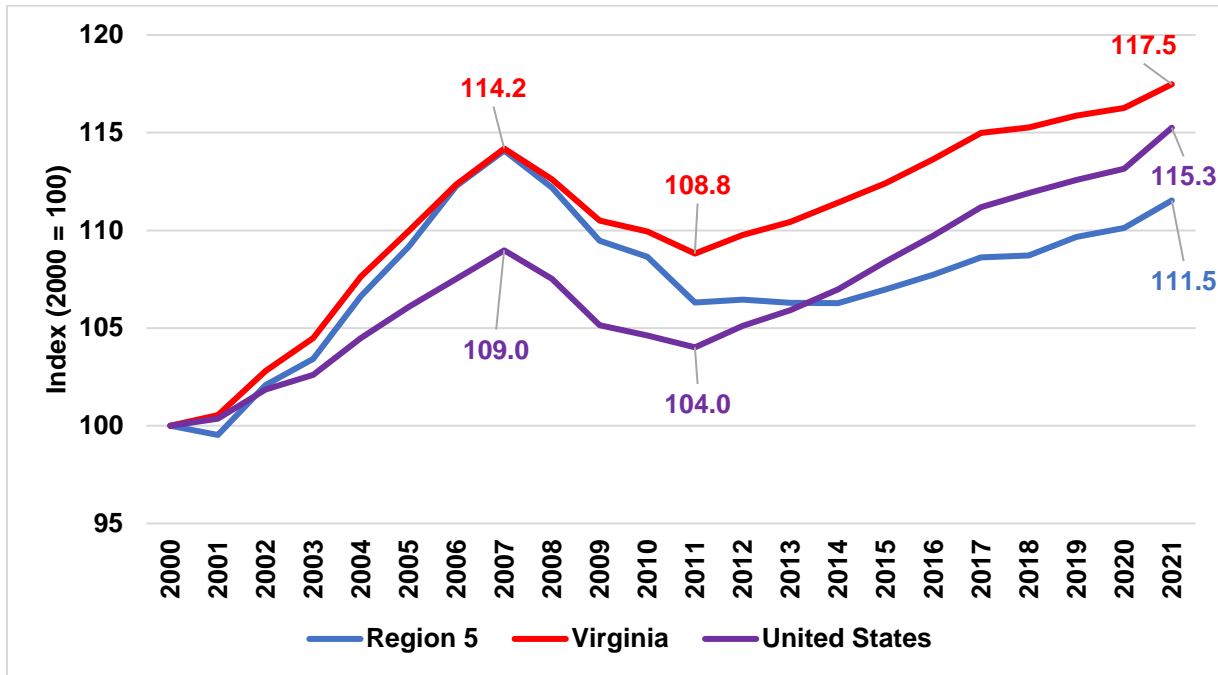
**Figure 22 - Number of Establishments in Region 5  
2000 – 2021**



Source: U.S. Census Bureau, County Business Patterns and Dragas Center for Economic Analysis and Policy.

Figure 23 compares the growth in the number of establishments in Region 5 with Virginia and the United States from 2000 to 2021. In 2007, the number of establishments in Region 5 was 14.1% higher than it was in 2000; only slightly below Virginia (14.2%) and 5.1 percentage points higher than the national average. After the trough in the number of establishments in 2011, Region 5 diverged from Virginia and fell behind the United States. In 2021, the number of establishments in Virginia and the United States was 17.5% and 15.3% higher, respectively, than in 2000. In Region 5, the number of establishments was only 11.5% higher in 2021 when compared to 2000. As establishment creation and destruction is closely tied with the health of the regional economy, it should be no surprise that establishment growth was anemic in the first half of the last decade. The recovery from the COVID-19-induced shock of 2020 is apparent in the increase in the number of establishments in 2021, and we expect establishments to increase in number in 2022 and 2023 as economic growth continues in Region 5.

**Figure 23 – Establishment Growth in Region 5, Virginia, and the United States  
2000 – 2021**



Source: U.S. Census Bureau, County Business Patterns and Dragas Center for Economic Analysis and Policy.

Table 17 presents the annual establishment growth for Region 5, other GO Virginia regions, Virginia, and the United States. A familiar story emerges from this data. From 1990 to 1999, establishment growth in Region 5 was positive, yet Region 5 establishment growth was tied for last in the Commonwealth along with Region 3 (Southside). From 2000 to 2009, establishment growth averaged 1% per year, the same as the previous decade. Region 5 outperformed four other regions and the nation, but this was mostly due to the impact of the Great Recession on establishment growth in other regions and nationally rather than a significant improvement in Region 5’s economic fortunes.

From 2010 to 2019, establishment growth in Region 5 slowed dramatically to an annual average rate of 0.1%. Region 5’s establishment growth over this period was significantly lower than the Commonwealth (0.6% per year) and the nation (0.8% per year), and also lagged other regions in the urban crescent. When we examine the most recent data, a somewhat brighter

picture emerges. There were 1.3% more establishments in Region 5 in 2021 than in 2020. Region 5's establishment growth from 2020 to 2021 was 0.3 percentage points higher than Virginia but 0.6 percentage points less than the nation. Region 5 ranked <sup>third</sup> among GO Virginia regions for establishment growth from 2020 to 2021, lagging only Region 9 (1.7%) and Region 6 (2.6%).

**Table 17 - Establishment Growth, U.S., Virginia, and GO Virginia Regions  
1990 – 2021**

	<b>Annual Establishment Growth 1990 – 1999</b>	<b>Annual Establishment Growth 2000 – 2009</b>	<b>Annual Establishment Growth 2010 – 2019</b>	<b>Establishment Growth 2020-2021</b>
Region 1: Southwest	1.2%	-0.9%	-1.3%	-0.7%
Region 2: West Central	1.5%	0.4%	-0.1%	1.1%
Region 3: Southside	1.0%	-0.3%	-0.9%	-0.3%
Region 4: South Central	1.3%	1.0%	0.8%	0.8%
<b>Region 5: Hampton Roads</b>	<b>1.0%</b>	<b>1.0%</b>	<b>0.1%</b>	<b>1.3%</b>
Region 6: Eastern	2.5%	1.9%	0.4%	2.6%
Region 7: Northern	2.6%	1.9%	1.4%	0.9%
Region 8: Valley	1.2%	0.9%	0.2%	1.2%
Region 9: Central	2.0%	1.3%	0.6%	1.7%
<b>Virginia</b>	<b>1.7%</b>	<b>1.1%</b>	<b>0.6%</b>	<b>1.0%</b>
<b>United States</b>	<b>1.4%</b>	<b>0.6%</b>	<b>0.8%</b>	<b>1.9%</b>

*Source: U.S. Census Bureau, County Business Patterns and Dragas Center for Economic Analysis and Policy. Annual growth rate is the Compound Annual Growth Rate.*

Table 18 presents establishment growth rates by jurisdiction for Region 5. From 2010 to 2019, establishment growth exceeded the national average only in Isle of Wight County, Suffolk, and Williamsburg. Suffolk stands out with an average annual establishment growth rate of 1.3%, more than double the Commonwealth average. Suffolk illustrates that when economic conditions are more favorable, entrepreneurs will increase the pace of establishment growth.

The most recent data illustrates how establishment growth is distributed across Region 5 (Table 18). From 2020 to 2021, establishment growth in Williamsburg (5.2%), Suffolk (2.2%), and Virginia Beach (2.1%) outpaced the national average of 1.9%. Isle of Wight (1.6%), Newport  
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News (1.5%), and Chesapeake (1.5%) observed faster establishment growth from 2020 to 2021 than the average for Region 5. On the other hand, Franklin (-2.7%), Portsmouth (-0.9%), Accomack County (-0.8%), Northampton County (-0.3%), and York County (-0.2%) all observed declines in the number of establishments from 2020 to 2021. With the exception of York County, these declines were a continuation of a fall in establishments over the previous decade. It should be no surprise that as economic conditions deteriorate in these localities, population decline follows, further eroding economic activity.

**Table 18 - Average Establishment Growth, U.S., Virginia, and Region 5 Localities  
1990 – 2021**

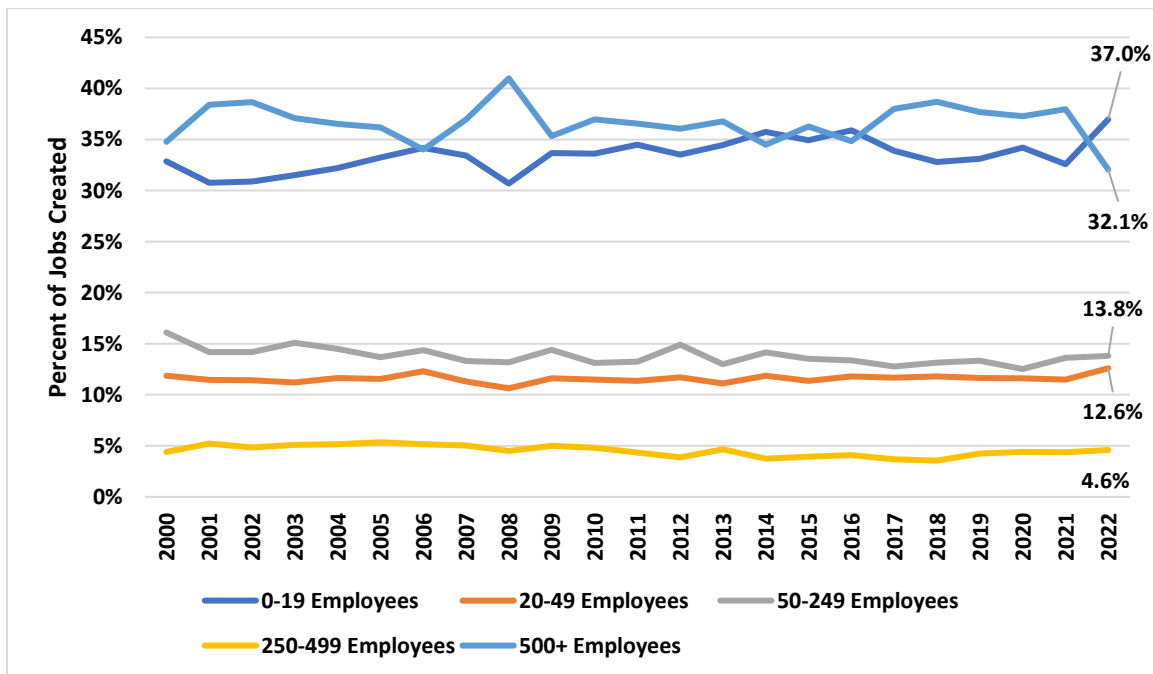
	<b>Annual Establishment Growth 1990 – 1999</b>	<b>Annual Establishment Growth 2000 – 2009</b>	<b>Annual Establishment Growth 2010 – 2019</b>	<b>Establishment Growth 2020-2021</b>
Accomack County	1.2%	0.2%	-1.6%	-0.8%
Chesapeake City	3.4%	2.0%	0.4%	1.5%
Franklin City	-2.4%	2.5%	-1.6%	-2.7%
Hampton City	0.0%	-0.2%	-0.3%	0.2%
Isle Of Wight County	1.6%	2.2%	1.0%	1.6%
James City County	12.8%	5.4%	0.6%	0.8%
Newport News City	0.4%	0.3%	-0.1%	1.5%
Norfolk City	-1.2%	0.8%	-0.9%	0.7%
Northampton County	0.4%	0.5%	-0.7%	-0.3%
Poquoson City	0.5%	2.5%	0.0%	1.3%
Portsmouth City	-0.6%	0.9%	-0.7%	-0.9%
Southampton County	2.8%	-1.6%	-1.0%	0.9%
Suffolk City	0.7%	2.9%	1.3%	2.2%
Virginia Beach City	1.7%	0.7%	0.6%	2.1%
Williamsburg City	-4.7%	-5.5%	1.0%	5.2%
York County	5.5%	2.4%	0.5%	-0.2%
<b>Region 5</b>	<b>1.0%</b>	<b>1.0%</b>	<b>0.1%</b>	<b>1.3%</b>
<b>Virginia</b>	<b>1.7%</b>	<b>1.1%</b>	<b>0.6%</b>	<b>1.0%</b>
<b>United States</b>	<b>1.4%</b>	<b>0.6%</b>	<b>0.8%</b>	<b>1.9%</b>

*Source: U.S. Census Bureau, County Business Patterns and Dragas Center for Economic Analysis and Policy. Annual growth rate is the Compound Annual Growth Rate*

## Small Firm Job Creation in Region 5

Small firms have historically powered job creation in the United States though larger firms tend to create a higher percentage of jobs in Region 5. Figure 24 illustrates the distribution of jobs created by firm size for Region 5 from 2000 to 2022. The share of jobs created by firm size is remarkably stable. From 2000 to 2009, small firms (0 to 19 employees) created, on average, 32.3% of new jobs in Region 5. From 2010 to 2019, small firms created about 34.2% of new jobs in Region 5. From 2020 to 2022, small firms were responsible for approximately 34.6% of new jobs created in the region. Large firms (500+ employees) created, on average, 36.9%, 36.6%, and 35.9% of new jobs from 2000 to 2009, 2010 to 2019, and 2020 to 2022, respectively.

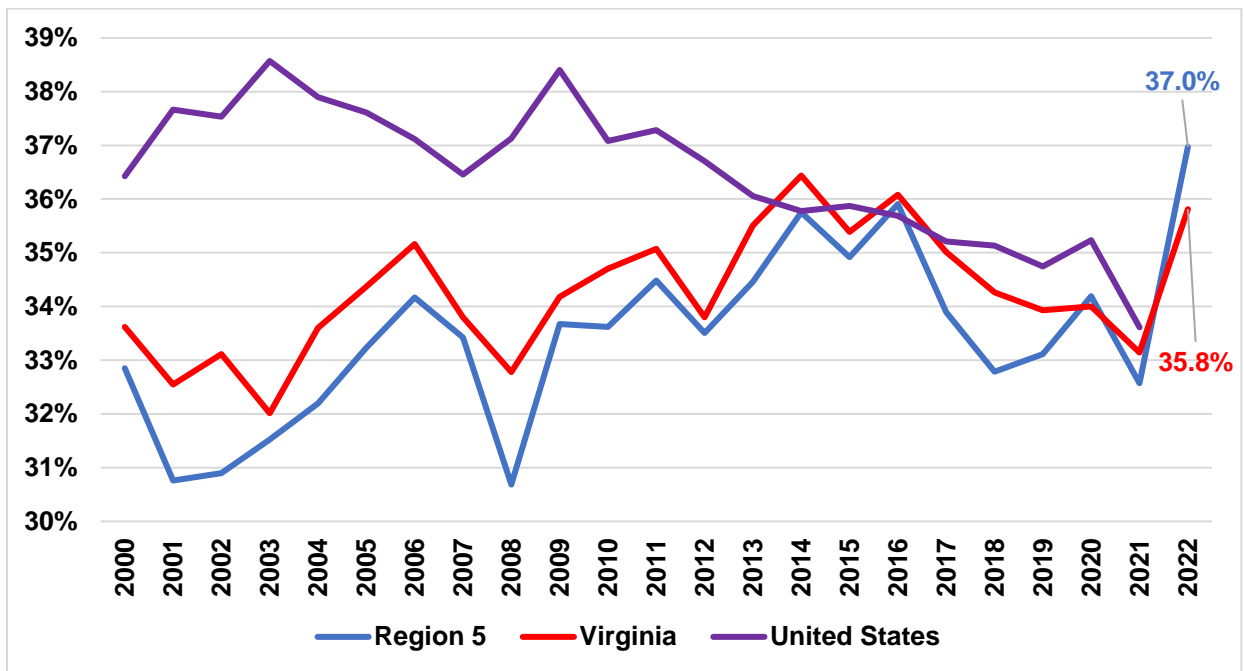
**Figure 24 – Percent of Jobs Created by Firm Size, Region 5  
2000 - 2022**



Source: U.S. Census Bureau, Quarterly Workforce Indicators and Dragas Center for Economic Analysis and Policy. Annual averages. Virginia Beach – Norfolk – Newport News MSA data for Region 5. Private sector firms only.

Figure 25 illustrates that, until recently, small firms have been responsible for a higher percentage of new jobs nationally than in Region 5 or the Commonwealth. In 2000, more than 1 in 3 jobs nationally was created by a small firm, approximately 3 to 4 percentage points higher than Virginia or Region 5. However, small firm job creation as a share of total job creation has trended downward nationally over the last decade while increasing, on average, in Region 5 and Virginia. In 2021, the data suggest that share of small firms in job creation was roughly equivalent for Region 5, Virginia, and the United States. In 2022, the share of jobs created by small firms jumped in Region 5 and the Commonwealth, suggesting that the recovery, in part, was powered by job creation by small firms.

**Figure 25 - Percent of Jobs Created by Small Firms, U.S. Virginia, and Region 5  
Firm Size – 0 to 19 Employees  
2000 – 2022\***



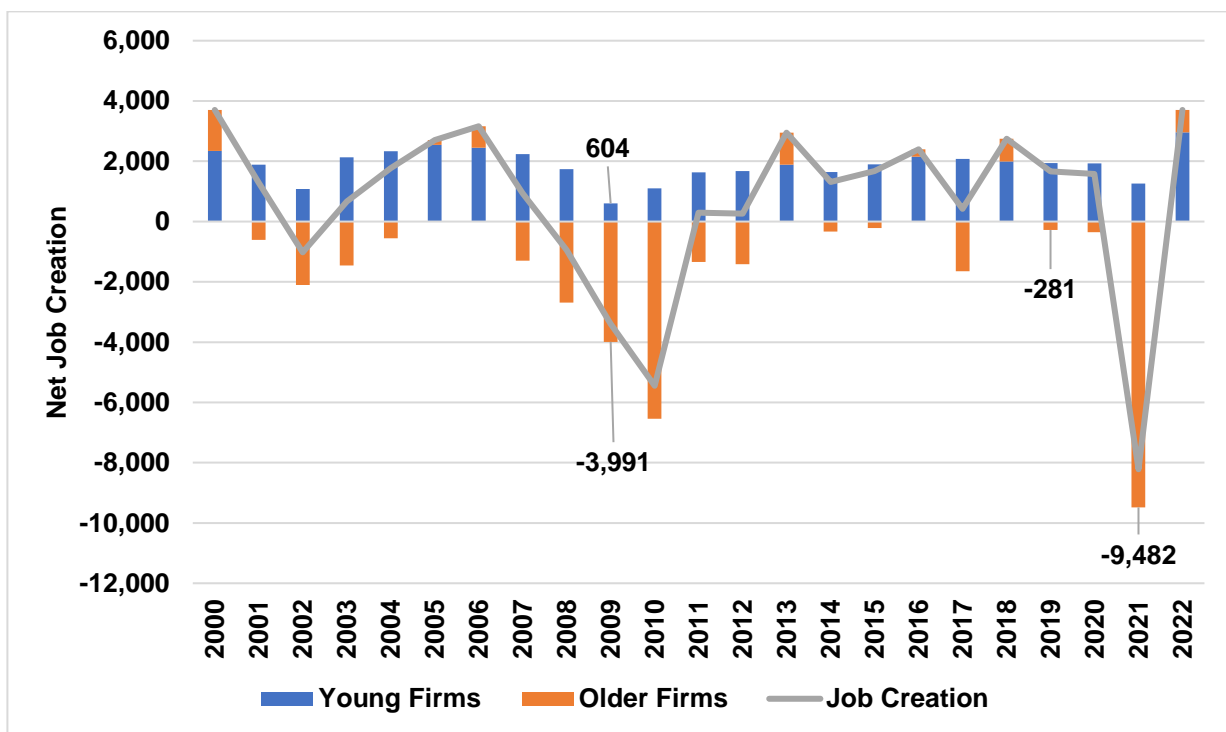
Source: U.S. Census Bureau, Quarterly Workforce Indicators and Dragas Center for Economic Analysis and Policy. Annual averages. Virginia Beach – Norfolk – Newport News MSA data for Region 5. Private sector firms only. \* United States data through 2021.

### Young Firm Job Creation in Region 5



Young firms, defined as firms five years or younger, are typically the greatest source of job creation each year in the United States. Young firms typically account for roughly 8 out of 10 new jobs in a given year. The most vibrant, dynamic economic regions of the country typically have high levels of young firm job creation. We can examine net job creation to ascertain how important young firms are to Region 5's economy. Figure 26 displays annual average net job creation for younger and older firms in the Virginia portion of the Hampton Roads metropolitan statistical area from 2000 to 2022. One immediate observation is that net job creation by younger firms was positive every year from 2000 to 2022.

**Figure 26 – Net Job Creation by Young and Older Firms for Hampton Roads MSA 2000 – 2022**



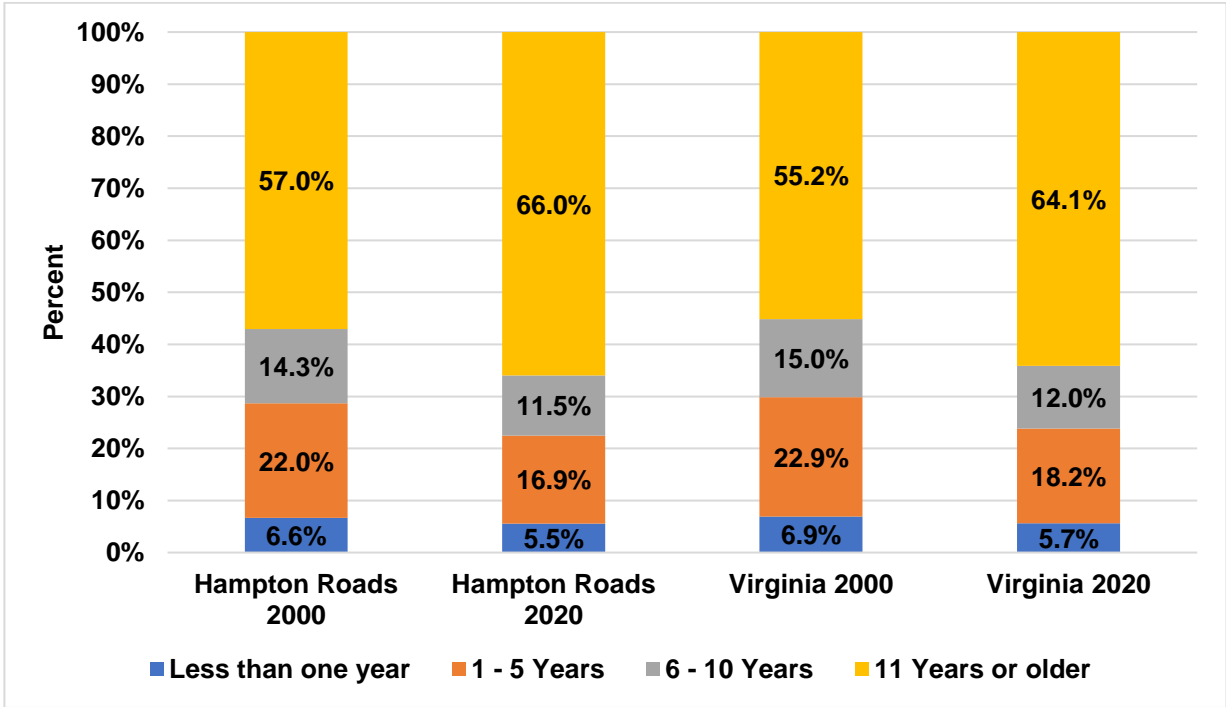
Source: U.S. Census Bureau, Quarterly Workforce Indicators. Net job creation is the difference between job creation and job destruction. Young firms are firms age 5 years or younger. Older firms are 6 years or older. Virginia Beach – Norfolk – Newport News metropolitan statistical area. Private firms only.

**In many years, young firms were responsible for the positive job creation in Hampton Roads' private sector because net job creation by older firms was negative. This observation holds even in 2021 when older firms shed significant number of jobs while young**

firms continued to generate new jobs. In 2022, as one might expect given the pace of economic activity in the region, both young and old firms added jobs, although we note that young firms net job creation was 4 times higher than older firms.

Creating more young firms is not merely a regional challenge. Figure 27 displays the distributions of establishments by firm age in the Hampton Roads metropolitan area and Virginia in 2000 and 2020. In 2000, young firms, less than 5 years old, made up 28.7% and 29.9% of establishments in Hampton Roads and the Commonwealth, respectively. In 2020, the share of young firms in Hampton Roads and the Commonwealth, respectively, had declined to 22.5%. In Region 5, the percentage of establishments that were classified as “young” declined to 22.5%. In other words, establishments were increasingly concentrated among older firms, even though more young firms would be preferred from a job creation perspective.

**Figure 27 – Establishment Distribution by Firm Age: Hampton Roads and Virginia 2000 and 2020**



Source: U.S. Census Bureau, Business Dynamic Statistics. Virginia Beach – Norfolk – Newport News metropolitan statistical area.

**Challenge 4**  
***Region 5 is Not Creating a Workforce for the Next-Generation, Knowledge-Based Economy at a Quick Enough Pace.***

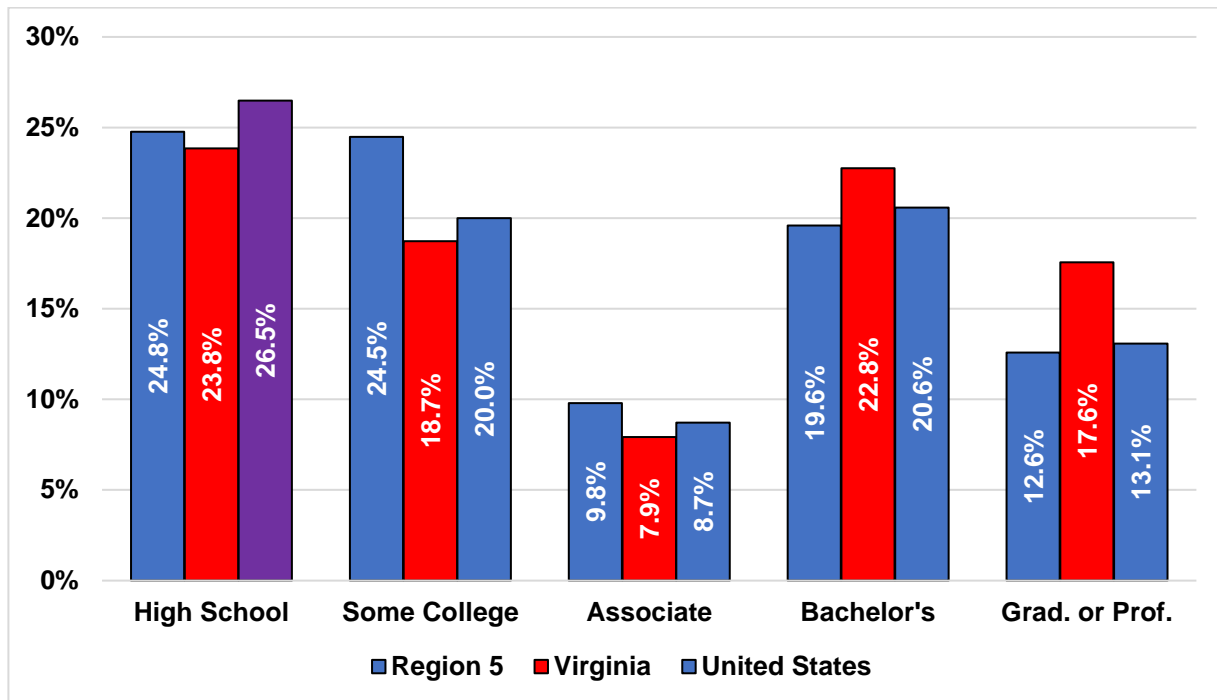
Workforce development is the linchpin of a region's economic development strategy. Without the right workers in the right place at the right time, existing firms cannot expand to exploit new business opportunities, new firms will struggle to launch, and economic development efforts will fall flat because firms will see that economic conditions in a region are not conducive to their business goals. A region needs two strategies to meet the demands of employers: produce skilled workers in sufficient numbers at all levels of education and attract workers from other regions to fill gaps in the workforce. Failing that, workforce gaps will develop, business demands for labor will be unmet, and regional economic activity will not meet its full potential.

In 2021, about 8.8% of adults in Region 5 had less than a high school education, compared with 9.2% of adults in the Commonwealth, and 11.1% of adults in the United States. While the percentage of adults with a high school degree was lower in Region 5 than the nation, this was because a higher proportion of adults had either attended some college or had graduated with an Associate degree. In 2021, 24.5% of adults age 25 and older in Region 5 have some college, and 9.8% had an Associate degree. One path forward for economic development is to assist those adults with some college towards completion of an Associate's degree. The data suggest that there is a large base of workers willing to do so and reducing obstacles to completion not only builds skilled workers but can promote entrepreneurship and innovation.

Examining completion of four-year degrees, 32.2% of adults 25 and older had at least a four-year degree in 2021. This was 1.5 percentage points below the national average and 8.1 percentage points below the Virginia average. One important point to note is that the nature of education is changing in some industries. The pace of change in information technology and cyber security-related industries, for example, is so rapid that employers focus on currency of

education rather than quantity of education. In other words, in an increasingly dynamic work environment, certificates and shorter degrees may be preferred in some industries.

**Figure 28 - Educational Attainment of Population Aged 25 Plus United States, Virginia, and Region 5, 2021**



Source: U.S. Census Bureau, American Community Survey 2021 5-year estimates, and Dragas Center for Economic Analysis and Policy.

Table 19 illustrates the distribution of education attainment across GO Virginia regions, Virginia, and the United States. Within Virginia, Region 5 ranks 4th for the share of residents holding any higher education degree (42.0%). Region 5 only ranks below Region 4 (44.8%), Region 7 (64.7%), and Region 9 (45.1%) with regards to residents holding any type of college degree. This suggests that residents of Region 5 do seek out higher education to improve their skills, though many appear to stop at the Associate level. Region 5 does not rank as high with regards to the proportion of residents with Bachelor’s or Graduate/Professional degrees. One potential reason for the higher proportion of Associate degrees in Region 5 is the higher proportion of military residents, veterans, and retirees.

**Table 19 - Educational Attainment of Population Aged 25 Plus  
United States, Virginia, and GO Virginia Regions, 2021**

	<b>Less Than High School</b>	<b>High School Graduate</b>	<b>Associate degree</b>	<b>Bachelor's Degree</b>	<b>Graduate or Prof. Degree</b>	<b>Any College Degree</b>
Region 1: Southwest	19.0%	35.4%	20.4%	9.3%	10.2%	25.2%
Region 2: West Central	10.8%	30.5%	20.6%	9.5%	17.0%	38.1%
Region 3: Southside	18.5%	35.3%	21.5%	8.9%	10.2%	24.8%
Region 4: South Central	10.2%	25.0%	20.0%	7.4%	23.1%	44.8%
<b>Region 5: Hampton Roads</b>	<b>8.8%</b>	<b>24.8%</b>	<b>24.5%</b>	<b>9.8%</b>	<b>19.6%</b>	<b>42.0%</b>
Region 6: Eastern	9.5%	28.9%	22.3%	8.0%	19.0%	39.3%
Region 7: Northern	7.9%	13.7%	13.7%	5.9%	30.6%	64.7%
Region 8: Valley	13.5%	34.2%	18.6%	7.3%	15.8%	33.7%
Region 9: Central	10.4%	25.2%	19.3%	6.6%	21.3%	45.1%
<b>Virginia</b>	<b>11.1%</b>	<b>26.5%</b>	<b>20.0%</b>	<b>8.7%</b>	<b>20.6%</b>	<b>42.4%</b>
<b>United States</b>	<b>9.2%</b>	<b>23.8%</b>	<b>18.7%</b>	<b>7.9%</b>	<b>22.8%</b>	<b>48.3%</b>

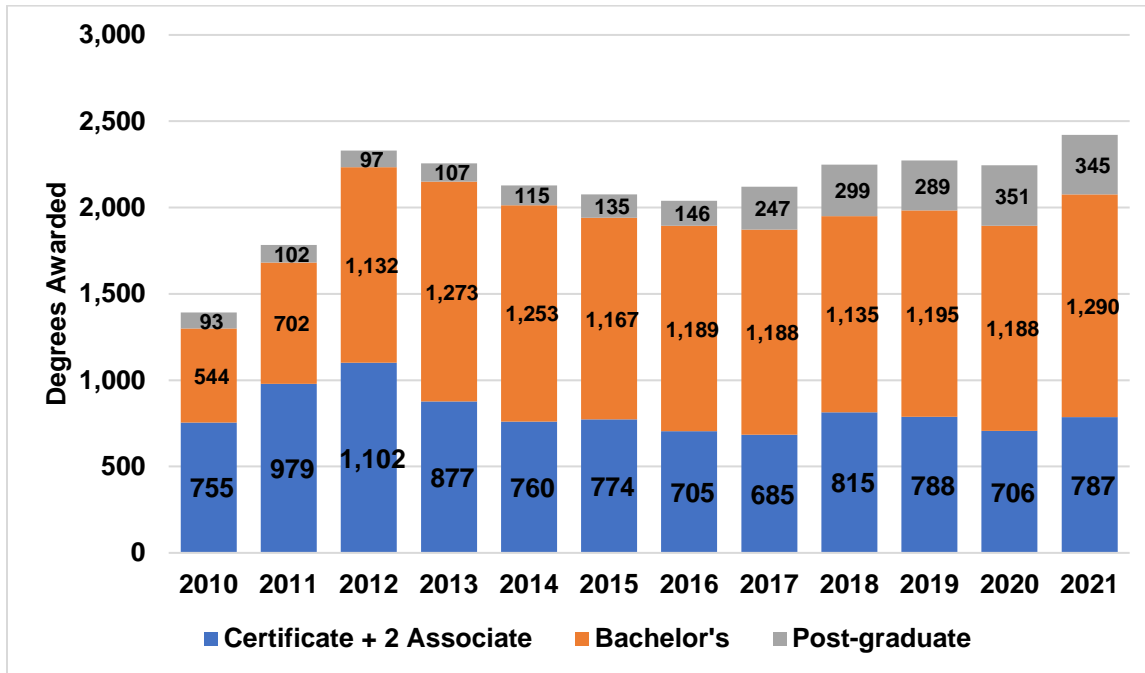
*Source: U.S. Census Bureau, American Community Survey 2021 5-year estimates, and Dragas Center for Economic Analysis and Policy.*

Previous Growth and Diversification plans for Region 5 cautioned regional leaders about the shortage of local degree awards in occupations that we would consider STEM (Science, Technology, Engineering and Mathematics) related. These skills are considered the skills of the future and, while these skills have traditionally been seen as the purview of higher education, STEM skills are becoming ubiquitous at all levels of education.

Figure 29 presents the degrees awarded in a STEM subset, computer science and mathematics for Region 5 from 2010 to 2021. During this period, the number of Bachelor awards increased by 137.1% while the number of post-graduate awards increased by 271.0%. Certificate and Associate awards increased by 4.2%. All told, total awards increased by 74% from 2010 to 2021. Certificate awards, curiously, are not a significant component of total awards for Region 5 even though interviews with employers suggest that certificates are in increasing

demand in these fields. There were 763 Associate awards in 2021, compared with about 25 certificate awards.

**Figure 29 - Degrees Awarded in Computer and Mathematical Occupations Region 5, 2010 - 2021**

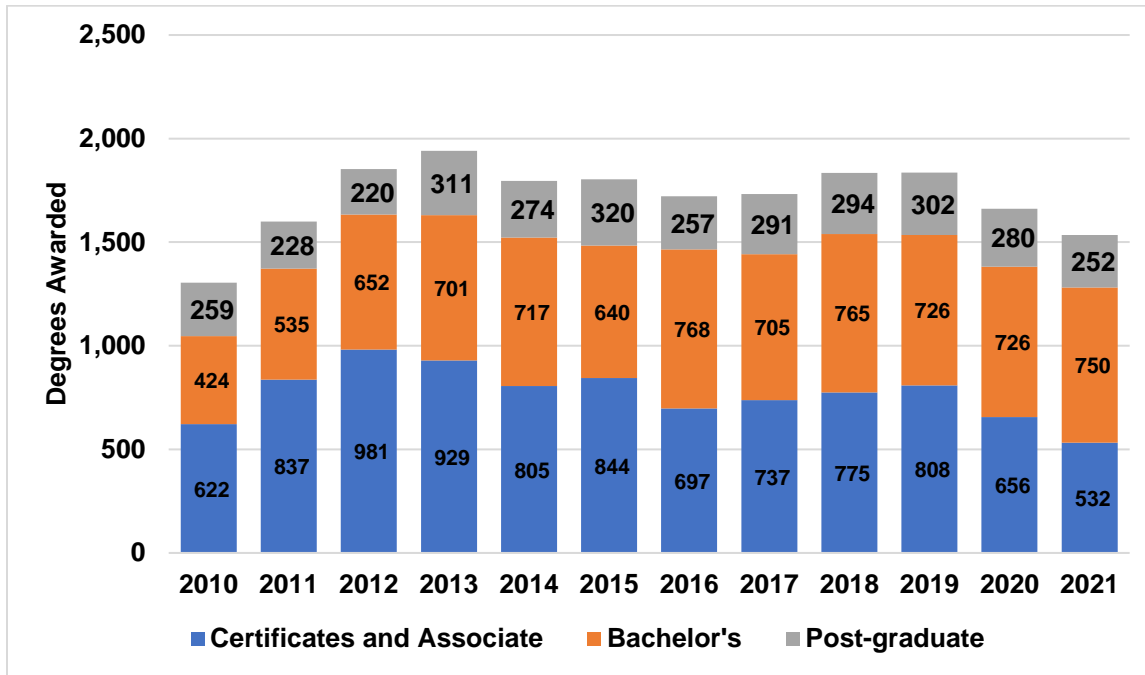


Source: JobsEQ. CIP Code 15-0000. Data are for academic years ending in the year shown.

Another key educational area for the region is Engineering. In Figure 30, we present awards for Architecture and Engineering occupations for Region 5 from 2010 to 2021. All of the seven priority clusters in Region 5 have significant workforce demands in engineering and engineering-related fields. The data in Figure 30, however, do not lend credence to the claim that Region 5 is producing more graduates in Architecture and Engineering occupations.

Figure 30 shows that awards peaked at 1,941 in 2013 and had declined to 1,534 in 2021. The composition of awards has shifted over time. In 2010, 47.7% of awards were either certificates or Associate degrees. By 2021, 34.7% of awards were certificates or Associate degrees. If we dig into the 2021 data, there were 183 certificates and 349 Associate degrees awarded, compared to 750 Bachelor's degrees, 229 Master's and 30 post-baccalaureate or doctoral degrees.

**Figure 30 - Architecture and Engineering Occupation Awards  
Region 5, 2010 - 2021**



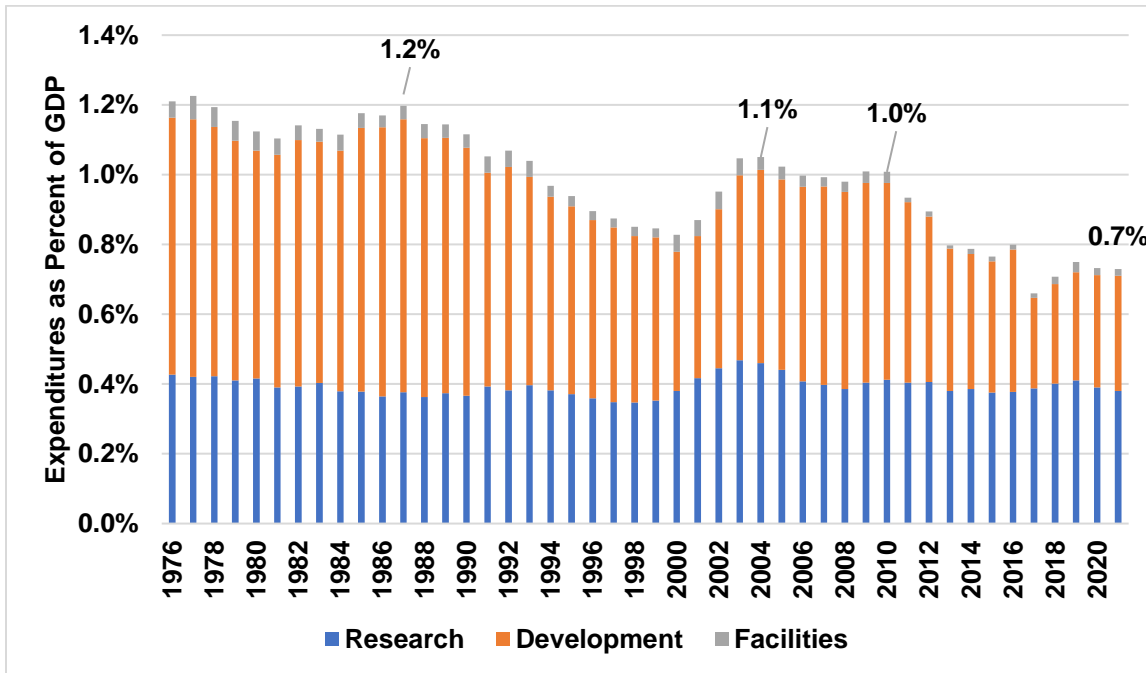
Source: JobsEQ. CIP Code 17-0000.

Two distinct lessons can be drawn from the awards data. First, there is a sizeable share of the population in Region 5 that has attended a higher education institution at some point. Many of these residents obtain Associate degrees, but do not appear to pursue Bachelor's or postgraduate degrees at the same pace as those in Region 4 or Region 7. This suggests that Region 5 could examine ways to assist individuals in moving from an Associate to Bachelor's degrees to boost human capital. The second observation is that Region 5 has not yet generated significant progress on the awarding of engineering and similar degrees. Given the use of STEM and engineering degrees in the key industry clusters, this could stifle innovation in the future unless Region 5 reverses the outmigration of working age adults to bring in new talent to fuel growth in the key clusters.

**Challenge 5**  
**Region 5 Lacks a Deliberate and Coordinated Innovation Strategy.**

Improving economic development in the key industry clusters and spurring growth in the broader economy will rest, in part, on the ability of Region 5 to spur innovation. Innovative ideas, products, and processes are essential to modernizing existing industries. Innovation is also key to maintaining and expanding a region’s competitive advantages in key industry clusters. A region that lacks an innovation culture and environment is likely to lag its relatively more innovative peers over time. Figure 31 shows that federal R&D expenditures have declined as a percent of GDP over the last three decades, falling below 1.0% of GDP during the Great Recession and were approximately 0.7% of GDP in FY 2021.

**Figure 31 - Federal Research and Development Expenditures as Percentage of GDP  
 FY 1976 – FY 2021**



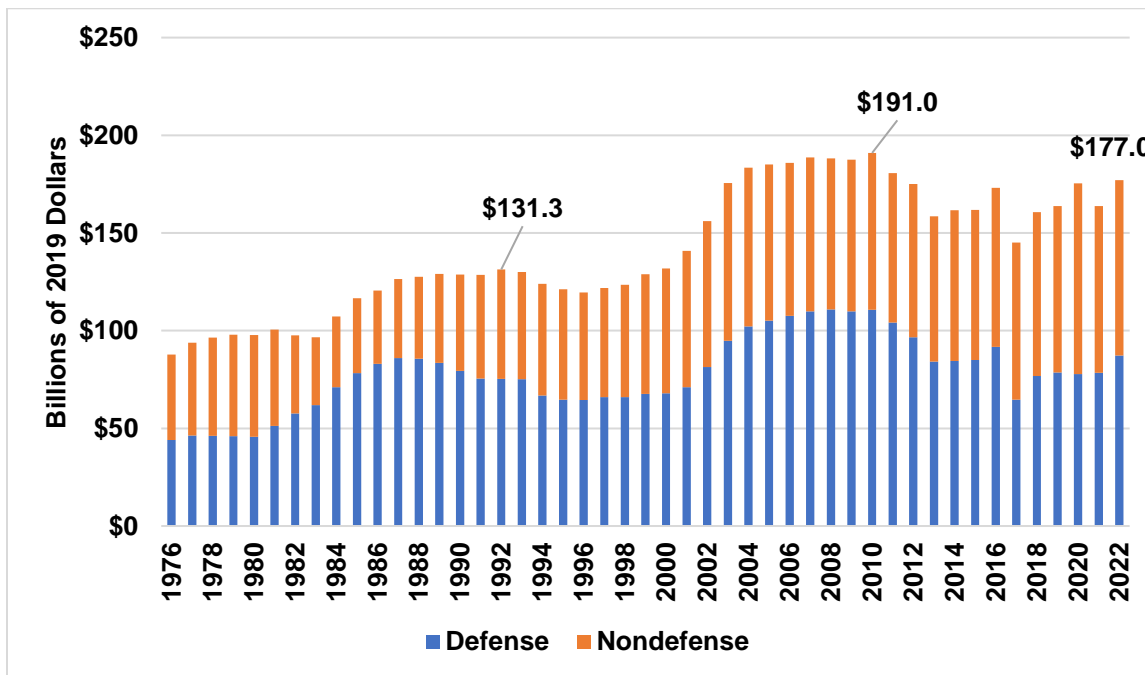
Source: American Association for the Advancement of Science (2022), <https://www.aaas.org/programs/r-d-budget-and-policy/historical-trends-federal-rd>

Broadly speaking, Region 5’s economic relationship with the federal government may influence the pace of innovation in the region. The relative decline in federal research and



development spending is troubling, not only for national competitiveness, but also for the region. Figure 32 illustrates the change in real (inflation-adjusted) federal research and development expenditures from FY 1976 to FY 2022. Federal expenditures peaked in FY 2010 at \$191.0 billion in 2022 constant dollars. In FY 2022, real federal research and development expenditures were approximately \$177.0 billion. However, the composition of federal research and development expenditures changed significantly over this decade. In FY 2010, DoD research and development spending accounted for 58.0% of all federal research and development spending. By FY 2019, this share had dropped to 48.0% before rising slightly to 49.3% in FY 2022. Given the absolute amount of federal R&D has declined in constant dollars over the last decade, this means fewer dollars flowing into DoD R&D budgets and, downstream, into the Region 5 economy.

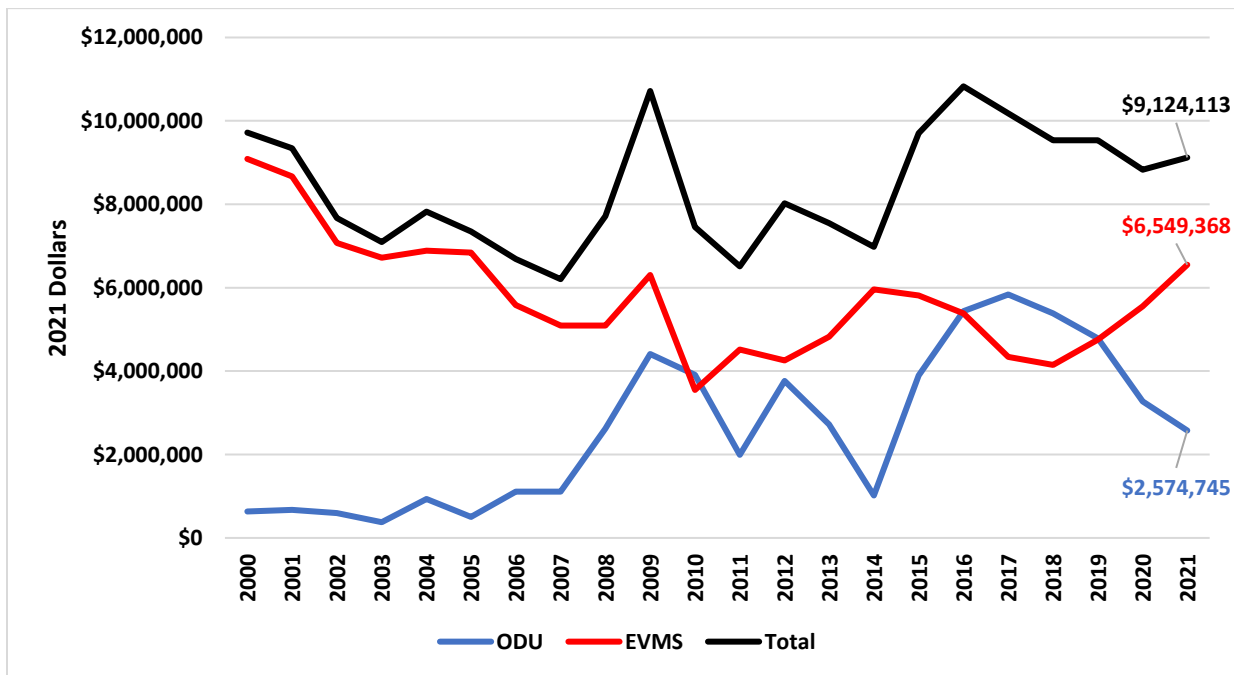
**Figure 32 - Real Federal Defense and Nondefense R&D Expenditures  
FY 1976 – FY 2022**



Source: American Association for the Advancement of Science (2022). FY 2020 data does not contain emergency COVID-19 R&D spending. <https://www.aaas.org/programs/r-d-budget-and-policy/historical-trends-federal-rd>

The National Institutes of Health (NIH) is the largest funder of biomedical research in the United States. In Fiscal Year 2020 (FY 2020), NIH had a discretionary budgetary authority of approximately \$41.7 billion to fund medical research and awarded more than \$32 billion in extramural research funds, largely through competitive grants. In FY 2019, the latest year for which complete data are available, the NIH awarded 71.4% (\$22.3 billion) of all research grants and other mechanisms to institutions of higher education in the United States. Attracting NIH funding is not only a signal of relative competitiveness, it also generates positive economic impacts as NIH funds flow into a region, affecting salaries of faculty and staff as well as other goods and services. Figure 33 illustrates the real (inflation-adjusted) level of NIH funding for Eastern Virginia Medical School (EVMS) and Old Dominion University from 2000 to 2021.

**Figure 33 - Inflation-Adjusted National Institutes of Health Research Funding  
Old Dominion University and Eastern Virginia Medical School  
FY 2000 – FY 2021**

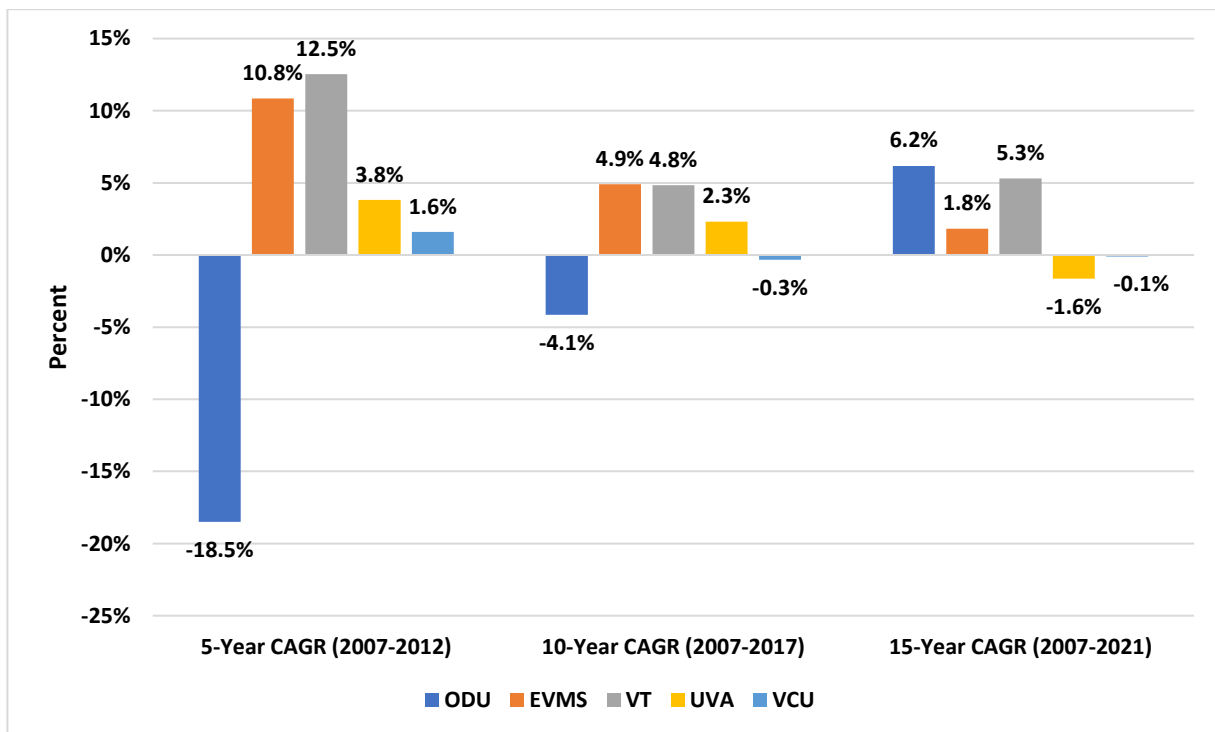


Source: National Institutes of Health (2021). The base year is 2021 and is calculated using the Biomedical Research and Development Price Index from the NIH.

Figure 34 compares the Compound Annual Growth Rate of real NIH funding among selected institutions of higher education in Virginia. From 2017 to 2021, real NIH funding declined at an annual average rate of 18.5% for ODU while increasing at a 10.8% rate for EVMS. Extending the period of analysis from 2007 to 2017 yields an annual average decline in NIH funding for ODU of 4.1% and an annual average increase of 4.9% for EVMS.

**Figure 34 - Compound Average Growth Rate – Real NIH Funding  
Select Institutions of Higher Education, Virginia**

2007 - 2021

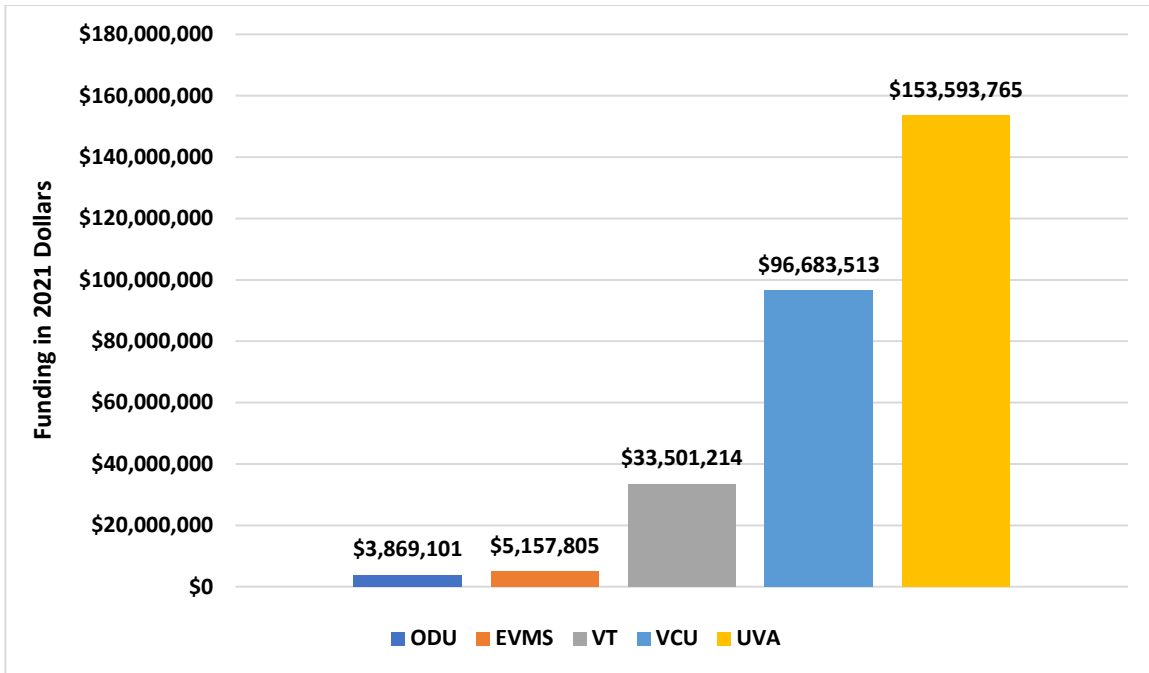


Source: National Institutes of Health (2021). The base year is 201 and is calculated using the Biomedical Research and Development Price Index from the NIH.

Figure 35 illustrates the average level of inflation-adjusted NIH funding among the selected institutions of higher education in Virginia from 2012 to 2021. We select a real 10-year funding average to dampen variability from year-to-year changes in NIH funding. We also argue that a ten-year window is more reflective of the innate capability of academic institutions to attract NIH awards and funding. To estimate the potential economic impact of EVMS and ODU

operating in a more tightly coordinated manner, we posit that increased collaboration would yield significant positive externalities in terms of NIH awards and funding.

**Figure 35 - Average Real NIH Funding from 2012 - 2021  
Select Institutions of Higher Education, Virginia**



Source: National Institutes of Health (2021). The base year is 2021 and is calculated using the Biomedical Research and Development Price Index from the NIH.

### Final Thoughts

The 2021 biennial data update reveals that Region 5 has lagged other regions in the urban crescent, the Commonwealth of Virginia, and the nation in almost every indicator of economic activity. The gains in economic activity at the end of the recent decade have largely dissipated in the face of the COVID-19 pandemic, and the region’s recovery has lagged that of peer and aspirant regions in Virginia and across the United States. While defense spending has increased in recent years, Region 5’s economy has not responded with higher rates of growth akin to the turn of the century.

We encourage revisiting the data on a frequent basis to evaluate how economic conditions are evolving in Region 5. In December 2023, the Bureau of Economic Analysis will

release advance estimates for county and metropolitan area GDP for 2022 and revise previous estimates of GDP. During the same month, the U.S. Census Bureau will release the 2018-2022 5-Year American Community Survey (ACS) estimates. These estimates, along with the previously released 2022 Population Estimates provide insight into socio-economic and demographic characteristics that can inform policy decisions in Region 5.

Fostering a higher rate of private sector employment growth is crucial to reduce Region 5's vulnerability to shifts in national security policy or the federal government's spending priorities. The old proverb that "no tree can grow to the sky" applies here in that, at some point, defense budgets will peak and decline. If Region 5 does not diversify its economy, it faces the prospect of a destructive cycle of economic development where declines in federal spending lead to job and population losses which, in turn, lead to further job and population losses. The economic impacts of sea level rise will only amplify the economic undercurrents facing the region.

There is a modicum of good news. Region 5 does appear to have a competitive advantage in several key industry clusters. Key investments and collaboration across localities to foster economic development efforts can retain these competitive advantages. We remind that economic competition is not static, and if Region 5 does not invest and promote these key clusters, Region 5's competitive advantages will erode over time. Longer-term strategies to increase academic research and development and foster regional innovation will complement efforts to expand the region's competitive advantages in these clusters.

## Section 3: A Review of Region 5's Priority Industry Clusters

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Region 5 identified six priority industry clusters in 2017 and reaffirmed the importance of these clusters in the 2019 biennial update of its Growth and Diversification Plan. The Clean Energy cluster was identified in the 2021 biennial update in addition to the six previously identified clusters. These seven previously identified clusters are joined by a new priority industry cluster in Life Sciences. In this section, we briefly review the eight industry clusters of interest, their recent economic performance, and prospects and challenges for growth over the coming decade.

### Background

The 2017 GO Virginia Region 5 Growth and Diversification Plan used three criteria to identify priority industry clusters: (1) Capacity existed in the cluster that could be scaled; (2) occupations in the identified clusters were forecasted to grow nationally; and (3) an opportunity existed for Region 5 to create a national identity in the identified clusters. Industry clusters were classified into one of three categories: mature, stars, and emerging.

**Mature Clusters** are industry clusters with high location quotients but with relatively slow or negative employment growth. Regions should not abandon growth strategies for mature clusters but must recognize the importance of deliberate intervention to advance the cluster. Growing mature clusters typically involves innovation strategies and seeking out new markets for the firms' products and services.

**Star Clusters** are industry clusters that present opportunities to leverage competitive advantages for economic growth. These clusters have location quotients above 1 and relatively high rates of employment growth. Fostering growth in these clusters can create a virtuous development cycle where growth begets increased talent and opportunities which begets more growth. These clusters still require important growth strategies. Often, star clusters become disconnected across a region as firms in the cluster locate in disparate locations throughout the

region. In addition, star clusters tend to give birth to small, related firms that may go unnoticed. As a result, star clusters can benefit from frequent asset mapping and situational analysis that identifies the firms in the cluster and brings them together to discuss emerging market opportunities.

**Emerging clusters** are industry clusters that have location quotients below 1 but are experiencing relatively high employment growth at the national and regional level. Emerging clusters have very specific needs to evolve into star clusters. First, these clusters need strong regional trade associations to facilitate networking. Networking among the cluster firms provides firm density which assists with developing a regional brand in the emerging cluster. Second, firms in emerging clusters need a process for innovation to keep up with the rapid changes in technology happening in the cluster. Finally, emerging clusters need very clear and deliberate workforce development strategies. The “newness” of the emerging cluster means that a large stock of talent may not exist. This could inhibit firm growth and firm attraction. Workforce development strategies for emerging clusters should focus on both short-term quick credentialing programs as well as medium to longer-term Bachelor’s and advanced degrees programs to promote sustainability of the cluster. Chances are the emerging clusters will need to import talent in the short run to fill workforce gaps that might exist.

### **Priority Industry Clusters**

**Advanced Manufacturing** is an industry cluster that encompasses materials and food manufacturing in which research and development spending is in the 80<sup>th</sup> percentile (\$450 a worker or higher) and where more than 21% of occupations in the industry require a STEM education. There is substantial crossover in the region between firms that work in this industry cluster and significant advanced manufacturing assets as well. There was an average of 10,645 employees in this cluster in Region 5 in 2023 Q1 with an average annual wage of more than \$74,500. This cluster had an employment location quotient of 2.6 in 2023 Q1, highlighting the

relative concentration and potential competitive advantage in this cluster. However, from 2013 Q1 to 2023 Q1, the Advanced Manufacturing cluster lost approximately 200 employees. This may be related to the impact and recovery from the COVID-19 pandemic, but it may also be a warning signal of the cluster losing momentum. Given the speed of change in this industry, Region 5 will need to move with agility to address changing workforce demands and site needs for this cluster to grow over the coming decade.

**Clean Energy** is an industry cluster spanning firms that engage in activities in the renewable energy space, including solar and wind power manufacturing, construction, and generation. Over the next four decades, the U.S. Energy Information Administration projects that most of the addition to the national energy supply will be from renewable sources of energy, thus the growth prospects for this cluster are significant. The Clean Energy cluster was added as a priority industry cluster in the 2021 biennial update.

There were almost 24,000 employees in this cluster in Region 5 in 2023 Q1, with an average annual wage of about \$85,300. The Clean Energy cluster can also leverage existing priority clusters to facilitate growth. Advanced Manufacturing, Shipbuilding and Ship Repair, and Uncrewed Systems and Aerospace utilize common occupational skills with this cluster. Port Operations, Logistics, and Warehousing can facilitate the importation and exportation of products from this cluster. Finally, Water Technologies can cross-pollinate given the expansion of the offshore wind industry and the continued development of solar energy in Region 5.

**Cyber Security, Data Analytics and Modeling and Simulation** is an industry cluster that encompasses a range of activities, inclusive of cyber security, data analytics/data engineering, and modeling and simulation. These activities often overlap in the industry cluster and the cluster is characterized by rapid technological change. The changing needs of this cluster are also reflected in workforce demands. Data analytic tools, for example, are quickly moving towards R, Python, and other platforms and away from legacy, closed-source platforms.



Region 5's educational institutions must be nimble to meet these workforce demands, especially given the rapid and likely sustained transition to remote work in this industry over the last 24 months. There were slightly more than 5,100 workers in this cluster in 2023 Q1 with an average annual wage over \$76,600. While average employment growth was the highest among the priority clusters from 2013 Q1 to 2023 Q1, this is likely due relatively small size of the cluster. With a LQ of 0.6, Region 5 does not have a competitive advantage in this cluster.

**Life Sciences** is a new industry cluster for Region 5 that is closely aligned with the broader Health industry cluster. As noted previously in this report, the health industry cluster had an employment LQ of 1.0 in 2023 Q1. The growth of this cluster over the last decade suggests that an opportunity exists to gain a significant competitive advantage. The health industry cluster was also the third largest in terms of employment in 2023 Q1, only behind Consumer Services and Professional Services. Over the last decade, employment in the health industry cluster grew faster than Consumer Services, Public Administration, and Professional Services.

With this in mind, the GO Virginia Region 5 Council approved the addition of a Life Sciences cluster to the key industry clusters for Region 5. As of 2023 Q1, there were, on average, 6,951 employees in the Life Sciences cluster with annual average wages of \$107,437. While annual average wages in the Life Sciences cluster area almost double the regional average, employment in the cluster declined by approximately 150 jobs from 2013 Q1 to 2023 Q1. These job losses were not, however, evenly spread throughout the cluster. Three sectors (Scientific Research and Development Services, Waste Treatment and Disposal, and Medical Equipment and Supplies Manufacturing) added approximately 500 jobs over the last decade. These job gains, however, were offset by losses in Medical and Diagnostic Laboratories (-585 jobs) and Pharmaceutical and Medicine Manufacturing (-80 jobs). The loss of jobs in the cluster

over the last decade and the relatively small number of jobs compared to other clusters provides insight into why the LQ for the Life Sciences cluster was approximately 0.7 in 2023 Q1.

**Port Operations, Logistics, and Warehousing** is an industry cluster that is broadly defined as economic activity focused on material moving, shipping services, and warehousing. Region 5 has a natural competitive advantage in this industry cluster given the harbors formed by waters of the James, Nansemond, and Elizabeth rivers and the Chesapeake Bay. In the first quarter of 2023, more than 19,000 workers were employed in this industry cluster with an average annual wage of over \$72,000, more than \$15,000 higher than Region 5's average annual wage. Region 5 has an economic competitive advantage in this industry cluster, with an employment location quotient of 1.1. Recent investments in the Port of Virginia have increased capacity and throughput. A continuing challenge is to move from transitioning cargo through the region to using port traffic to generate value-added goods where they are then exported to other locations. The lack of an interstate directly from Region 5 to metropolitan areas to the south continues to constrain growth in this cluster.

**Ship Repair and Ship Building** is an obvious choice as a priority industry cluster for Region 5 given the visible concentration of firms engaged in this industry around the region. Region 5 has a history in this industry stretching back to the founding days of the nation and is a linchpin of the nation's shipbuilding effort. There were almost 40,000 employees on average in 2023 Q1, earning an average salary of over \$81,000. The LQ of 43.1 illustrates the high concentration of Ship Repair and Ship Building-related jobs in Region 5.

**Uncrewed Systems and Aerospace** is a key industry cluster that includes firms in aircraft manufacturing (including drones), aircraft parts manufacturing, robotic manufacturing, and aerospace engineering.<sup>14</sup> Undoubtedly, uncrewed systems will only rise in importance over

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<sup>14</sup> It is important to note that underwater navigational equipment employment and underwater remote vehicles employment currently sit within the Ship Building and Ship Repair cluster.

the coming decade. Drones, automated long-distance transport, robotic-assisted manufacturing, and other technologies are either emerging in the marketplace or on the immediate horizon. There were approximately 14,500 employees in this cluster in 2023 Q1 with an annual average wage of almost \$94,000. We caution that these estimates may be overstated as firms may not be “fully committed” to uncrewed systems and aerospace, working in manned and uncrewed systems simultaneously. The LQ of 1.8 signals that Region 5 has a competitive advantage in this cluster. We recognize, however, that the technological change in this cluster is extremely fast, and the region cannot afford to debate strategies and actions over the course of years. We need only remind the reader that just 15 years ago, only a handful of nation-states had the capability to field drones on a consistent basis. Today, individuals and firms can use drones of increasing capability for a wide variety of uses.

**Water Technologies** is an industry cluster that includes firms in architecture, engineering, and urban planning, as well as firms and institutions doing coastal and climate research. Given the likely impacts of climate change in the coming decades on localities in Region 5, it should be no surprise that an increasing number of firms and institutions are pivoting to produce goods, services, and research in this industry. In 2023 Q1, there were more than 37,000 employees in this industry with an average annual wage approximately \$90,000. With an LQ of 1.2, Region 5 has a comparative advantage in this industry cluster.

## Section 4: Key Occupations Across Industry Clusters

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A workforce gap emerges in a region when there is insufficient supply in a region's workforce to meet the demand for workers in an industry or industries. Given that a region's workforce and the demand for workers is dynamic, we should expect workforce gaps to emerge and close, especially when a region is experiencing high rates of economic growth. Workforce gaps may also persist because a region is unable, due to lagging economic performance and opportunities, to retain and attract talent in key industries.<sup>15</sup>

Table 20 presents the projected workforce gaps by selected major occupations in Region 5 from 2023 to 2033. For example, if the number of projected completions in post-secondary degree programs for healthcare practitioners (a measure of occupation supply) is less than the projected average annual job openings for healthcare practitioners (a measure of occupation demand), then a projected workforce gap exists. On the other hand, if projected post-secondary awards for sales-related occupations exceed the projected demand for sales-related occupations, then a projected workforce surplus will exist.

Over the next decade, the largest annual workforce gap is projected for healthcare practitioners and related healthcare technical occupations. On average, employers will need 209 more workers each year in this occupational field than will be available through the award of post-secondary degrees. Workers in this occupation are relatively well compensated, earning approximately \$40,000 more annually on average than workers across Region 5. The next largest supply gap will be in management occupations, with an average annual deficit of 197 workers. Annual average wages are more than \$122,000, significantly above the regional average.

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<sup>15</sup> The 2019 biennial update of the Growth and Diversification Plan highlighted the findings from the Council for Adult and Experiential Learning (CAEL) and Avalanche Consulting, who were retained by the Hampton Roads Workforce Council in 2018 to produce a gap analysis for industry clusters in Region 5 that closely (but not perfectly) matched the priority clusters identified in the original growth and diversification plan. We perform our own analysis in this section.

The third largest supply gap will occur in computer and mathematical occupations. Over the next decade, Region 5’s awards will fall approximately 180 workers short of what employers need. Given these occupations will earn more than \$100,000 annually, not filling these gaps means employers will have to “import” labor from outside the region or seek their fortunes elsewhere. Given the three largest projected supply gaps are crucial to many of the key industry clusters in Region 5, there must be rapid action to address these gaps else Region 5 faces the prospect of undermining its existing comparative advantages.

**Table 20 – Annual Average Workforce Gaps and Surpluses in Region 5  
2023 - 2033**

<b>Occupation</b>	<b>Average Annual Wages</b>	<b>Supply Gap (-) or Surplus (+)</b>
Healthcare Practitioners and Technical Occupations	\$97,400	-209
Management Occupations	\$122,400	-197
Computer and Mathematical Occupations	\$103,600	-180
Installation, Maintenance, and Repair Occupations	\$54,000	-141
Business and Financial Operations Occupations	\$83,000	-116
Construction and Extraction Occupations	\$51,700	-97
Educational Instruction and Library Occupations	\$62,000	-97
Healthcare Support Occupations	\$32,900	-76
Production Occupations	\$49,900	155
Office and Administrative Support Occupations	\$43,300	264
Food Preparation and Serving-Related Occupations	\$31,300	305
Sales and Related Occupations	\$45,500	422
All Occupations	\$58,800	---

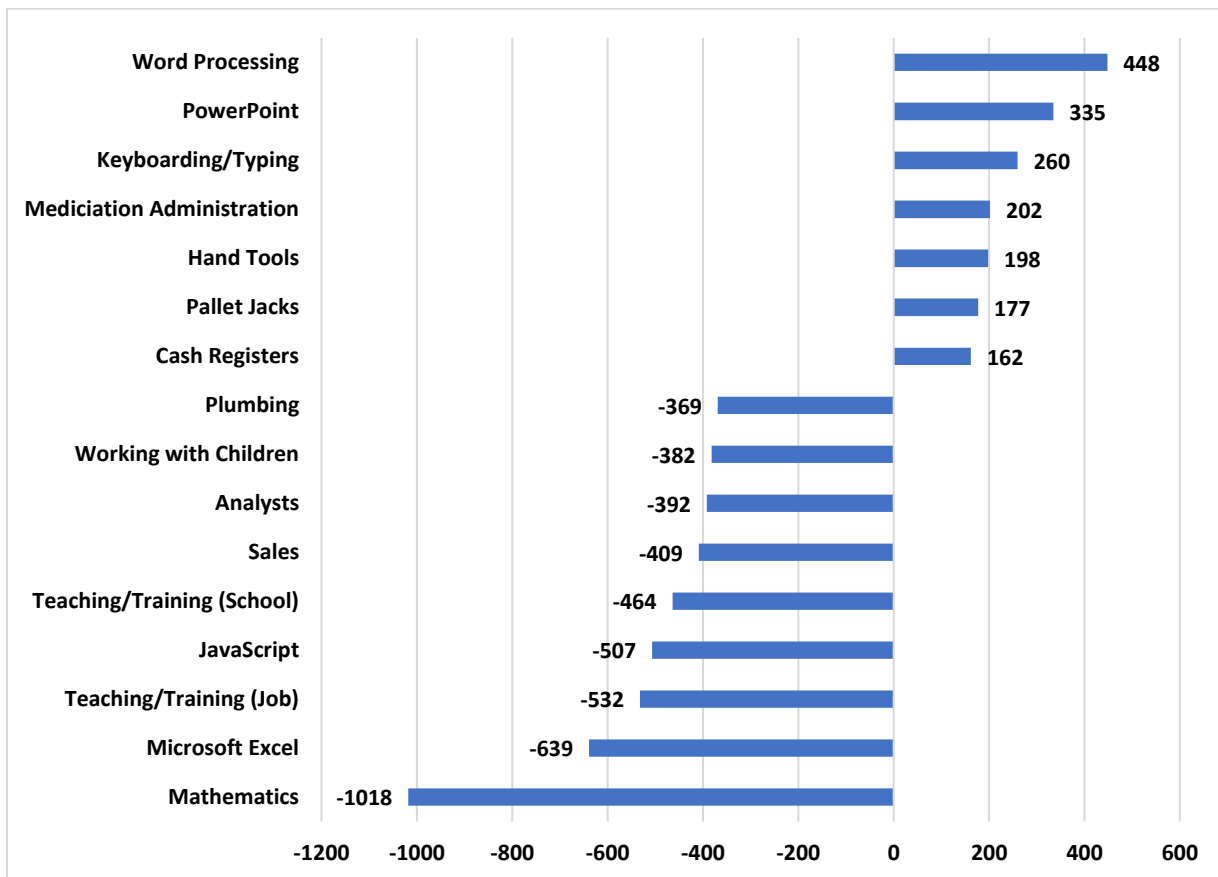
*Source: JobsEQ and the Dragas Center for Economic Analysis and Policy. Occupations only with workforce gaps or surpluses greater than 50 workers a year. Data as of September 2023.*

Workforce surpluses will exist in some of the lower-wage occupations in Region 5. As illustrated in Table 20, the largest occupational surpluses are projected to occur in relatively low-wage occupations. There will be 422 more workers available annually in Region 5 compared to projected employer demand for Sales and Related Occupations. Food Preparation and Serving-Related Occupations will have an annual surplus of 305 employees while Office and Administrative Support Occupations will have an annual surplus of 264 employees. Each of

these occupations earns less, on average, than the prevailing annual average wage in Region 5.

Another means of measuring occupational gaps and surpluses is to examine the alignment of specific skills with the needs of employers. Figure 36 displays estimates of skills in demand and without sufficient candidates (a skills deficit) and skills in surplus. The ability to use mathematics was the skill in the highest demand without sufficient candidates in 2023, followed by the ability to use Microsoft Excel proficiently. Not surprisingly, many of the priority industry clusters in Region 5 have need of these skills, and the region is not producing sufficient graduates to fill these occupational needs.

**Figure 36 – Selected Skill Gaps in Region 5  
2023 Q1**



Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.

Table 21 presents the 10 largest occupations in the Advanced Manufacturing industry cluster in 2023 Q1. Of the 10,611 employees in the cluster, 8.6% were employed in Team Assembler occupations, while 5.1% were occupied in Aerospace Engineer occupations. Average annual wages were more than 3 times higher for the Aerospace Engineering occupations when compared to the Team Assembler occupations in 2023 Q1. The next two largest occupations (Welders, Cutters, Solderers, and Brazers as well as Machinists) earned slightly more than the regional average of \$58,000. What is clear from the occupational distribution is that the Engineering occupations in the Advanced Manufacturing cluster earned well above the regional average in 2023 Q1.

**Table 21 – Key Occupations in the Advanced Manufacturing Cluster  
2023 Q1**

<b>SOC</b>	<b>Occupation</b>	<b>Employment</b>	<b>Percent of Total Employment</b>	<b>Avg Ann Wages</b>
51-2092	Team Assemblers	913	8.6%	\$40,000
17-2011	Aerospace Engineers	539	5.1%	\$130,700
51-4121	Welders, Cutters, Solderers, and Brazers	411	3.9%	\$59,800
51-4041	Machinists	370	3.5%	\$57,500
51-1011	First-Line Supervisors of Production and Operating Workers	362	3.4%	\$76,800
17-2199	Engineers, All Other	287	2.7%	\$120,800
49-9041	Industrial Machinery Mechanics	253	2.4%	\$57,400
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	251	2.4%	\$52,300
51-2028	Electrical, Electronic, and Electromechanical Equipment Assemblers, Except Coil Winders, Tapers, and Finishers	245	2.3%	\$44,200
17-2141	Mechanical Engineers	229	2.2%	\$95,000

Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.

Table 22 displays the 10 largest occupations in the Clean Energy cluster as of 2023 Q1. Electricians were the largest occupation in the cluster, accounting for 12.1% of employment and earning, on average, \$59,100 annually. In 2023 Q1, there were 2,081 Civil Engineers in the Clean Energy cluster, earning, on average, \$95,900 annually. Project Management Specialists (\$106,100), Mechanical Engineers (\$97,900), General and Operational Managers (\$148,700), Electrical Engineers (\$99,600), and Software Developers (\$122,900) earned well above the regional average in 2023 Q1. There were approximately 500 Office Clerks and about another 500 Electrician Helpers employed in the cluster, but these occupations earned less than the regional average. Given that many of the key occupations in the cluster earned significantly more than the regional average, it is clear why expanding this cluster is a priority for Region 5.

**Table 22 – Key Occupations in the Clean Energy Cluster  
2023 Q1**

<b>SOC</b>	<b>Occupation</b>	<b>Employment</b>	<b>Percent of Total Employment</b>	<b>Avg Ann Wages</b>
47-2111	Electricians	2,888	12.1%	\$59,100
17-2051	Civil Engineers	2,081	8.7%	\$95,900
13-1082	Project Management Specialists	907	3.8%	\$106,100
17-2141	Mechanical Engineers	757	3.2%	\$97,900
11-1021	General and Operations Managers	683	2.9%	\$148,700
17-2071	Electrical Engineers	616	2.6%	\$99,600
15-1252	Software Developers	607	2.5%	\$122,900
43-9061	Office Clerks, General	499	2.1%	\$44,300
47-3013	Helpers--Electricians	494	2.1%	\$36,200
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	488	2.0%	\$79,000

*Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.*

The Cyber Security, Data Analytics and Modeling and Simulation cluster employed 5,086 workers in 2023 Q1. As illustrated in Table 23, there were 1,235 Management Analysts employed in this cluster in 2023 Q1 with an average annual wage of \$106,400. In other words,



roughly 1 in 4 employees in the industry cluster were engaged in analysis, not surprising given the composition of the sectors in the cluster. The top-7 occupations in the cluster observed average annual wages above the regional average in 2023 Q1, and only two of the selected occupations in Table 23 (Office Clerks and Customer Service Representatives) observed average wages below the regional average.

**Table 23 – Key Occupations in the Cyber Security Cluster  
2023 Q1**

<b>SOC</b>	<b>Occupation</b>	<b>Employment</b>	<b>Percent of Total Employment</b>	<b>Avg Ann Wages</b>
13-1111	Management Analysts	1,235	24.3%	\$106,400
13-1199	Business Operations Specialists, All Other	278	5.5%	\$89,200
11-1021	General and Operations Managers	261	5.1%	\$152,100
13-1161	Market Research Analysts and Marketing Specialists	229	4.5%	\$68,500
15-1252	Software Developers	194	3.8%	\$118,400
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	152	3.0%	\$83,200
13-1082	Project Management Specialists	150	2.9%	\$103,100
43-9061	Office Clerks, General	96	1.9%	\$41,600
13-2011	Accountants and Auditors	95	1.9%	\$81,800
43-4051	Customer Service Representatives	95	1.9%	\$40,000

Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.

Table 24 contains the ten largest occupations in the Life Sciences industry cluster in Region 5 for 2023 Q1. With the exception of the 9<sup>th</sup> and 10<sup>th</sup> largest occupations (Refuse and Recyclable Material Collectors; Heavy and Tractor-Trailer Truck Drivers), the largest occupations in the Life Sciences cluster earn more (and, for the most part, significantly more) than the regional average. Software Developers earned, on average, \$145,600 a year while Medical Scientists earned approximately \$101,700. The average wage for General and Operations Managers in the Life Sciences cluster was \$182,600 for 2023, followed by

Biochemists and Biophysicists (\$111,600). While Biological Technicians earned \$58,300, slightly less than the regional average, Natural Sciences Managers (\$121,800), Business Operations Specialists (\$101,100), and Project Management Specialists (\$117,400) observed average annual wages well above the regional average.

**Table 24 – Key Occupations in the Life Sciences Cluster  
2023 Q1**

<b>SOC</b>	<b>Occupation</b>	<b>Employment</b>	<b>Percent of Total Employment</b>	<b>Avg Ann Wages</b>
15-1252	Software Developers	327	4.7%	\$145,600
19-1042	Medical Scientists, Except Epidemiologists	259	3.7%	\$101,700
11-1021	General and Operations Managers	223	3.2%	\$182,600
19-1021	Biochemists and Biophysicists	140	2.0%	\$111,600
19-4021	Biological Technicians	139	2.0%	\$58,300
11-9121	Natural Sciences Managers	135	2.0%	\$121,800
13-1199	Business Operations Specialists, All Other	123	1.8%	\$101,100
13-1082	Project Management Specialists	122	1.8%	\$117,400
53-7081	Refuse and Recyclable Material Collectors	120	1.7%	\$45,900
53-3032	Heavy and Tractor-Trailer Truck Drivers	112	1.6%	\$55,300

*Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.*

The 10 largest occupations in the Port Operations, Logistics, and Warehousing industry cluster are highlighted in Table 25. Unlike many other key industry clusters in Region 5, the largest occupations in the Port Operations, Logistics, and Warehousing industry cluster earn less than the regional average. In 2023 Q1, the four largest occupations covered 7,711 employees (more than the total employment in Life Sciences cluster) and these employees, on average, earned less than the regional average. Only 4 out of the 10 largest occupations in the cluster earned more than the regional average and, of these, one (Cargo and Freight Agents) was only slightly above the regional average. We also note that the three largest occupations

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may be vulnerable to increasing automation, that is, the rise of autonomous vehicles and loading machines may reduce employment in these occupations in the coming years.

**Table 25 – Key Occupations in the Port Operations Cluster  
2023 Q1**

<b>SOC</b>	<b>Occupation</b>	<b>Employment</b>	<b>Percent of Total Employment</b>	<b>Avg Ann Wages</b>
53-3032	Heavy and Tractor-Trailer Truck Drivers	2,303	12.1%	\$50,700
53-7065	Stockers and Order Fillers	1,942	10.2%	\$36,100
53-7062	Laborers and Freight, Stock, and Material Movers	1,785	9.4%	\$42,000
53-7051	Industrial Truck and Tractor Operators	1,681	8.9%	\$46,200
53-5011	Sailors and Marine Oilers	969	5.1%	\$52,300
53-5021	Captains, Mates, and Pilots of Water Vessels	857	4.5%	\$100,800
53-5031	Ship Engineers	594	3.1%	\$94,300
43-5011	Cargo and Freight Agents	546	2.9%	\$57,200
43-5071	Shipping, Receiving, and Inventory Clerks	484	2.5%	\$41,000
53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	470	2.5%	\$67,800

*Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.*

Table 26 contains the top-10 occupations in the Ship Repair and Ship Building industry cluster in Region 5 for 2023 Q1. The Ship Repair and Ship Building cluster is the largest key industry cluster in Region 5, employing approximately 40,000 workers in 2023 Q1. About 10% of these workers were classified in the Welders, Cutters, Solderers, and Brazers Occupation, earning, on average, \$60,800 annually. There were also 2,512 Team Assemblers in the Ship Repair and Ship Building industry cluster in 2023 Q1, however, these workers earned significantly less the regional average. Of the 10 largest occupations in the Ship Building and Ship Repair cluster, only First-Line Supervisors of Production and Operating Workers (\$76,000)

and Marine Engineers and Naval Architects (\$96,000) earned significantly more than the regional average. This is in contrast to the smaller Life Sciences cluster where all but one occupation earned more than the regional average. The difference, of course, is that the Ship Repair and Ship Building industry cluster was roughly 5 times larger than the Life Sciences cluster in 2023 Q1.

**Table 26 – Key Occupations in the Ship Repair and Ship Building Cluster  
2023 Q1**

<b>SOC</b>	<b>Occupation</b>	<b>Employment</b>	<b>Percent of Total Employment</b>	<b>Avg Ann Wages</b>
51-4121	Welders, Cutters, Solderers, and Brazers	3,997	10.0%	\$60,800
51-2092	Team Assemblers	2,512	6.3%	\$38,200
51-1011	First-Line Supervisors of Production and Operating Workers	1,902	4.8%	\$76,000
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	1,870	4.7%	\$55,800
51-4041	Machinists	1,552	3.9%	\$57,600
47-2111	Electricians	1,513	3.8%	\$58,900
51-2041	Structural Metal Fabricators and Fitters	1,354	3.4%	\$63,500
47-2152	Plumbers, Pipefitters, and Steamfitters	1,123	2.8%	\$57,200
51-4192	Layout Workers, Metal and Plastic	1,029	2.6%	\$60,400
17-2121	Marine Engineers and Naval Architects	991	2.5%	\$96,000

*Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.*

Table 27 illustrates the 10 largest occupations in the Uncrewed Systems and Aerospace in Region 5 in 2023 Q1. There were 2,066 Civil Engineers, accounting for 14.2% of employment in the cluster, in 2023 Q1. These workers earned \$95,900, almost \$40,000 more than the regional average. Of the 10 largest occupations in the Uncrewed Systems and Aerospace industry cluster in 2023 Q1, only one, Architectural and Civil Drafters, earned less than the regional average. Average annual wages for the seven largest occupations were well above the

regional average, suggesting that growth in this cluster would be due to a rise in higher paying jobs. We note that while this cluster was smaller than the Ship Repair and Ship Building cluster, average annual wages were higher due to the distribution of employment in higher wage occupations.

**Table 27 – Key Occupations in the Uncrewed Systems and Aerospace Cluster  
2023 Q1**

<b>SOC</b>	<b>Occupation</b>	<b>Employment</b>	<b>Percent of Total Employment</b>	<b>Avg Ann Wages</b>
17-2051	Civil Engineers	2,066	14.2%	\$95,900
17-2141	Mechanical Engineers	730	5.0%	\$98,200
13-1082	Project Management Specialists	707	4.9%	\$109,500
15-1252	Software Developers	544	3.7%	\$124,000
17-2071	Electrical Engineers	523	3.6%	\$99,900
11-1021	General and Operations Managers	428	2.9%	\$157,300
11-9041	Architectural and Engineering Managers	400	2.8%	\$149,300
47-4011	Construction and Building Inspectors	366	2.5%	\$63,600
17-3022	Civil Engineering Technologists and Technicians	318	2.2%	\$58,900
17-3011	Architectural and Civil Drafters	317	2.2%	\$55,700

*Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.*

Table 28 highlights the 10 largest occupations in the Water Technologies cluster. Software Developers comprise 8.9% of all employment in the cluster, followed by Civil Engineers (5.6%), and Management Analysts (3.4%). The five largest occupations in the cluster averaged \$113,451 in annual wages in 2023 Q1, roughly double the average annual wage in Region 5. The Water Technologies cluster is also significantly larger than the new Life Sciences cluster. The three largest occupations in the Water Technologies cluster were approximately the same size as the entire Life Sciences cluster. In other words, while some occupations in the small

clusters may earn as much (or more) than the Water Technologies cluster, the size of the Water Technologies cluster means its economic impact is larger on the economy of Region 5.

**Table 28 – Key Occupations in the Water Technologies Cluster  
2023 Q1**

<b>SOC</b>	<b>Occupation</b>	<b>Employment</b>	<b>Percent of Total Employment</b>	<b>Avg Ann Wages</b>
15-1252	Software Developers	3,362	8.9%	\$119,200
17-2051	Civil Engineers	2,128	5.6%	\$95,800
13-1111	Management Analysts	1,294	3.4%	\$106,800
13-1082	Project Management Specialists	1,285	3.4%	\$105,900
11-1021	General and Operations Managers	1,233	3.3%	\$143,100
47-2061	Construction Laborers	1,033	2.7%	\$38,500
15-1211	Computer Systems Analysts	871	2.3%	\$110,300
15-1232	Computer User Support Specialists	760	2.0%	\$57,600
17-2141	Mechanical Engineers	754	2.0%	\$98,400
43-9061	Office Clerks, General	728	1.9%	\$42,700

*Source: JobsEQ and the Dragas Center for Economic Analysis and Policy.*

A final takeaway from the analysis in this section is that there is significant “cross-pollination” across the key industry clusters. Software Development and Engineers, broadly speaking, are two occupations in demand. This illustrates the need for Region 5 to produce more graduates in STEM-associated fields because the key industry clusters rely on these occupations. Without sufficient awards, employers will have to recruit talent outside the region or, worse, move operations outside of Region 5 in search of talent.

# Section 5: Economic Development Site Inventory

Region 5 can improve economic growth and firm diversification if it expands the region’s portfolio of sites that are prepared for business expansion. Companies that intend on making new investments and expanding market opportunities prioritize sites that offer low development risk and speed to market. Region 5, by identifying and expanding sites that complement firms in its key industry clusters, can increase the likelihood that firms in search of new business sites will select the region.

The Virginia Economic Development Partnership (VEDP) defines “Business-Ready” as part of its Virginia Business Ready Sites Program (VBRSP). Table 29 displays the continuum of tiers in the VBRSP. Region 5 adheres to VEDP’s definitions.

**Table 29 - VBRSP Tier System Identifies Prepared and Competitive Sites**

Raw Land	Tier 1-2	Tier 3	Tier 4-5
Identified for development and marketing to prospects.	Site controlled for marketing and development.	Zoned industrial or commercial, due diligence completed.	“Project-ready”. Infrastructure can be in place within 12-18 months.

Source: VEDP

Concerns among local business leaders about GO Virginia Region 5’s portfolio of economic development sites led to the initiation of a study in June 2016 to prepare a regional sites inventory. This study was supported by a GO Virginia capacity building grant. The regional inventory and a subsequent state-wide study found that about 90% of the sites in Region 5 and across the state were in lower VBRSP Tier Levels and were not competitive for attracting investment.

An October 2021 VEDP study estimated that the Commonwealth had experienced significant job and revenue losses since 2016 due to the lack of business-ready sites. The study estimated that approximately 28,000 direct jobs and 21,000 indirect and induced jobs were lost over the study period. About \$27 billion in capital expenditures were not made and the estimated loss in annual state revenues was between \$170 million and \$215 million.

A team of local and regional partners is currently implementing the Hampton Roads Economic Development Sites Readiness Project. This project will complete the due diligence and infrastructure work needed to advance three sites totaling 495 acres from Tier 2 to Tier 4. The key milestones in this process were:

1. **June 2016: Regional Economic Development Sites Inventory** - supported by GO Virginia Region 5 Capacity Building grant.
2. **December 2017: Port of Virginia Opportunity Analysis** – identified improved site readiness as key to port-related economic development opportunities.
3. **October 2018: Hampton Roads Site Characterization/Assessment Study** – identified the VBRSP Tier Levels for 20, 100+ acre sites prioritized for further evaluation in the 2016 Regional Sites Inventory.
4. **2019: VEDP Site Evaluation Study** – 466 sites of 25 acres or more (including 72 in GO Virginia Region 5) were evaluated to determine VBRSP Tier Levels and sector suitability to drive limited investment dollars to the State’s most competitive sites.
5. **2020 - 2021: DHCD/VEDP Collaboration** – state agencies work together with local and regional stakeholders to update guidance for grant funding for site development.
6. **July 2020 - Ongoing: Hampton Roads Economic Development Sites Readiness Project** – a GO Virginia grant-funded project to implement site development work to advance sites from Tier 2 to Tier 4.
7. **January 2023: Governor Glenn Youngkin announced \$90 Million in VBRSP grants to develop industrial sites across the Commonwealth** – award recipients include Chesapeake, Norfolk, and James City County.

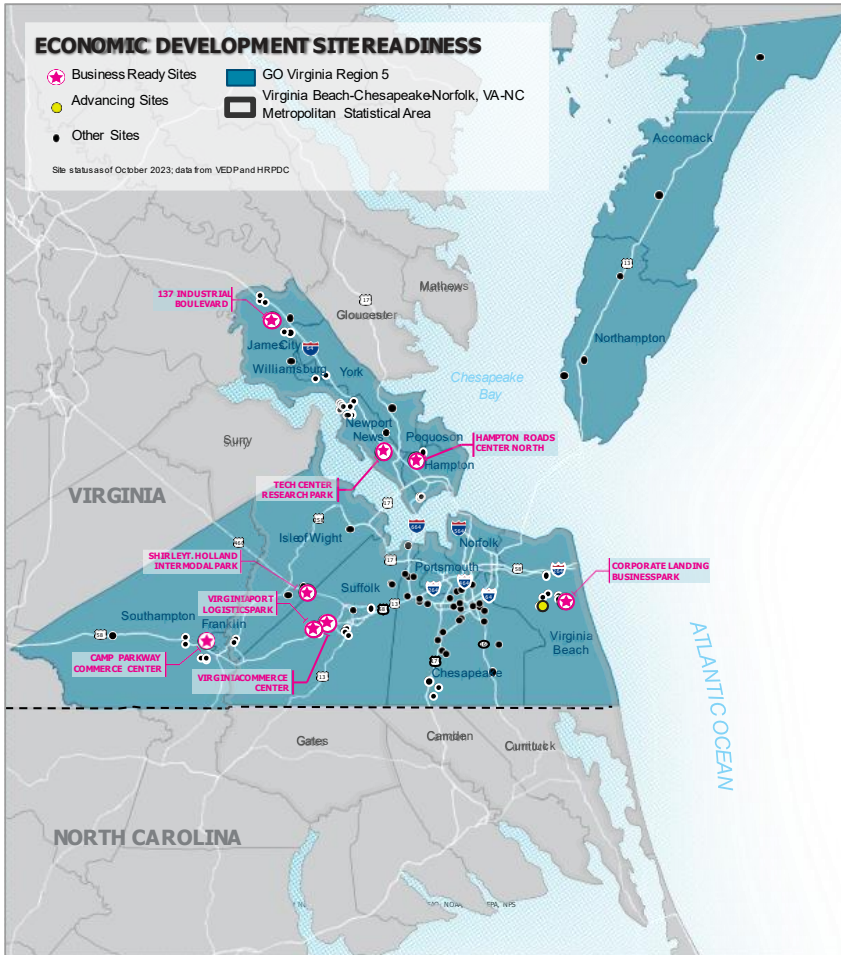
The map “Economic Development Site Readiness” shows the current inventory of sites in GO Virginia Region 5. The Business-Ready Sites (Tier 4 or 5) and Advancing Sites are identified in Table 30. It is important to note that GO Virginia funds have been a catalyst for several Tier



4 designations cited in Table 29. Additional information on sites is available on state, regional or local Economic Development Offices (EDO) websites.

**Table 30 – Business-Ready Sites & Advancing Sites in GO VA Region 5**

Site	Locality	Acres	Tier Level
137 Industrial Blvd.	James City County	10	4
Hampton Roads Center North	Hampton	95	4
Camp Parkway Commerce Park	Southampton County	345	4
Virginia Commerce Center	Suffolk	50	4
Virginia Port Logistics Park	Suffolk	300	4
Corporate Landing Business Park	Virginia Beach	92	4
Shirley T. Holland	Isle of Wight County	268	4
Tech Center Research Park	Newport News	64	4
Phase I			
Fairwinds Landing	Norfolk	111	Advancing to 3
Innovation Park	Virginia Beach	163	Advancing to 4
Phase II			
Mitsubishi Site	Chesapeake	83	Advancing to 4
Southampton Commerce & Logistics Center	Southampton County	80	Advancing to 4
			<b><u>Existing Tier</u></b>
Beale Farm	Southampton County	202	2
Franklin Industrial Air Park	Isle of Wight County	65	2
US Route 460/12360 Windsor Blvd.	Isle of Wight County	83	2
Carlton Advanced Manufacturing Site	Newport News	145	2
Oakland Industrial Park	Newport News	112	2
Air Commerce Park East	Newport News	50	2
Air Commerce Park West Phase 1	Newport News	280	2
Southampton Business Park	Southampton County	32	2
Norfolk Tree Farm	Chesapeake (Norfolk owned)	750	2



Under Phase I of the site readiness project, the Shirley T. Holland site in Isle of Wight County and the Tech Center Research Park in Newport News have been certified as Tier 4. Newport News has invested over \$ 16 million in public infrastructure at this location, to include the new *Tech Center Parkway* and *Innovation Parkway*. In addition, the city is investing \$ 3.7 million in a “Drillfield” green space amenity to further enhance co-worker collaboration through creative collisions. Work is ongoing to complete Innovation Park in Virginia Beach under Phase I and to complete work on the Mitsubishi Site in Chesapeake, and the Southampton Commerce and Beale Farm Sites in Southampton County. As the first phase of the Hampton Roads Economic Development Sites Readiness Project nears completion, local and regional partners are working together and have identified seven new site development opportunities totaling 577

acres. This collaborative planning effort led to a GO Virginia award in 2022 to support Phase II.

The recommended next steps are:

1. Continue to leverage local investment in site preparation with State grant funds to advance strong Tier 2 sites to Tier 4 and 5.
2. Complete a regional planning process to identify and prioritize new site development opportunities. Evaluate site readiness, sector suitability, cost of site improvements and return on investment to identify and prioritize the region's site development opportunities.
3. Use the results of the regional planning process to identify existing and emerging site corridors, clusters, and/or districts. Use the data to support additional coordination between site development and infrastructure planning and investment at a regional scale.
4. Continue to explore joint site development opportunities including potential roles for the Eastern Virginia Regional Industrial Facilities Authority (EVRIFA).
5. Actively encourage all local jurisdictions to join the EVRIFA.
6. Actively advocate for substantially increased State funding for the "Business-Ready Sites Programs" administered by VEDP.
7. For improved coordination once the currently underway regional planning process is completed, transfer the ongoing management of the sites inventory process to the HR Alliance and the Regional Economic Development (RED) Team.
8. In August 2022, the Hampton Roads Alliance executed an MOU to provide administrative and managerial support to the EVRIFA. This MOU provides support at no cost.
9. Create a collaboration, with the City of Chesapeake providing leadership, between VEDP, the HR Alliance, EVRIFA, and other interested stake holders, to explore the best approach and schedule to develop the "Williams Farm" mega-site. This 4,000-acre site is adjacent to 3,000 acres in North Carolina that provides an opportunity for interstate collaboration.

## **Section 6: Recent Developments in Region 5**

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Since December 2017, when the initial GO Virginia grant was awarded to Region 5, the region has received grants totaling \$34.6 million for 45 projects. These grants fall within the highly successful GO Virginia program categories with twelve in Cluster- Scale Up, four in Site Development and Infrastructure, seven in Startup Ecosystem, and 22 in Workforce Development. Combined with the local match of about \$46.8 million, these grants resulted in a total investment of \$81.4 million. A complete listing of the GO Virginia grants received is provided in Appendix A. In addition, Region 5 has also engaged in numerous initiatives since August 2019. This section provides a brief description of major initiatives.

### **Alignment of Regional Economic Development Organizations and Partners**

A key strategic initiative for the Hampton Roads region is alignment and coordination among the region's primary economic development organizations. In Spring 2023, the "Hampton Roads Executive Roundtable" was formed, combining two previous organizations, Reinvent Hampton Roads and the Hampton Roads Business Roundtable. The Roundtable is responsible for regional strategic direction and thought leadership, incorporating innovation and entrepreneurship into the region's economic development strategy, and it continues the role of support organization for GO VA Region 5 previously held by Reinvent. It is comprised of regional CEOs, higher education presidents, and growth companies.

In addition, the "Regional Organizations Presidents Council" was formed, aligning the Alliance, HR Workforce Council (HRWC), HR Planning District Commission (HRPDC), HR Military and Federal Facilities Alliance (HRMFFA), Urban League, 757 Collab, Black BRAND, and CIVIC Leadership Institute, co-convened by the Hampton Roads and Virginia Peninsula Chambers, and with membership from the Roundtable. This development is significant by

clarifying strategic and implementation roles for growing the region’s economy and providing an organizational forum to address new issues and opportunities for the region’s future.

### **Hampton Roads Alliance Restructuring**

As part of the alignment, the Alliance serves as the lead economic development organization and point of contact for outside companies and investors. Through the fundraising efforts of the Alliance capital campaign and in partnership with the Hampton Roads Executive Roundtable, many new private sector investors came on board while existing investors increased contributions, doubling total funding.

The Master Agreement for Regional Economic Development (RED) was executed in September 2019 by all localities in Region 5. As outlined in the Master Agreement, the restructuring led to a smaller, more nimble Alliance Board, creating a more effective working group of C-suite leaders and Mayors. Also, the mission of the Alliance has fundamentally evolved by adding a “Business Retention & Expansion” (BRE) leg of economic development at the regional level. This BRE work is significant since an estimated 75 percent of job growth comes from firms already present in the region. Close coordination with local economic development offices is crucial to the success of this work and is accomplished through the RED teams.

### **757 Recovery and Resilience Action Framework**

The 757 Recovery and Resilience Action Framework is a game plan created by a stakeholder collaboration for the 757’s business community to help accelerate the region’s economic recovery from the COVID-19 pandemic — and to do so in a way that builds a more resilient economy that is better prepared to weather future shocks. Organized and partially funded by a GO Virginia grant around a vision of economic empowerment and growth for all, the Action Framework advances five strategic pillars: Build Regional Unity; Grow New Jobs; Grow, Retain, and Attract Talent; Build Resiliency; and Advance Regional Infrastructure. Each

of these pillars includes specific corresponding program areas with concrete goals, action steps, and quantifiable measures to track and report performance.

### **Hampton Roads Infrastructure Coalition**

The Hampton Roads Infrastructure Coalition (HRIC) was established by a group of 17 regional organizations to prepare the first comprehensive prioritized listing of regional projects. The group developed a high priority list of critical infrastructure regionally based projects approved by all localities in Region 5 as part of the FY2022 appropriations process and the President's American Recovery Act. The HRIC's initiatives focus on water resources, surface transportation, clean energy, broadband, education, and housing.

### **Regional Fiber Network**

The Hampton Roads Planning District Commission (HRPDC) is managing the construction of a regional fiber network that will connect to the subsea cables that have landed in Virginia Beach and distribute this ultrafast fiber around the 17 localities in the Hampton Roads region. Currently over 3,000 linear miles of fiber are under construction on the southside of Hampton Roads. The Regional Fiber Ring on the southside will connect with the subsea cables and interconnect the cities of Virginia Beach, Norfolk, Portsmouth, Suffolk, and Chesapeake through the Southside Network Authority. Further west, the HRPDC secured a State VATI grant to build last mile fiber service in western Suffolk and Isle of Wight/Southampton Counties. Future phases will extend through the Hampton Roads Bridge Tunnel and Monitor Merrimac Memorial Bridge Tunnel to create a complimentary ring on the Peninsula that will serve critical assets such as Jefferson Lab.

### **Regional Energy Master Plan**

The Atlantic Coast Pipeline (ACP) was initially announced in 2014 in response to a lack of energy supply and delivery diversification for millions of families, businesses, schools, and national defense installations across North Carolina and Virginia. Robust demand for the ACP

was driven by the regional retirement of coal-fired electric generation in favor of environmentally superior, lower cost natural gas-fired generation.

Since the termination of the (ACP) in July 2019, the Hampton Roads region has faced a challenge to provide enough energy to support future economic development, particularly through industrial projects. A Request for Qualifications (RFQ) was issued in November 2021 to contract the services of a consultant to conduct an assessment study of the anticipated supply and demand for energy in Region 5 and provide recommendations for an energy mix that will support development over the next 20 to 30 years. The end goal is to create a Regional Energy Master Plan that will guide the region to an energy secure future. The GO Virginia-funded analysis commenced in October 2021 and was completed in September 2022. Since its completion a regional energy steering committee was established and is working alongside the Commonwealth to secure the region's energy future.

### **Hampton Roads Workforce Council and Peninsula Council for Workforce Development Merger**

A major development for regional alignment, occurred on July 1, 2021, when the Hampton Roads Workforce Council (HRWC) officially merged with the Greater Peninsula Workforce Board to serve the 757 as one region, one workforce, and one economy. HRWC has subsequently grown to win two major federal grants, the \$11 million "Build to Scale" EDA grant focused on maritime workforce development and the \$5 million Workforce Infrastructure grant.

### **Hampton Roads Economic Development Site Readiness Project**

In the face of the current economic climate and future aspirations, being site-ready is paramount to winning the attention of companies who would invest in Region 5. Having shovel-ready sites, or the availability of quality sites that can be shovel-ready within 12-18 months, gives companies more incentive to invest in our region over another, which may be outside of the Commonwealth.

The Hampton Roads Economic Development Site Readiness Project leverages funds to complete due diligence work recommended by earlier studies, including the Enhanced Site Characterization project recently performed by the Virginia Economic Development Partnership (VEDP). This effort will assist in promoting the availability of shovel-ready sites to prospective businesses, which would, in turn, help to create higher paying jobs in Region 5. A GO Virginia application was submitted in 2020 where three sites in Region 5 received funding to help accelerate the development to Tier 4. The Hampton Roads Economic Development Sites Readiness Phase II was subsequently awarded a \$ 3.75 million GO Virginia grant in 2022 to advance three sites. Potential sites for a second round of GO Virginia grant funding to advance site readiness have also been identified.

The Chesapeake City Council, in November 2022, rezoned 1,420 acres of agricultural land for an industrial park to be known as Coastal Virginia Commerce Park. The Chesapeake Economic Development Authority then signed a contract to buy this land for \$37 million from Mr. Frank Williams, a farmer in Virginia Beach with an option to acquire another 2,602 acres. This development will go a long way to diversify the regional economy.

### **Eastern Virginia Regional Industrial Facility Authority**

The Eastern Virginia Regional Industrial Facility Authority (EVRIFA) was formed and funded by GO Virginia to provide a regional authority mechanism to enhance the economic base of the member localities by sharing the cost and revenue of economic development projects, regardless of geographic location. Not all members have to participate in a particular project, and any project partnership would have its own agreement requiring governing bodies' approval. In 2022 the EVRIFA signed an agreement to be managed by the Hampton Roads Alliance. The following member localities currently comprise EVRIFA: Chesapeake, Franklin, Gloucester County, Hampton, Isle of Wight County, James City County, Newport News, Poquoson, Williamsburg, and York County.



## **RVA757 Connects (Mega Region)**

The mission of RVA757 Connects is to create an Innovation Corridor by increasing collaboration in infrastructure connectivity, innovation, and workforce talent development. RVA and 757 have joined forces to spark the I-64 Innovation Corridor — an 8,000 square-mile region that runs from Richmond to Hampton Roads along Interstate I-64. The objective of this corridor is to connect, collaborate, and create new ways to deliver business opportunities, scientific breakthroughs, world-class healthcare, military advancements, artistic endeavors, and equitable social and economic opportunities. RVA757 Connects has received a GO Virginia grant in order for Regions 4 and 5 to conduct a talent pool study for the Innovation Corridor.

The study confirmed that collaboration rather than competition between cities is a new paradigm in economic development. The Richmond and Hampton Roads regions need to grow more jobs and retain more home-grown talent. This study also highlighted clear set of strategic imperatives that include supporting key industry clusters, pushing for digital infrastructure growth, focusing on talent retention, improving transportation infrastructure, and heightening communication to inform and connect everyone in the process.

As a megaregion, Richmond and Hampton Roads have a dynamic economic development ecosystem that includes the Virginia Economic Development Partnership, Greater Richmond Partnership, the Hampton Roads Alliance, and local economic development agencies. As an inclusive, mutually supportive network of Richmond and Hampton Roads leaders representing community, business, and higher education, RVA757 Connects is a resource that is bringing the power of convening, connecting, and collaborating at a megaregion scale to ensure future economic growth and prosperity for everyone in the I-64 Innovation Corridor

## **Campus 757**

Campus 757 was launched in April 2021 to work with local universities and corporations to retain and develop young professionals in Hampton Roads. Campus757 is building a community for students to excel professionally after graduation by providing access to career resources, internships, and job positions across industry sectors. The GO Virginia funded initiative will inform and guide students with programs and resources to launch their careers, establish a home base in Hampton Roads and leave a lasting impact in the community.

### **The “Assembly”**

Assembly brings together leading creative and technology companies in one iconic building. It is purposefully designed for shared energy, inspiration, and resources to make each company stronger and to build a collective community with an even greater impact. The facility offers top-notch amenities including a rooftop deck, library, recording studio, event space and other attractive features. The facility is 90% leased with one 4,500 square foot office available for buildout or subdivision. Discussion has begun for the Phase 2 expansion, which will add 50,000+ square feet. The intent is to offer world-class design to enable collaboration, shared resources, and programming. Already located in the Assembly building are 12 tenants, including 757 Accelerate, 757 Angels, and 757 Startup Studios, which make up 757 Collab. 757 Collab is a GO Virginia funded program that has exceeded all deliverables. 757 Collab has directly deployed \$780k in grant capital through 757 Accelerate over its six-year history and 757 Angels has invested over \$105 million in 52 startups over its seven-year history, Activation Capital (ACC) founders have raised over \$ 72 million, and Startup Studios (SUS) founders have raised over \$ 12 million. Thirty-nine startups have gone through ACC, and SUS has served 105 startups since launch. The program has created 1,128 jobs and 62 internships, engaged 243 mentors and 2789 entrepreneurs, and 138 Underrepresented Founders.

### **Navy Tech Bridge**

In May 2021, the Assistant Secretary of the Navy for Research, Development and Acquisition announced the creation of six more “Tech Bridges” nationwide, which included the Mid-Atlantic Tech Bridge (MATB) in Hampton Roads. The MATB is a partnership between the U.S. 2<sup>nd</sup> Fleet and three Navy warfare centers in the region — Naval Surface Warfare Center Dahlgren Dam Neck Activity, NSWC Carderock Norfolk Detachment, and Naval Information Warfare Center Atlantic Hampton Roads Detachment.

Tech Bridge establishes off-base spaces to lower barriers of entry for innovators to connect with Department of the Navy personnel and collaborate on problem solving. The Mid-Atlantic Tech Bridge will connect local startups, academia, and industry partners with the largest U.S. Naval base in the world. As one example, it was instrumental in bringing South Dakota-based cold spray company VRC Metal Systems to Chesapeake, with Navy and commercial clients.

757 Collab has held a partnership agreement with the Mid-Atlantic Tech Bridge since their creation in 2021. 757 Collab facilitates connecting local startups, academia, and industry partners with the largest U.S. Naval Base in the world through public and private events. The MATB staff, in coordination with 757 Collab, have met with over 200 startups, academia, and industry partners.

### **Port of Virginia Expansion**

The Port’s terminal capacity expansion project was completed in fall 2020, following the final phase of construction at NIT South and the arrival at NIT new ship-to-shore cranes. Eighty-six automated stacking cranes were delivered over 27 months. The port now has the capacity to process an additional one million containers or 45% additional capacity: 600,000 additional units at the Virginia International Gateway and 400,000 additional units at Norfolk International Terminal. The combined cost of the project was nearly \$800 million.

The Port of Virginia is investing in Virginia Inland Port (VIP) and Richmond Marine Terminal (RMT) to expand capacity at those facilities, reconfigure some areas of operation and ensure the terminals are ready for the future. It is also important to note that VIP is fulfilling all of its operational electricity needs from clean-energy resources and in doing so moves the Port of Virginia closer to its goal of reducing emissions and becoming carbon-neutral by 2040.

### **Norfolk Harbor & Channels Deepening Project**

The work to deepen the western side of Thimble Shoal Channel, which leads into the Norfolk Harbor, to 55 feet began on December 1, 2019, and is scheduled to be completed by the end of 2024. Once complete, the commercial channels serving the Norfolk Harbor will be able to simultaneously accommodate a two-way flow of ultra-large container vessels. The total cost of the project, including the preliminary engineering and design work, is \$350 million. Once complete the Port of Virginia will become the deepest port on the US East Coast. Deeper and wider channels will support many Virginia businesses and fuel cargo growth, job creation and economic investments across the Commonwealth.

### **James River Barge Service to RVA**

James River Barge Service, a weekly container-on-barge service from Hampton Roads to Richmond, provides a maritime alternative to I-64 by transporting goods on the James River via barges, removing container traffic from local roads and highways. The Richmond Marine Terminal has spent \$6 million on two new barges and is now in a position to provide the thrice-weekly rotation.

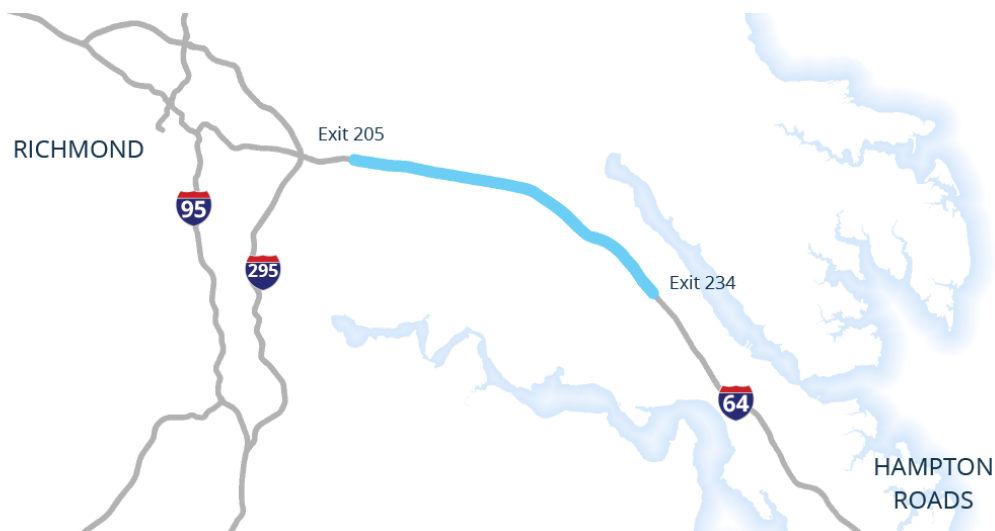
### **HRBT Expansion**

The Hampton Roads Bridge-Tunnel Expansion is the largest highway construction project in Virginia's history, costing roughly \$3.9 billion. This transformative undertaking funded by a regional set of taxes is scheduled for completion by summer of 2027. The project will widen

the current four-lane segments along nearly ten miles of the I-64 corridor in Norfolk and Hampton, with new twin tunnels under the harbor.

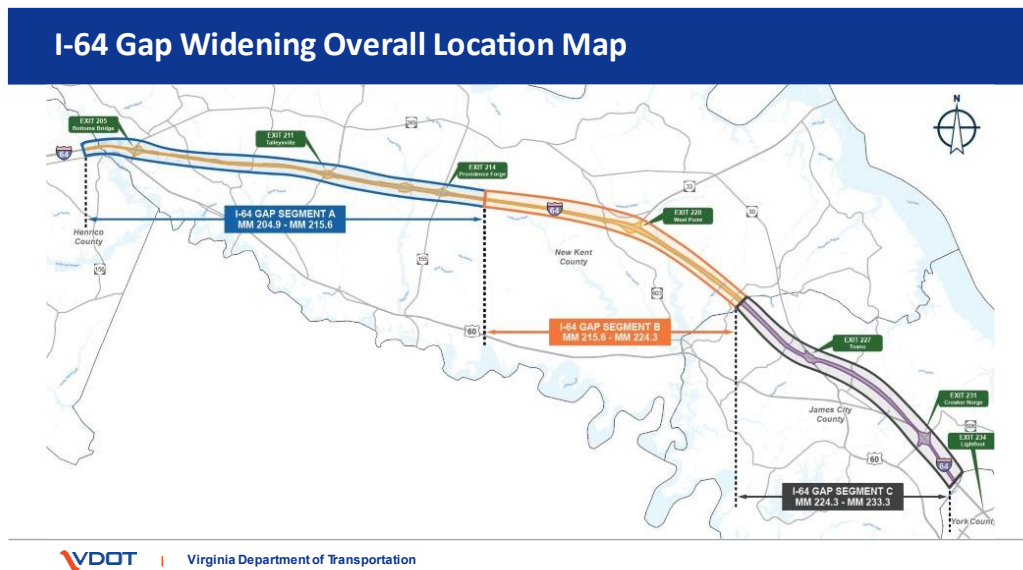
### **I-64 Widening to Six Lanes**

The purpose of the I-64 Widening Project is to improve mobility in Region 5, and especially on the Peninsula. After much regional advocacy from the Hampton Roads Planning District Commission member localities through their regional legislative agenda, the 29 -mile I-64 Gap is fully funded at a cost of \$ 750 Million. The Virginia Department of Transportation will deliver the project, providing three travel lanes in each direction in three segments, the final segment will be completed in 2028. The I-64 29-mile gap widening between Hampton Roads and Richmond has been the top priority roadway project of RVA757 Connects and is depicted in the diagram below.



The cost 29-mile I-64 gap project will be completed in three phases. Segment A, as shown below, located in New Kent County will be the first phase and will go from mile marker 205 to 215. This phase is expected to begin in November 2023 and is projected to be completed in July 2027. Segment C located in James City County will be next from mile marker 224 to 233 and is expected to be completed in November 2027. Finally, Segment B

located in the middle portion in New Kent County from mile marker 215 to 224 is expected to be completed in April 2028.



### **Chesapeake Bay Bridge Tunnel Expansion**

The Chesapeake Bay Bridge-Tunnel (CBBT) expansion is under construction with projected completion in 2027 due to several delays. When complete, the new tunnel will carry two lanes of traffic southbound, and the existing tunnel will carry two lanes of traffic northbound. The northern tunnel is expected to get a similar expansion in the 2030s.

The \$756 million parallel tunnel at Thimble Shoals is being built to improve traffic safety and reduce congestion near Virginia Beach during the busy summer tourist season. The additional tunnel also can serve as an emergency backup.

### **Norfolk International Airport**

Norfolk International Airport has outlined an airport expansion project in its Master Plan Update, ensuring that ORF's airfield, passenger terminal and aircraft gates, support facilities, and surface and transportation-related facilities can adequately accommodate existing and anticipated activity levels well into the future.

The airport has also added Breeze Airways to its roster of airlines. Breeze Airways, a U.S.-based airline, provides low-cost, nonstop service to mid-size markets. Breeze has invested \$5.2 million to establish an operations center in Norfolk. The company targets underserved cities without nonstop service and has identified dozens of route opportunities from Norfolk International Airport. Virginia successfully competed with several other locations for this project, which will create 116 new jobs.

Spirit Airlines started its service at Norfolk International Airport in March 2023 offering nonstop service to Fort Lauderdale and Orlando, and connection options to places such as the Caribbean and Latin America.

Norfolk Airport is also receiving about \$13 million dollars in federal funding to support the Airport's ongoing efforts to rehabilitate runways. This money is part of more than \$44 million headed to the commonwealth through the Federal Aviation Administration's Airport Improvement Program this fiscal year. The program funds airport infrastructure projects, including runways, airport signage and lighting. Also in February 2023, the airport received \$5.4 million in federal funding to construct a people mover on the pedestrian bridge connecting the departures and arrivals terminal building. Last year was the best year in the airport's 85-year history as Norfolk airport handled 4.12 million passengers slightly more than the Richmond airport which handled 4.07 million passengers.

However, the news is not good for the Newport News Williamsburg Airport. American Airlines is the only airline serving this airport currently having 4 flights to Charlotte only. Passenger traffic peaked in 2010 at around 1.1 million passengers served. Since then, it's been on a steady decline. Roughly 150,000 passengers traversed the airport in 2022. The airport's current fiscal year operating budget projects a \$2.5 million loss. The Newport News Williamsburg Airport is currently updating their Long-Range Master Plan to include light industrial development site opportunities for aviation-related uses.

### **Military Circle Design Competition**

The Military Circle area has been a regional crossroads for decades. The intersection of two major boulevards—Military Highway and Virginia Beach Boulevard—created a transportation and economic crossroads in the mid-20<sup>th</sup> century that led to the growth of much of the early retail development in the region. The Norfolk Economic Development Authority (NEDA), purchased much of this area in 2020 with the ambitious goal to redevelop the area into a thriving walkable district to support an inclusive, healthy, and sustainable mixed-use community.

### **MacArthur Mall**

In August 2023, the City of Norfolk purchased the 1 million square foot MacArthur Mall. The city has engaged an international architecture firm to explore reuse concepts.

### **Dollar Tree HQ - Summit Pointe**

Dollar Tree’s headquarters expansion has been completed, and the Summit Pointe mixed-use commercial center is underway. The \$110 million expansion of Dollar Tree’s headquarters in the Greenbrier area of Chesapeake is the tallest commercial building in the city. This 13-story tower boasts 325,000 square feet of Class A office space and added 600 high-paying jobs to the Hampton Roads area.

Phase Two began with the Helix apartment building, completed in summer 2020. Next came 555 Belaire, a six-story office building finished early this year. With Mosaic now under construction, the final element of Phase Two will likely be another residential building, which would break ground in early 2022 and be completed by the end of 2023. Summit Pointe is presently zoned to develop one million square feet of office space, more than 1,400 residences, up to 500,000 square feet of retail space, and 250,000 square feet of hospitality and conference space.

### **Transatlantic Subsea Cables**



Hampton Roads is a global gateway, offering unparalleled connectivity. The region is home to the highest capacity transatlantic subsea cables in the world: MAREA, BRUSA, Dunant, and coming in 2023, CONFLUENCE-1. MAREA, owned by Microsoft and Facebook and operated by Telxius, brought the first ultra-high-speed 200 terabits per second (Tbps) fiber optic cable from Bilbao, Spain, to Corporate Landing. BRUSA, owned and operated by Telxius, brought the second cable (138 Tbps) from Rio de Janeiro and Fortaleza (Brazil) to Virginia Beach in 2018. DUNANT, owned by Google, connected Virginia Beach to Europe in late 2020. Dunant is the first long-haul subsea cable to feature a 12-fiber pair space-division multiplexing (SDM) design delivering a record-breaking capacity of (250 Tbps) across the ocean. The landing site has the capacity for a fourth cable.

CONFLUENCE-1 is a proposed undersea cable system linking prominent undersea cable landing stations on the East Coast of the U.S. The cable is scheduled to be ready for service in 2023. CONFLUENCE-1 will serve as a diverse, more direct, and more secure alternative to current linkages via existing terrestrial routes between Miami and New York. As announced in May 2022, Virginia Beach-based Globalinx Subsea Colocation is building four more subsea bore pipes in the city's Sandbridge area.

In September 2023, RVA-757 Connects released its plan to create a global internet hub, defined as "a physical location that facilitates the exchange of internet traffic among multiple networks, internet service providers, content delivery networks and other interconnected entities". Microsoft, Facebook, Google, and others are investing in the newest and fastest transatlantic fiber optic cables in the world, connecting the I-64 Innovation Corridor to Brazil, Spain, France, and South Africa. This lightspeed access can ignite the growth of data centers, making the I-64 Innovation Corridor a vital part of the world's digital network. The Hampton Roads Alliance has engaged Mike Grella, formerly of Amazon, to conduct a study of major sites in Hampton Roads for their suitability for data centers.

## **Amazon Distribution and Fulfillment Centers**

Amazon completed two major facilities in Hampton Roads: a robotics fulfillment center in Suffolk creating 1,500 jobs that, other than the Pentagon, will be the largest logistic building by volume in the world, and a processing center (cross-dock) in Chesapeake creating 1,000 jobs. Both facilities opened in 2022 and will significantly benefit the Port of Virginia. Amazon also opened two new delivery stations – a 165,000 square foot facility on Sewells Point Road in Norfolk and a 111,600 square foot facility on W. Mercury Boulevard in Hampton. These stations will each create 200 full-time and part-time jobs.

Amazon in September 2023 announced that it will launch a fulfillment center and delivery station in Virginia Beach creating an estimated 2,100 new jobs including 1,000 full-time positions. The company anticipates launching operations at the delivery station in time for the 2024 holiday season and at the 650,000-square-foot robotics fulfillment center in 2025. VEDP worked with the city of Virginia Beach and the Hampton Roads Alliance to secure the project. The city will fund stormwater and road improvements between Dam Neck Road and London Bridge Road to provide access to the new facilities, and Dominion Energy will provide power to the sites.

## **Hampton Roads Maritime Collaborative for Growth and Innovation – Maritime Industry Cluster**

A key initiative for the maritime industry cluster is establishment of the Hampton Roads Maritime Collaborative for Growth & Innovation (HRMC), announced in 2021. HRMC is an umbrella organization providing thought leadership, alignment, and organizational structure to identify, prioritize, and pursue impactful opportunities for long-term economic development and innovation in the Hampton Roads maritime industrial base ecosystem.

In November, HRMC released “A Pathway for Maritime Innovation in Hampton Roads,” prepared by TEconomy Partners that identifies opportunities to leverage and expand the

region's innovation and workforce support for industry partners. ODU also announced the establishment of the ODU Maritime Initiative – and in September 2023, SCHEV approved the new School of Supply Chain, Logistics, and Maritime Operations. The Maritime Initiative will coordinate and grow the University's maritime-related degree and certificate programs, talent development, entrepreneurship and research and innovation. It will expand opportunities to engage industry partners across a broad spectrum of maritime domains, including the Port of Virginia, offshore wind energy, the Navy, shipbuilding and repair, autonomous systems and cybersecurity in catalyzing workforce, research, and innovation.

Hampton Roads continues putting the pathway recommendations and ODU's leadership role into action despite not receiving a "Build Back Better Regional Challenge" grant through the U.S. Economic Development Administration in 2022. The application including Hampton Roads and northeastern North Carolina identified the theme of maritime innovation as one industry cluster, with three of the seven projects proposed based directly upon the "Pathways" report.

### **Virginia Offshore Wind**

Virginia has a goal of 5,200 MW of offshore clean energy capacity by 2034, and the Dominion Coastal Virginia Offshore Wind (CVOW) project will help get the state there. The project calls for the construction and operation of 176 turbines of the shore of Virginia Beach at an estimated cost of \$9.8 Billion. During operations and maintenance, the CVOW project is expected to support about 1,100 long-term jobs. Dominion Energy completed a two-turbine, 12 MW CVOW pilot wind farm located adjacent to the commercial development that became operational in 2020. This facility will be the largest OSW facility in North America, providing 2,640 MW of electricity to power 660,000 homes.

Dominion Energy has contracted for an installation vessel at a cost of \$500 million. This vessel, the first Jones Act-compliant ship, will be homeported in Hampton Roads and provide capacity to install additional OSW facilities along the coast. Avangrid Renewables' Kitty Hawk

project will follow the Dominion project and will be serviced out of the port of Virginia. As other OSW projects come online the ability to utilize the Portsmouth Marine Terminal and other properties such as Lambert's Point to help secure a Hampton Roads advantage.

The Siemens Gamesa announcement, in October 2021, of a \$200 million blade finishing facility to be located on the PMT property should produce dividends for the region. The Lambert's Point Docks property in Norfolk is expected to become a maritime operations and logistics center to support local offshore wind, defense, and transportation industries.

The 111-acre property, to be known as Fairwinds Landing has 6,000 linear feet of waterfront infrastructure, as well as pier space with more than 30 feet of water depth. It also has deep water access and doesn't have air draft restrictions. Fairwinds Landing will support several aspects of the offshore wind supply chain: manufacturing, fabrication, and assembly; construction and storage; staging, maintenance, and operations; and maritime logistics and transportation. The owners plan to invest more than \$100 million in buildings and infrastructure, starting in late 2022. This facility will host companies who will bring over 500 new jobs to the area supporting the offshore wind energy industry.

Fairwinds Landing's Monitoring and Coordination Center (MCC), an offshore wind energy monitoring and coordination center, will occupy 7.5 acres of the site, which has deepwater access to the Elizabeth River and is across from Portsmouth Marine Terminal. Expected to be completed in 2025, the MCC will support more than 200 construction and engineering jobs. The MCC will include two buildings — a 31,167-square-foot operations and maintenance center and a 17,280-square-foot warehouse. The operations center will be used by Dominion Energy Inc. to monitor maritime activities, analyze asset performance, provide strategic planning, and ensure regulatory compliance. Dominion will have more than 45 shore-based personnel and 60 vessel-based personnel based who will be deployed to the offshore

wind farm. The MCC will feature 950 linear square feet of pier frontage for offshore wind support and crew vessels.

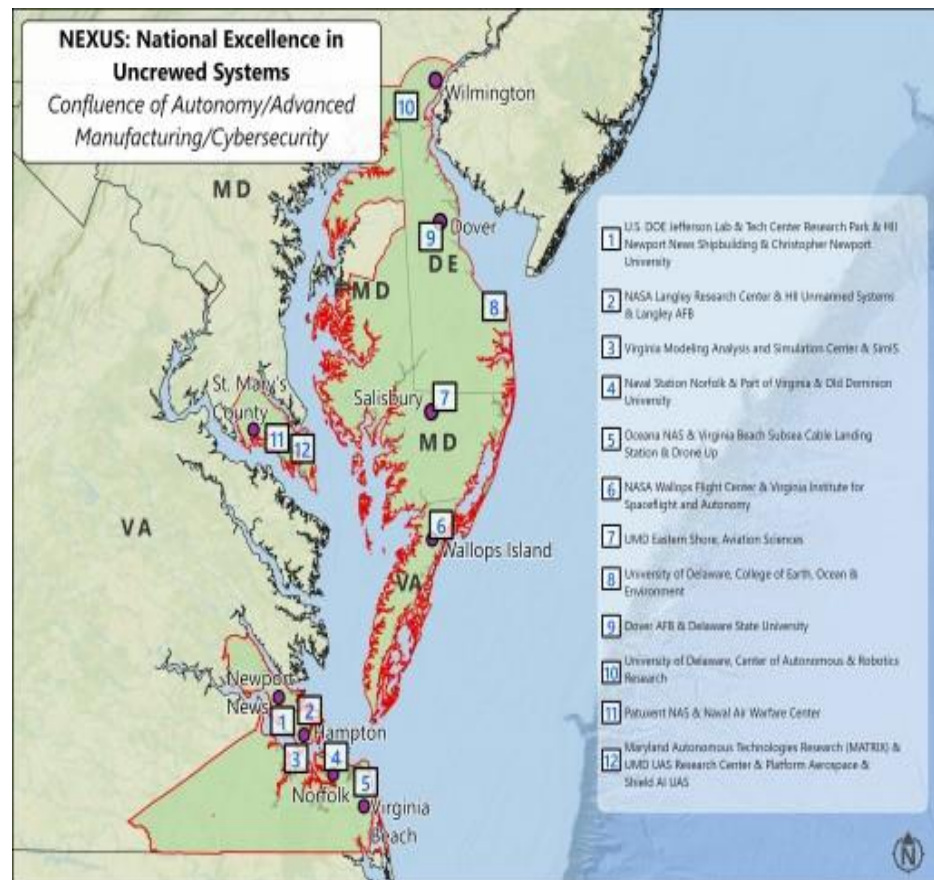
### **Hydrogen Fuel Program**

The Hampton Roads Alliance and the cities of Newport News, Norfolk, Portsmouth, and Virginia Beach, in partnership with Virginia Tech Corporate Research Center (VTCRC), are creating a green hydrogen fuel project. This project is expected to create 230 high-paying jobs and will be in the Tech Center Research Park near Jefferson Lab in Newport News. The demonstration site project, which includes a nearly \$1.5 million grant from Go Virginia with additional \$5 million in matching funds, is intended to help existing companies expand while attracting new development to the region. VTCRC will scale-up the clean energy industry in Hampton Roads through green hydrogen production. The project will initiate three to five hydrogen transition projects to drive local industry investments, establish a hydrogen competency center to educate and attract businesses and create advanced workforce and talent programs to support the clean energy sector. This project could be just the beginning of significant advances in this sector. Virginia, Maryland and Washington, D.C., are hoping to receive part of \$8 billion in regional hydrogen hub funding from the Department of Energy.

### **NEXUS: “National Excellence in Uncrewed Systems: Air, Land, Sea, Space and Digital Hub” – Industry Cluster**

NEXUS was formed and submitted as an EDA “Tech Hubs” application during summer, 2023. Led by the Hampton Roads Executive Roundtable, over 100 businesses, organizations, higher education, community, and other economic development partners from 3 states joined together to propose this international center of excellence for uncrewed/autonomous systems through industry expansion and engagement, coordination and marketing of multi-domain test sites, commercialization and entrepreneurship, and workforce training and readiness. The geography covers GO VA Region 5 (Including the VA Eastern Shore), Delaware, and Maryland’s

Eastern Shore. NEXUS aligns with Region 5's industry clusters and provides a solid opportunity to build out this industry cluster in the years ahead. Many key partners are unique to this region – NASA Langley Research Center, NASA Wallops, and JLab, as well as the U.S. Navy and other military installation and cybersecurity partners.



### **HII/NNS Unmanned Vehicle Manufacturing Facility**

Huntington Ingalls Industries (HII) has completed the first phase of its Unmanned Systems Center of Excellence with the construction of a 22,000 square-foot facility. The first of

two planned buildings on the 20-acre campus in Hampton will be used to assemble hull structures for Boeing's Orca Extra Large Unmanned Undersea Vehicle (XLUUV) program for the U.S. Navy. Structural development of the main facility, a 135,000 square-foot building, is now complete. The purpose-built, state-of-the-art facility will be used for unmanned systems prototyping, production and testing. HII partnered with the Virginia Economic Development Partnership (VEDP), the city of Hampton and the Alliance to secure the project. More than 250 high quality jobs will be created to support unmanned systems design and production.

### **VRC Metal Systems Cold Spray Technology**

VRC Metal Systems opened in Chesapeake to deliver cold spray to the Norfolk Naval Shipyard. With respect to shipyard applications, cold spray has the potential to repair components previously deemed beyond capable repair as well as provide more durable repairs for those items previously epoxy/electroplate repaired. VRC Metal Systems, LLC, in collaboration with Mid-Atlantic Tech Bridge (as mentioned earlier in this section) and the U.S. Navy, leased an industrial facility in Chesapeake, creating up to 10 new jobs for the Hampton Roads region. The company's initial investment will create a commercial entity to be used for both industrial repair and innovative manufacturing process applications utilizing the company's cold spray technology. This nascent technology has the potential to revolutionize the ship repair industry.

### **CHKD Pediatric Mental Health Building**

The \$224 million CHKD Pediatric Mental Health Hospital is expected to transform mental health care for children across the mid-Atlantic, filling a critical gap in a shortage of pediatric mental health services. The 60-bed facility offers a new level of care, standing out among the nation's top pediatric mental health hospitals, with innovative patient- and family-centered design, research-based treatments, academic training programs for the next generation of child psychiatrists, and unparalleled support and community involvement. The facility, opened in

2022, will also provide outpatient therapy and a “partial hospitalization” program that provides intensive care to children who will spend most of the day at the hospital, but still reside at home.

### **Eastern Virginia Medical School (EVMS)**

The \$80 million, 11-story EVMS New Education and Academic Support Building is a vital hub for the collaborative work that defines EVMS’s distinctive approach to medicine and supports the next generation of leadership and growth at EVMS. The new EVMS Education & Academic Administration Building (Waitzer Hall) expands the capacity and consolidates existing spaces for teaching, study, student support and administrative workplace.

The Virginia General Assembly included funding in the State Budget to support the integration of Old Dominion University (ODU) and Eastern Virginia Medical School (EVMS). The integration, on schedule for January 1, 2024, will create the largest portfolio of health sciences degrees in the Commonwealth. The integrated center would provide 56 health sciences programs, including 18 not offered elsewhere in Virginia.

### **Brock Cancer Center**

Sentara Healthcare has officially opened the doors to the Sentara Brock Cancer for patient care and comprehensive cancer treatment. This new patient-centered facility transforms cancer care in Hampton Roads by bringing together expert care teams, community organizations and holistic cancer treatment services within one location. The Sentara Brock Cancer Center is a \$93.5 million, 253,000 square-foot facility and regional hub for the Sentara Cancer Network.

The Sentara Brock Cancer Center brings together care team partners from Virginia Oncology Associates (VOA), Eastern Virginia Medical School (EVMS) Medical Group and additional community providers. By partnering with like-minded clinical teams and community organizations, cancer patients, survivors and their families will benefit from increased access to



cancer resources and services, expanded screening, awareness and prevention efforts, treatment options, and survivorship care.

### **New Veterans Affairs Clinic To Open in Chesapeake**

The U.S. General Services Administration broke ground in October 2022 on the new Department of Veterans Affairs Community-Based Outpatient Clinic on a 25-acre parcel of land on the Chesapeake Regional Hospital campus. The new 196,000-square-foot facility is designed to improve veterans' access to outpatient services such as primary care, mental health, and eye clinic services, as well as new specialty care and advanced imaging services. The new location is also expected to reduce drive times as patients will no longer need to drive to Hampton for routine appointments. The facility should open in Fall 2024. A second 246,000 sq. ft. VA Health Care Facility on the southside was approved and proposals requested and due in September 2023. The new facility expected to be complete in early 2027 will be located around the I-64/I-264 interchange.

### **Rivers Casino Portsmouth**

The \$340 million, 250,000-square-foot **Rivers Casino** Portsmouth opened its doors in January 2023. The casino is expected to generate \$16.3 million in tax revenue annually, create 1,300 permanent jobs with an estimated annual payroll approaching \$62 million. The casino's offerings include restaurants, 1,446 slot machines, 57 game tables and a sportsbook with a 12-foot-by-62-foot-wide viewing wall that can simultaneously display dozens of televised sports events. The casino also has a 25,000-square-foot multipurpose event space.

### **The Headwaters Resort and Casino (Headwaters)**

Headwaters Casino will be located on roughly 20-acres of waterfront property adjacent to Harbor Park, home of the City's Triple-A-baseball stadium. The project is anticipated to have more than 300 four-diamond hotel rooms, a gaming floor, rooftop bar, waterside infinity pool, luxury spa, sports bar and grill, steakhouse, multi-purpose event center and a rooftop outdoor

event space. HeadWaters is initially estimated to produce \$24.8 to \$44.5 million in annual tax revenues, create 2,500 new jobs and have an annual indirect economic impact value of \$850 million. Groundbreaking is anticipated in late 2023, with a permanent venue opening two year later. The \$500 million Headwaters Resort and Casino will redefine Norfolk's waterfront. This latest addition that together with Harbor Park, the Half Moon Cruise Terminal, and many other arts, culture, and recreation amenities, solidifies the City's downtown as the premiere entertainment center in the region.

### **Norfolk Innovation Corridor (NIC)**

The Norfolk Innovation Corridor is an International Economic Development Council award winning public-private partnership established to attract and retain technology companies while serving as a magnet for a talented and diverse workforce. Under state law, the NIC is designated as a “technology zone”, enabling qualifying startup firms and firm expansions to receive certain tax incentives, in addition to access to a thriving technology ecosystem”. The NIC received its 501C3 tax exempt status in late 2021 and was admitted to The Global Institute on Innovation Districts’ Global Network in 2023.

### **Rocket Lab**

Rocket Lab broke ground in April 2022 on a launch pad and 250,000-square-foot manufacturing facility for Rocket Lab's Neutron reusable rocket adjacent to the NASA Wallops Flight Facility in Accomack County. Rocket Lab is expected to ultimately create 250 jobs at the facility. In January 2023, the company made its first launch from U.S. soil at Virginia Space's Mid-Atlantic Regional Spaceport, successfully deploying three satellites into low Earth orbit for Herndon-based satellite analytics company HawkEye 360. This mission was the first of three planned with HawkEye 360 through 2024. Rocket Lab, in September 2023, signed a contract with Reston-based Fortune 500 contractor Leidos to launch four Hypersonic Accelerator

Suborbital Test Electron (HASTE) missions. The suborbital testbed launch vehicle missions will lift off from its Launch Complex 2 facility in Accomack County. They are scheduled during 2024 and 2025.

### **DroneUp**

Founded in 2016, the company, which specializes in commercial drone delivery, flight services and software, has grown its ranks from three to 530 employees. Retail giant Walmart Inc. is a new partner, and DroneUp is close to completing a \$7 million expansion at its headquarters.

DroneUp's recently inked deal with Walmart has been a contributing factor to the company's growth. A contract to build out Walmart's drone delivery network was announced in December 2021 and package delivery was offered at three Walmart locations in the retailer's home state of Arkansas. In May 2022, DroneUp and Walmart announced plans to expand drone delivery services to reach 4 million homes across six states with drone hubs operating from 34 U.S. Walmart sites. Three hubs are currently located at Virginia Beach Walmart locations, with a 1-mile delivery range for up to 10-pound packages.

In August 2022, DroneUp announced that it was adding 655 jobs as part of an expansion that will include establishing a \$20 million drone testing, training and research and development center at Richard Bland College in Dinwiddie County. DroneUp plans to add 510 jobs in Virginia Beach and 145 positions at the Richard Bland center.

Virginia Institute for Space Flight & Autonomy (VISA) at ODU, Riverside Health System, Accomack-Northampton PDC and Drone-Up are partners on a \$ 1.877 million federal DOT grant to fund the use of drones to deliver critical medical supplies on the Eastern Shore and Tangier Island. This application was the result of the GO Virginia planning grant VISA received to explore autonomous systems routes and corridors in Region 5.

## **Section 7: Strategies to Address Region 5's Economic Challenges**

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As noted throughout the report, Region 5 occupies a distinctive role in the national security of the nation. The economy of Region 5 rests of three pillars: federal (and, in particular, Department of Defense) spending, the Port of Virginia, and the leisure and hospitality industry. Region 5 should 'lean into' the identified key industry clusters to increase existing comparative advantages and to foster the creation of comparative advantage in emerging clusters. Improving growth in these clusters will diversify the economic base of Region 5 and foster the growth of relatively high-wage jobs. In this section, we examine strategies to improve economic performance in Region 5.

### **1. Workforce Development and Talent Attraction**

Employers across the industry spectrum continue to experience challenges with regards to recruiting and retaining talent. The civilian labor force and individual employment were at record levels in the summer of 2023. While job openings across the state declined in August 2023, these levels were still higher than those observed prior to the onset of the COVID-19 pandemic. Job quits have remained relatively stable over the last three years and within regional and state unemployment rates hovering below 3% in August 2023, there remains an intense competition for talent. Given net negative migration and the aging of the workforce, these conditions are unlikely to alleviate unless there is an economic contraction in 2024.

Region 5 must attempt to upskill workers to fill high-skilled, high-paying jobs whenever possible; this should be done on a regional basis with organizations like the Hampton Roads Workforce Council, Hampton Roads Executive Roundtable, local universities, and corporate recruiting professionals working in tandem. The RVA-757 megaregion should also leverage its collective assets to retain companies and their accompanying talent. In addition, organizations like the Hampton Roads Alliance and Hampton Roads Workforce Council should continue to leverage their business intelligence and marketing tools to attract talent to the region; this should

be done based on existing target industry studies and aim first to bring in higher skill/higher wage talent that employers cannot procure from the existing population. Emerging industries like offshore wind will require additional workforce recruitment efforts, which should be prioritized as well.

The Norfolk City Council funded a three-year, \$1.5 million program through the Hampton Roads Workforce Council to train Norfolk residents for high-demand, good-paying, skilled trades jobs. “Norfolk Strong” will provide training, and supportive services for 200 Norfolk residents in Maritime, Road Construction and Offshore Wind related skilled trades.

In September 2022, the WeldNOW mobile welding lab program and partnership training program received a Gold Award in the Talent Development & Retention Category from the International Economic Development Council. Aimed at bridging the skills gap between nearby residents and incoming jobs, the program is a collaboration between Tidewater Community College, Norfolk Works, and the inaugural host site, Lyon Shipyard. Norfolk Works and TCC are proud to partner with Colonna’s Shipyard in 2023. This stellar partnership training initiative prepares individuals for employment in shipbuilding and advanced manufacturing by emphasizing work readiness and industry-recognized certification. TCC’s state-of-the-art mobile lab has eight welding booths to offer a hands-on experience to each student.

Norfolk Works, Tidewater Community College, and Hampton Roads Transit developed DriveNow, a Commercial Driver’s License (CDL) partnership training program. Nine students entered the pilot and all 9 passed their CDL permit test, graduated, and were hired by HRT. Future program cohorts will help to increase the talent pool of CDL drivers.

The region is fortunate to have resources like New Horizons Career and Technical Education Centers that provide students with experiential learning with courses that will earn them college credits and prepare them for jobs in Transportation, Distribution and Logistics;

Architecture and Construction; Manufacturing Technology; Health Sciences; Agriculture, Food and Natural Resources; Human Services; Information Technology; and Public Service.

Another STEM-focused program, Setting Pathways that Activate Real-World Knowledge (SPARK), in Portsmouth Public Schools, works closely with local industry partners to develop courses and experiences that are aligned with the needs and opportunities for entry level jobs in the region. High-school students go through a two-year progression of coursework and experiences that will provide them with knowledge, skills, and certifications essential to pursuing advanced manufacturing careers. This program is one of 22 workforce development projects support with GO Virginia funds.

## **2. Enhancing Opportunities Derived from the Port of Virginia**

The Port of Virginia’s presence provides a cornerstone of the regional economy. Studies have shown that many companies have chosen to locate or expand in Virginia because of the Port, but a great deal of regional activity is still tied to transporting goods to Chicago and other westward markets via the region’s rail and highway infrastructure. The region must position itself to serve as a value-added hub for companies, rather than serving as a “throughway” to markets like Chicago. Marketing the region as such and attracting companies will ensure more investment, job opportunities, and allow the local economy to retain dollars that are currently passing through the area and locating elsewhere in the United States while highlighting accessibility Richmond and Raleigh markets.

## **3. Enhance Shipbuilding/Ship Repair and Defense Contracting Capabilities**

Although sequestration disproportionately affected defense-heavy areas like Region 5, aging military equipment and vessels provide an opportunity for economic expansion. Huntington Ingalls, the region’s largest employer, is uniquely qualified to address the U.S. Navy’s aging fleet of vessels through both repair and replacement contracts. Companies that work alongside Huntington Ingalls and other similar defense contractors should prioritize these

efforts and seek opportunities to do so in an expeditious manner. Given that the plurality of Region 5's economy is directly related to defense, any enhancements to the existing portfolio of work or number of defense contractors in the region will have a significant positive impact on investment and employment.

Hampton Roads has one of the densest concentrations of ship repair capabilities in the country and additional ship repair capacity is needed to address the Navy's aging fleet. Steady investment in Navy ship repair budgets and homeporting additional conventional powered ships in the region will provide a consistent demand signal to Hampton Roads ship repair companies and allow them to invest in personnel and infrastructure to grow their capabilities.

#### **4. Site Readiness & Regional Industrial Facilities Authority Utilization**

As discussed in Section 5, enhancing site readiness is among the most important strategies Region 5 can undertake to secure new businesses and retain existing companies that are in expansion mode. Virginia Economic Development Partnership (VEDP) executives point to a lack of developable sites and buildings as the main factor in losing more than \$100 billion in project-related capital investment since 2016; it is also increasingly making Region 5 unable to compete for projects. Working together as a region to obtain funding through GO Virginia, VEDP's Business Ready Sites Program, and local matching funds is critical to ensure that the region can attract major facilities to locate and grow. The Regional Industrial Facilities Authority (RIFA) should be a cornerstone of this effort, as localities can share the burden of investment and collectively benefit from revenues obtained by projects located on so-called "mega sites." Through the RIFA, even localities that are primarily built out can invest in large tracts of land in neighboring localities that will attract shared revenues and employ people from across Region 5. All localities in Region 5 should consider joining the RIFA and work with regional organizations including Reinvent Hampton Roads, the Hampton Roads Alliance, and the

Hampton Roads Planning District Commission to identify opportunities and sites that could benefit from a regional investment strategy.

Chesapeake City Council, in November 2022, rezoned 1,420 acres of agricultural land for an industrial park to be known as Coastal Virginia Commerce Park. The Chesapeake Economic Development Authority then signed a contract to buy this land for \$37 million from Mr. Frank Williams, a farmer in Virginia Beach with an option to acquire another 2,602 acres. This development will go a long way to diversify the regional economy.

## **5. Maritime Innovation**

A study by TEconomy Partners completed in 2021 provided recommendations on how to leverage opportunities in maritime innovation across Region 5. The study examined high-level industries within the maritime ecosystem, including defense, port operations, offshore wind energy, and coastal resilience services. Recommendations to support maritime innovations include creating hubs and centers of excellence in maritime industries and supporting components that cut across industries and will benefit multiple companies and customers. Old Dominion University's OpenSeas effort, the Hampton Roads Maritime Collaborative for Growth & Innovation (HRMC), the Hampton Roads Alliance, and other regional players focused on attracting and scaling up maritime businesses in the region should follow and seek funding to execute the recommendations derived from the TEconomy study. Recommendations from this study were incorporated in the Economic Development Administration's Build Back Better Regional Challenge grant application filed in mid-October to create:

- a. Technology Advancement & Innovation Commercialization Programming Hub:** Build space and develop operational and programming strategies to expand the Tech Center Research Park's Science and Technology Accelerator Network Program which supports the advancement of NASA innovations. This project will drive inclusive economic growth by strengthening partnerships with HBCUs and national networks to attract founders of color to the



region and provide necessary business growth support services. The total project cost is estimated at \$16 million with a match of \$25 million from private and public sources. Further, the Hampton Roads Alliance is working with Grella Partnership Strategies to evaluate the region's suitability for data centers, which are a major source of revenue for northern Virginia but have not yet proliferated the Hampton Roads region.

- b. Autonomous Systems National Hub:** Bring together and maximize the impact of three ongoing initiatives: 1) York County's donation of land for a 20-acre Unmanned Systems Training, Testing & Demonstration Facility; 2) A regional strategic playbook for autonomous systems in collaboration with the Unmanned Systems Center at Center for Innovative Technology (CIT) and VISA; and 3) a 10-member Eastern Virginia Regional Industrial Facility Authority (EVRIFA) established to shepherd the development of appropriate industrial spaces. This project will help accelerate the development of the York County site and the identification of regional demonstration projects and infrastructure. The total project cost is estimated at \$22 million including a match from VISA state budget allotments, state funding and land contributions from York County.

Currently underway, the region's two airport commissions and the cities of Newport News, Hampton, and Norfolk are partnering with the Hampton Roads Alliance to study the region's aviation, aerospace, and unmanned systems assets. Assessment will offer suggestions to help position our aviation, aerospace, and unmanned systems industry (aviation industry) as an efficient and dynamic system prepared to meet the region's future aviation demands. Given national industry challenges, regional partnership and collaboration have become important in assuring regional aviation industry vitality. The *Hampton Roads Regional Aviation, Aerospace, and Unmanned Systems Assessment* will extend and expand on the *Hampton Roads Eastern Shore Autonomous Systems Strategic Playbook*; the study will also investigate additional

opportunities consistent with the *Hampton Roads Economic Growth and Diversification Plan* and frame it within the context of the regional aviation industry.

**c. Maritime Small Business Innovation Collaborative:** Build upon regional organizations such as OpenSeas and 757Collab to create a maritime-focused collaborative that leverages blue economy issues and institutional research to create and grow innovation-based companies. The total project cost is estimated at \$18.25 million with a match from CIT, state funding, customers and investors.

**d. ODU Maritime Cybersecurity and Data Analytics Center of Excellence in Virginia Beach:** Create a home for academic programs for cybersecurity and data analytics, a cybersecurity credentialing center, and the Internet Shipping Computational Platform and Test Bed. The Coastal Virginia Center for Cyber Innovation, a regional node of the Commonwealth Cyber Initiative responsible for bringing together regional businesses and higher education institutions to promote research and economic development related to cybersecurity, will move its headquarters to the Center. The total project cost is estimated at \$9.75 million with a match of \$2 million from the Coastal Virginia Center for Cyber Innovation's annual allocation that it receives as part of the Commonwealth Cyber Initiative.

The City of Norfolk, in partnership with Old Dominion University (ODU) is creating a commercial and academic testing site for Uncrewed Surface Vehicles (USVs) and Uncrewed Underwater Vehicles (UUVs) in a portion of the city's nearly five-acre Willoughby Boat Ramp.

Several USV/UUV companies operate within the Hampton Roads region and have noted a need for testing sites in order to grow. The boat launch is currently used by several small commercial fishermen. Recreational boating will continue to be available and free at this location. ODU's Open Seas Technology Innovation Hub will serve as the immediate user, leasing the facility from the city for commercial and academic testing of the USVs/UUVs, as well as helping to market it as a future test site for others.

## **6. Jefferson Lab Diversification**

As one of the smaller national laboratories focused on a single science area, Jefferson Lab needs to diversify its mission. Following the Department of Energy's decision to locate the Electron Ion Collider (EIC) at Brookhaven Lab on Long Island, a partnership has formed whereby the Jefferson Lab staff will assist in the design and fabrication of the EIC. This work will provide real benefits to the region for the next several years, but it will not address the underlying need to diversify the mission of the Jefferson Lab.

The U.S. Department of Energy proposed, in the President's budget introduced at the end of May, the development of a fourth "supercomputer" on the East Coast. In October 2023 the Department of Energy announced that Jefferson Lab was selected to lead a \$ 300 million to \$ 500 million data science computing hub that will make scientific data more accessible to sciences Nationwide. Known as the High-Performance Data Facility hub (HPDF), the project will be based in Newport News and opens the opportunity for significant research and commercialization.

## **7. RVA757 Connects /The I-64 Innovation Corridor**

The creation of a mega region focused on connecting Hampton Roads and Richmond along the I-64 corridor offers significant opportunities to both sub-regions. Formally incorporated as a 501-C-3, the organization has inventoried a significant number of innovative institutions and companies along I-64 and has developed a list of priority projects which offer tremendous value to both sub-regions. Included in this list for advocacy and action in 2022 are the construction of the 29-mile gap on the Interstate to widen the current four lanes to six lanes. Also, on the agenda is continued support for the extension of the existing Virginia Capital Trail from Richmond to Williamsburg to historic Fort Monroe as the Birthplace of America Trail (including the construction of the African landing memorial).

Also on the agenda for next year is the significant effort to become a Global Internet Hub by building off the incredible presence of the transatlantic high-capacity cables and the connections to the fourth-largest hosting facility operated by QTS in Henrico County. The analysis of other Global Internet Hubs demonstrates that once concentration is recognized widely, a virtuous cycle occurs with additional data centers, data analytic operations, Artificial Intelligence programmers and users, and cyber security companies clustering throughout the megaregion.

Finally, through a GO Virginia grant, a task force analyzed the collective workforce in the megaregion and identified existing and projected talent gaps for the years ahead.

## **8. Clean Energy**

Over the next 30 years, the U.S. will shift from a fossil fuel-based economy to a more sustainable economy based on “clean energy.” The shift offers great opportunities for our region to focus on the development of Offshore Wind (OSW) energy. Due to our Mid-Atlantic location and acknowledged operational advantages of the port of Virginia, Hampton Roads stands to gain a potential strategic advantage over other locations on the East Coast.

In addition to the lead provided by OSW, other elements of the clean energy cluster including solar, while not tied to our locational advantages, have the potential to make the region a center for clean energy. Solar developers have already installed over 1,100 MW of collector capacity as shown in Appendix E.

Other opportunities such as “green hydrogen” production will be tested in conjunction with the OSW project. Also, innovative technologies for the conversion of solid waste into electricity, clean diesel fuel and other products are actively under consideration. Finally, battery storage firms are already taking shape in the region. If we embrace all the elements of clean energy, Hampton Roads can become a leading center nationally for this increasingly important

industry. With this in mind, the Hampton Roads Alliance applied for and received a GO Virginia grant to prepare a regional energy assessment in 2022.

## **9. Public Health**

The Hampton Roads region currently exhibits wide health disparities. While this presents a major problem, it also presents a very real opportunity. Reinvent Hampton Roads managed an analysis of the region's healthcare system to examine best practices around the country. ODU, EVMS, Sentara, CHKD, and NSU, as well as the Commonwealth of Virginia, participated in this analysis in varying degrees. The Manatt study recommended multiple approaches to address these disparities as well as ways to structure a productive relationship of system components. One such approach calls for a collaborative effort to establish the first school of public health in the Commonwealth. This approach is to be guided by a recently proposed MOU that spells out the participants and their respective responsibilities.

In September 2023, lawmakers in the Commonwealth allocated funds to support the integration of Old Dominion University and Eastern Virginia Medical School in its amended budget. The move would create the most comprehensive health sciences center in the Commonwealth. A merger between ODU and EVMS would include a school of medicine, school of health professions, college of health sciences and school of nursing. Additionally, O.N.E. School of Public Health, a joint initiative among ODU, Norfolk State University and EVMS would also become part of the integrated institution.

Improving health literacy is another complementary approach to improve public health while at the same time increasing the productivity of the labor force. Healthier757 is a 501-C-3 organization devoted to establishing a regional solution utilizing an innovative platform developed by EDLogics, a local startup. This approach is based on gamification and offering prizes through competitions and presents an appealing way to engage in learning about improving personal health.

Finally, Hampton Roads is the largest region in the country without a freestanding Hospice House. A nonprofit has been formed to address this situation. The Hospice House of Hampton Roads has partnered with the City of Virginia Beach to construct and operate the much-needed facility. They have already raised \$4.6 million of the \$9 million estimated to build, staff, and open such a prototype facility in the region. There is hope that once the initial facility is constructed by 2023, that a series of Hospice facilities can be realized throughout the region over the coming years.

#### **10. Comprehensive Infrastructure**

The COVID-19 pandemic has brought a series of federal initiatives to construct severely needed infrastructure designed to transform the regional economy and create jobs. The unprecedented influx of trillions of dollars in Federal funding served as a wake-up call for Hampton Roads and resulted in the establishment of the ad hoc Hampton Roads Infrastructure Coalition (HRIC). The purpose of HRIC is to monitor activities at the Federal and State levels and to develop a comprehensive prioritized regional package of infrastructure projects that have the very real potential to transform the regional economy.

Fortunately for us, the region had already established trusting relationships between the various regional organizations and the Hampton Roads Planning District Commission/Hampton Roads Transportation Planning Organization. They have been preparing prioritized project lists including roads, bridges, tunnels, a broadband fiber ring, the port's dredging of the harbor channel, public transit, trails, airport improvements, and flooding and sea-level rise. The sum of these various megaprojects total in the billions of dollars; our region could not have progressed in such a fiscally constrained environment without congressional action.

Previously mentioned, but worth repeating here again, are projects such as a 29-mile gap on I-64 to connect Hampton Roads and Richmond, the concept of extending I-87 to the South to access the markets of Raleigh/Durham, transformative projects such as constructing

the Broadband Fiber Ring throughout the entire region, extending an improved Route 58 to connect more efficiently to I-95 and I-85, continuing further improvements to the port and airport, and, finally, sea level rise and drainage projects (including those authorized by a 70% voter approval on the bond issue referendum in Virginia Beach).The collective impact of investments of Federal dollars will generate thousands of jobs in Hampton Roads as well as the rest of the country.

#### **11. Diversity, Equity, and Inclusion**

In the wake of the social justice movements of 2020, businesses and economic developers have placed a greater emphasis on diversity, equity, and inclusion as strategies to address economic challenges. Regional leaders, as part of the 757 Framework, will focus on two key initiatives. First, we will deliver diversity and inclusion education and training to the 1,000 companies and nonprofits, including best practices from Hampton Roads companies and nonprofits who embrace diversity and inclusion. Second, we will aggressively support and grow minority entrepreneurs, startups, and small businesses. We will inventory support services and resources in the region and formulate a comprehensive minority supplier support ecosystem.

Norfolk is a diverse community of roughly 235,000 residents, including the world's largest naval station, NATO's North American headquarters, and four colleges and universities. Norfolk prides itself as the first city in Hampton Roads to launch a Diversity, Equity, and Inclusion (DEI) initiative to champion equity and inclusion in city services and programs. The city is committed to celebrating the distinct cultures and values rich within and focused on implementing institutional strategies and services that acknowledge the disparities, advantages, and disadvantages that exist among residents, communities, and businesses. In November 2021, the City Council passed a resolution supporting closing the wealth gap, especially for African Americans and requesting the City Manager move towards the creation of "a financial city that works for all."

Regional organizations should promote opportunities for internships for students of color and partner with the region's HBCUs (Hampton University and Norfolk State) to link major regional employers with graduating students. Finally, organizations like the Hampton Roads Workforce Council and local economic development departments should partner with public school systems to implement additional career & technical education and internship opportunities for students at every high school in the region. These efforts will serve to provide potential regional employees with additional skills and a higher wage potential, and, in turn, will enhance the productivity quotient of the overall employee base.

The Hampton Roads Alliance, Hampton Roads Workforce Council, and Virginia Beach Economic Development along with Presidents and officials of universities, community colleges, and technical colleges from Hampton Roads and Hampton Roads mayors and business leaders visited educational, business, and political leaders in Stuttgart, Germany in July 2023. The delegation explored Germany's dual-track vocational education and training (VET) program, a national workforce development pipeline. The VET program supports roughly 1.3 million vocational apprentices per year throughout the country and operates as the main vehicle driving talent development within the landscape of Germany's high-tech industries. The delegation interviewed technical school students, school administrators, company leaders, and instructors to identify how best practices from this 150-year-old technical education model could be adapted within the Hampton Roads education ecosystem.

One of the key attributes of the VET program is the inclusion of industry partners as investors in the educational model. Not only are the production facilities of manufacturers used as training sites for apprentices, but it is common for German employers to contribute input on curriculum, trainers to oversee the work of apprentices, and training equipment used to teach students on the direct technologies and tools that they will use in the workplace. The German



VET program could provide a framework for the development of a similar model for Hampton Roads with student success, workforce, and economic development opportunities.

## Section 8: Concluding Remarks

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The 2023 biennial update of Region 5's Growth and Diversification Plan reflects on the economic performance of the region since the original 2017 plan. Since the 2021 biennial update, we have observed a significant recovery in economic activity in Region 5. There were a record number people in the labor force and reporting that they were employed in the summer of 2023. Defense spending continued to increase in the region and the Port of Virginia was moving more cargo in 2023 than it did prior to the pandemic. The tourism and hospitality sector continued to outperform the state and the nation. Yet, these data points must be tempered by others that illustrated that Region 5's population declined in 2022 and the region had yet to full recover the jobs lost in the shock of 2020. Negative domestic migration continued this decade, a signal that some residents were leaving the region 5 in search of improved economic opportunities.

While federal spending has continued to increase in Region 5, the return in terms of economic growth appears to be smaller than at the beginning of the century. The burst of economic activity in 2021 was a recovery from the COVID-19 pandemic and does not appear to have been a structural shift in economic performance. We are increasingly concerned about continued deficits at the federal level as the recent rises in yields of U.S. Treasuries will invariably lead to greater costs to service existing (and new) debt. Simply put, net interest costs on federal debt are poised to exceed DoD expenditures by the end of the current decade. Even if we do not observe a shift in the national security posture of the United States, one must question how long it is before federal spending priorities shift, whether by choice or by crisis. Economic diversification is imperative to insulate, to some extent, the economy of Region 5 from the political dysfunction in Congress and the lack of political will to bring the federal budget back into balance. We applaud the recognition of these events at the regional level and the increasing focus on leveraging key industry clusters to improve economic growth.

To improve growth in the key industry clusters, Region 5 must continue efforts to increase innovation and entrepreneurship. As we noted in the 2019 and 2021 updates, an education-health-research nexus could draw funds and talent into Region 5. The ongoing merger between EVMS and ODU is likely to generate positive spillovers across the Region 5 economy. Working to further integrate and commercialize the operations of Jefferson Lab, NASA Langley, and increasing support for Wallops Island to the north will bolster efforts to provide STEM-related jobs in Region 5. We note that actions taken to grow the Clean Energy cluster last decade (before it was an official key industry cluster) are now paying off with an increasing number of jobs with relatively high wages compared to the regional average. While there may be a temptation to pursue the one large firm that will address many of the issues facing the region, the data suggest that fostering a climate for young, small firms will generate higher rates of job growth.

Section 3 examined Region 5's priority industry clusters. This report reaffirms the previously identified clusters and adds a new Life Sciences cluster. These clusters occupy the intersection of manufacturing, technology, and the environment. While Region 5 must face the challenge posed by sea level rise, it is also an opportunity for the region to grow in this emerging industry space. Recent announcements regarding the construction of windmills of the coast of Region 5 are a signal that the Clean Energy cluster could grow faster than it has over the past decade. Investments in business ready sites (discussed in Section 5) are one part of the solution to grow higher-paying jobs in the priority industry clusters. However, we continue to caution that, without concerted action, competitive advantages can quickly erode as other regions pursue aggressive development strategies.

Section 4 provided a look at the state of the region's workforce. Our analysis concludes that Region 5 has not made progress with regards to the goal of generating more awards in STEM fields. Without sufficient numbers of awards in engineering, mathematics, and computer-

related fields, the priority industry clusters will face increasing difficulties in attracting and retaining talent. Broader economic conditions, to include the “Great Resignation” and domestic outmigration from Region 5, will only exacerbate workforce gaps in the coming years.

Section 6 provides a review of actions taken within the Region 5 improve coordination and growth while Section 7 offers recommendations on specific actions to foster long-term growth. No one strategy is likely to produce a ‘home run’ in terms of economic development. We recommend an open conversation about building the foundation for economic diversification and resiliency that requires smaller actions in the short run that build up to long-term change. Investments in infrastructure, leveraging the success of the Port of Virginia, and building collaboration among institutions of higher education and the private sector will be key to moving Region 5 forward. Site development can help move Region 5 from a transit region for cargo to a region that produces intermediate imports that are then re-exported at higher value. Lastly, as we have seen over the past two years, investments in public health can pay rewards not only in healthier communities but resiliency in the face of unexpected events

## Appendix A - GO Virginia Grants Awarded as of September 2023

Project	GO VA Award	Match Committed	Total Investment	Grant type	GO Virginia Strategy Area
Retooling Manufacturers	\$2,950,000	\$1,475,000	\$4,425,000	Competitive	Cluster Scale-Up
VA Bio-Connect	\$1,599,653	\$1,599,653	\$3,199,306	Competitive	Cluster Scale-Up
VCA #1	\$642,713	\$750,100	\$1,392,813	Per capita	Workforce Development
VDSP #1	\$647,540	\$1,877,000	\$2,524,540	Per capita	Workforce Development
757 Seed Fund	\$140,000	\$256,000	\$396,000	Per capita	Startup Ecosystem
HR RIFA and Drone Park	\$150,000	\$150,000	\$300,000	Per capita	Site Development & Infrastructure
VDSP #2	\$647,540	\$1,877,000	\$2,524,540	Per capita	Workforce Development
VCA #2	\$642,713	\$750,100	\$1,392,813	Per capita	Workforce Development
757 Angel Network	\$240,000	\$479,000	\$719,000	Per capita	Startup Ecosystem
AN Sewer & Site Study	\$65,000	\$65,000	\$130,000	Enhanced Capacity	Site Development & Infrastructure
HR Coalition for Talent Dev.	\$99,705	\$100,000	\$199,705	Enhanced Capacity	Workforce Development
The GIG	\$85,117	\$115,728	\$200,845	Enhanced Capacity	Startup Ecosystem
COVA MAP	\$1,532,500	\$1,636,500	\$3,169,000	Per capita	Workforce Development
REI:757	\$266,667	\$133,333	\$400,000	Per capita	Startup Ecosystem
Campus757	\$95,838	\$96,500	\$192,338	Enhanced Capacity	Workforce Development
ES HydroDrone	\$99,300	\$92,680	\$191,980	Enhanced Capacity	Cluster Scale-Up
757 Recovery & Resilience	\$100,000	\$100,000	\$200,000	ERR FAST Access	Cluster Scale-Up
OSW Supply Chain Hub	\$529,788	\$290,840	\$820,628	Per capita	Cluster Scale-Up
GWP Target Industry	\$36,375	\$18,244	\$54,619	Enhanced Capacity	Cluster Scale-Up
HRED Sites Readiness	\$1,122,240	\$8,056,960	\$9,179,200	Per capita	Site Development & Infrastructure

**Appendix A - GO Virginia Grants Awarded as of September 2023 (Continued)**

<b>Project</b>	<b>GO VA Award</b>	<b>Match Committed</b>	<b>Total Investment</b>	<b>Grant type</b>	<b>GO Virginia Strategy Area</b>
HRWC Talent Pipeline	\$663,696	\$332,000	\$995,696	Per capita	Workforce Development
VA Virtual Maritime TT	\$100,000	\$200,000	\$300,000	ERR FAST Access	Workforce Development
Regional Robotics Hub	\$73,000	\$38,000	\$111,000	Enhanced Capacity	Cluster Scale-Up
RVA757 Connects	\$90,000	\$45,000	\$135,000	Enhanced Capacity	Workforce Development
Maritime Trades Program Exp.	\$99,137	\$49,569	\$148,706	ERR FAST Access	Workforce Development
757 Collab Bridge	\$32,000	\$120,024	\$152,024	Enhanced Capacity	Startup Ecosystem
Startup Stability Program	\$197,000	\$235,295	\$432,295	ERR Per Capita	Startup Ecosystem
Resilience & Adaptation Econ	\$2,937,163	\$3,696,411	\$6,633,574	Competitive	Workforce Development
VA K-12 Computer Science	\$2,424,537	\$3,106,015	\$5,530,552	Competitive	Workforce Development
Campus757	\$500,000	\$250,000	\$750,000	Per capita	Workforce Development
VA SBDC Mentor Program	\$882,794	\$442,497	\$1,325,291	Competitive	Cluster Scale-Up
Cybersecurity Job Creation System	\$1,450,000	\$1,643,637	\$3,093,637	Competitive	Workforce Development
757Collab	\$2,415,573	\$1,390,286	\$3,805,859	Per capita	Startup Ecosystem
Neighborhood	\$85,222	\$42,611	\$127,833	ERR Fast Access	Workforce Development
SPARK	\$100,000	\$55,000	\$155,000	Enhanced Capacity	Workforce Development
HR Energy Master Plan	\$84,000	\$42,000	\$126,000	Enhanced Capacity	Cluster Scale-Up

**Appendix A - GO Virginia Grants Awarded as of September 2023 (Continued)**

<b>Project</b>	<b>GO VA Award</b>	<b>Match Committed</b>	<b>Total Investment</b>	<b>Grant type</b>	<b>GO Virginia Strategy Area</b>
UxS Route Corridor Network	\$100,000	\$74,500	\$174,500	Enhanced Capacity	Cluster Scale-Up
I-64 Corridor Global Internet Hub (GIH)	\$100,000	\$50,000	\$150,000	Enhanced Capacity	Cluster Scale-Up
Maritime Entry to Employment (MEET)	\$1,090,527	\$563,565	\$1,654,092	Per Capita	Workforce Development
HRED Sites Readiness Phase II	\$3,751,545	\$10,510,326	\$14,261,871	Per Capita	Site Development & Infrastructure
GO TEC Virginia 2025	\$3,863,513	\$2,592,061	\$6,455,574	Competitive	Workforce Development
Clean Energy to Green Hydrogen (HRH2)	\$1,497,452	\$1,200,423	\$2,802,933	Per Capita	Workforce Development
Talent Pathways Initiative (TPI)	\$250,000	\$125,000	\$375,000	Special Allocation	Workforce Development
Virginia Life Sciences	\$40,000	\$20,000	\$60,000	Enhanced Capacity	Workforce Development
Aviation, Aerospace & UAS Assessment	\$100,000	\$50,000	\$150,000	Enhanced Capacity	Cluster Scale-up
<b>TOTAL</b>	<b>\$34,619,848</b>	<b>\$46,793,858</b>	<b>\$81,413,706</b>		

## Appendix B – GO Virginia Region 5 Announcements - August 2021 to September 2023

Company Name	Locality	NAICS	Business Description	Month Announced	New / Expansion	New Jobs	Investment (\$M)
Amazon	Virginia Beach	493110	Robotic fulfillment center	September 2023	N	1,100	350.0
Lyon Shipyard	Norfolk	336611	Commercial ships and vessels repair service for offshore wind projects	September 2023	E	134	9.0
Automatic Coating, Limited*	Suffolk	332813	Manufactures custom powder, liquid, and corrosion coating	September 2023	N	50	23.0
Hermes Abrasives USA*	Virginia Beach	327910	Produces industrial abrasive materials	September 2023	E	30	6.0
Amed Forces Brewing Company	Norfolk	312120	HQ; Brewery	July 2023	N	47	4.971
Fugro Geotechnics and Survey*	Norfolk	541330	Provides engineering and geo-data services to the offshore wind industry	June 2023	E	15	\$0.10
Top Tier Solar Solutions	Norfolk	238210	Provides solar panel installation services	June 2023	N	70	0.10
ZIM*	Virginia Beach	551114	US HQ expansion	June 2023	E	307	\$16.36
Bauer Compressors*	Norfolk	333912	Designer and manufacturer of hydrogen and natural gas compressors	May 2023	E	47	\$7.40



**Appendix B – GO Virginia Region 5 Announcements - August 2021 to September 2023 (Cont.)**

<b>Company Name</b>	<b>Locality</b>	<b>NAICS</b>	<b>Business Description</b>	<b>Month Announced</b>	<b>New / Expansion</b>	<b>New Jobs</b>	<b>Investment (\$M)</b>
AIT Marine	Norfolk	336611	Ship repair contractor for government, commercial, industrial, and marine industries	March 2023	E	76	\$0.50
Magazine Jukebox	Norfolk	513210	Provides customized QR code, giving digital magazine access to consumers	February 2023	E	20	\$1.00
PRINCO LLC	Norfolk	322291	Manufacturer of incontinence pads	February 2023	E	284	\$23.80
Yellow Dog Software	Norfolk	541511	Inventory software development company	January 2023	E	20	\$0.15
Dilon Technologies	Newport News	339112	Medical device manufacturing	December 2022	E	0	\$7.00
MSI	Suffolk	493110	Flooring, countertops, wall tile, and hardscaping products distributor	December 2022	E	80	\$61.55
O-I Glass, Inc.	James City	327213	Manufacturer of glass container products	November 2022	E	0	\$6.11
ARDX	Norfolk	541511	Provides critical healthcare consulting services to at-risk populations	November 2022	E	15	\$2.40
Stihl Inc.*	Virginia Beach	333991	Manufactures outdoor power tools	November 2022	E	15	\$49.00
Nakano Warehouse & Transportation Corp.*	Chesapeake	493110	Warehouse and distribution	November 2022	N	25	\$14.00

**Appendix B – GO Virginia Region 5 Announcements - August 2021 to September 2023 (Cont.)**

<b>Company Name</b>	<b>Locality</b>	<b>NAICS</b>	<b>Business Description</b>	<b>Month Announced</b>	<b>New / Expansion</b>	<b>New Jobs</b>	<b>Investment (\$M)</b>
Lowe's Companies, Inc.	Suffolk	493110	Distribution center	October 2022	N	100	\$75.00
DroneUp	Virginia Beach	336413	HQ expansion; drone flight services innovator and aviation technology provider	August 2022	E	510	\$7.00
Oldcastle APG*	Suffolk	325311	Lawn and garden products manufacturer	August 2022	N	28	\$6.31
Fairbanks Morse Norfolk Service Center	Chesapeake	333618	Training and service center	July 2022	E	50	\$13.00
Massimo Zanetti Beverage USA*	Suffolk	311920	Coffee roasters	June 2022	E	79	\$29.10
High Liner Foods USA*	Newport News	311710	Frozen seafood processing	June 2022	E	0	\$30.56
Atlantic Constructors Inc. (ACI)	Suffolk	332312	Fabricator of ductwork, piping, plumbing, and steelwork for construction services	June 2022	E	75	\$1.00
Muhlbauer, Inc.*	Newport News	333242	R&D; Manufacturer of semiconductor machinery	May 2022	E	34	\$9.00
Birdsong Peanuts	Suffolk	115114	Peanut processing	May 2022	E	0	\$25.10

**Appendix B – GO Virginia Region 5 Announcements - August 2021 to September 2023 (Cont.)**

<b>Company Name</b>	<b>Locality</b>	<b>NAICS</b>	<b>Business Description</b>	<b>Month Announced</b>	<b>New / Expansion</b>	<b>New Jobs</b>	<b>Investment (\$M)</b>
TeckArk	Norfolk	541511	Custom web design, software & app development, and digital marketing services	April 2022	E	8	\$0.10
WR Systems	Norfolk	541511	Government contractor; Systems engineering	April 2022	E	200	\$1.30
Colonna's Shipyard	Norfolk	336611	Provides ship repair, machining, and steel fabrication services to commercial and government markets	April 2022	E	40	\$28.00
Embody, Inc.	Norfolk	339113	Develops novel collagen-based technology for soft tissue injury and repair	April 2022	E	92	\$5.00
Certified Origins USA, Inc.*	Newport News	311225	Produces fresh and authentic extra virgin olive oil	March 2022	N	30	\$24.58
Perdue Agribusiness	Chesapeake	311224	Production of high protein soybean meal, soybean oil, and hulls	March 2022	E	0	\$59.15
Rocket Lab USA, Inc.	Accomack	336411	Spaceflight launch facility	February 2022	E	246	\$103.00
Mercana Furniture and Décor*	Newport News	493110	Manufacturer and wholesaler of home goods	January 2022	N	26	\$8.52
Celadon	Chesapeake	322121	Paperboard recycling and production	January 2022	N	210	\$267.00

**Appendix B – GO Virginia Region 5 Announcements - August 2021 to September 2023 (Cont.)**

<b>Company Name</b>	<b>Locality</b>	<b>NAICS</b>	<b>Business Description</b>	<b>Month Announced</b>	<b>New / Expansion</b>	<b>New Jobs</b>	<b>Investment (\$M)</b>
Celadon	Suffolk	322110	Converts recycled mixed paper and old corrugated cardboard into a reusable and exportable fiber sheet to supply middle-market paper manufacturers	November 2021	N	60	\$6.80
Global Concentrate	Franklin City	311411	Produces and bottles juice concentrate	September 2021	N	50	\$121.00
Aery Aviation, LLC	Newport News	336412	Full-service commercial and government services provider to the aerospace industry	September 2021	E	211	\$15.30
Prism Maritime	Chesapeake	541330	Full-service provider of maritime support services to the U.S. government	August 2021	E	166	\$4.02
SVT Robotics	Norfolk	511210	Provider of a software platform which accelerates and simplifies the deployment of industrial robotics	August 2021	E	37	\$0.10

\* Indicates that the Company has headquarters in another country.

## Appendix C – GO Virginia Region 5 Announcements - August 2019 to July 2021

Company Name	Locality	NAICS	Business Description	Month Announced	New / Expansion	New Jobs	Investment (\$M)
MI Technical Solutions, Inc.	Chesapeake	541512	Provides information technology solutions for military vessels	July 2021	E	10	\$0.52
Kristi Corporation USA	Suffolk	115310	Supplier of raw materials for aluminum and steel metallurgical industries	June 2021	N	10	\$1.06
Lyon Shipyard	Norfolk	336611	Full-service repair and industrial service provider	June 2021	E	119	\$24.40
Anchor Sandblasting and Coatings	Norfolk	238320	Provides sandblasting, pressure washing, and painting services to the maritime industry	May 2021	E	45	\$0.25
Breeze Airways	Norfolk	481111	Start-up low cost airline corporate services	May 2021	N	116	\$5.20
indieDwell	Newport News	321991	Steel modular housing manufacturing	May 2021	N	220	\$2.00
Kimley-Horn & Associates, Inc.	Virginia Beach	518210	Data center	May 2021	E	0	\$102.00
Dante Valve Company	Norfolk	332911	Manufacturer and distributor of valves and related products	April 2021	E	40	\$1.86
Sunny Farms, LLC	Virginia Beach	111419	Hydroponic greenhouse	April 2021	N	155	\$59.60
Katoen Natie Norfolk, Inc.*	Norfolk	493110	Plastics and polymers warehousing and distribution	April 2021	E	35	\$61.00
JRF Ship Repairs	Portsmouth	336611	Ship building repair	April 2021	E	0	\$0.50
Coastal Precast	Northampton	327390	Manufactures concrete ready mix	February 2021	E	41	\$7.50

**Appendix C – GO Virginia Region 5 Announcements - August 2019 to July 2021 (Cont.)**

<b>Company Name</b>	<b>Locality</b>	<b>NAICS</b>	<b>Business Description</b>	<b>Month Announced</b>	<b>New / Expansion</b>	<b>New Jobs</b>	<b>Investment (\$M)</b>
CMA CGM*	Norfolk	483111	Provides transportation and shipping services	February 2021	E	415	\$36.00
Tabet Manufacturing Company, Inc.	Norfolk	332322	Developer and manufacturer of large suite communications equipment and custom solutions for military and industrial consumers	January 2021	E	68	\$6.51
Atlantic Wind Transfers	Norfolk	488390	Provides support services to offshore wind farms	January 2021	N	3	\$0.03
Premium PPE	Virginia Beach	315210	Manufacturer of AmeriShield branded masks and personal protective equipment	October 2020	E	180	\$5.30
Plasser American*	Chesapeake	333120	Manufacturer of railway construction and maintenance equipment	October 2020	E	98	\$52.60
Amazon	Norfolk	492110	Fulfillment center	September 2020	E	100	\$10.00
Acoustical Sheetmetal Company (ASC)	Virginia Beach	332322	Manufacturer of sound attenuating and weather protective enclosures for on-site power	July 2020	E	200	\$15.80
SJS Industrial	Virginia Beach	332812	Provides powder, ceramic, and clear coating services	June 2020	E	0	\$1.00

**Appendix C – GO Virginia Region 5 Announcements - August 2019 to July 2021 (Cont.)**

<b>Company Name</b>	<b>Locality</b>	<b>NAICS</b>	<b>Business Description</b>	<b>Month Announced</b>	<b>New / Expansion</b>	<b>New Jobs</b>	<b>Investment (\$M)</b>
East Coast Repair & Fabrication	Newport News	488390	Performs maintenance and repairs on marine vessels	June 2020	E	332	\$64.40
Apex Systems, Inc.	Virginia Beach	561320	Provides professional staffing and IT solutions	June 2020	E	147	\$1.88
Valkyrie Enterprises, Inc.	Virginia Beach	541330	System engineering and acquisition support, readiness, modernization	May 2020	E	100	\$0.68
Huntington-Ingalls	Hampton	336611	Unmanned submarines	May 2020	E	268	\$46.00
Amazon	Chesapeake	493110	Import processing center	March 2020	E	500	\$50.00
Amazon	Suffolk	493110	Robotic fulfillment center	March 2020	E	1000	\$200.00
Total Fiber Recovery	Chesapeake	322110	Produces recycled pulp	February 2020	N	68	\$48.99
KD Navien*	James City	332410	Provides tankless water heaters, boilers, and combi-boilers for residential and commercial markets	February 2020	N	180	\$77.50
Bicast	James City	424990	Manufactures and distributes souvenirs	February 2020	E	18	\$1.00
Acesur USA LLC*	Suffolk	311224	Olive oil blending, bottling, and packaging	January 2020	N	29	\$10.97
GMAX Industries, Inc.	Franklin City	326199	Manufacturer and sourcing agent of medical disposable products	January 2020	N	40	\$10.50
Bon Bon Farms	Southampton	311224	Provides hemp plugs to farms	December 2019	N	162	\$8.50

DOMA Technologies, LLC	Virginia Beach	541513	Cloud-based data and document management	December 2019	E	300	\$1.40
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**Appendix C – GO Virginia Region 5 Announcements - August 2019 to July 2021 (Cont.)**

<b>Company Name</b>	<b>Locality</b>	<b>NAICS</b>	<b>Business Description</b>	<b>Month Announced</b>	<b>New / Expansion</b>	<b>New Jobs</b>	<b>Investment (\$M)</b>
G2 Ops	Virginia Beach	541511	Provides system modeling, systems engineering, and cybersecurity services	December 2019	E	10	\$0.40
InMotion Hosting, Inc.	Virginia Beach	517311	Provides business web hosting services	November 2019	E	50	\$12.20
TST Fabrication, LLC	Norfolk	332999	Sheet metal fabrication	November 2019	E	34	\$4.09
Hubbard Peanut Company	Franklin City	311911	Peanut manufacturing	November 2019	E	10	\$1.60
Priority Title & Escrow LLC	Virginia Beach	541191	Professional services	November 2019	E	200	\$0.40
DroneUp, LLC	Virginia Beach	551114	HQ; web and mobile platform for on-demand drone pilot services	October 2019	E	41	\$0.13
SRP Companies	Virginia Beach	493190	Warehouse facility	October 2019	N	131	\$1.16
LifeNet Health	Virginia Beach	339112	Regenerative organ and tissue R&D	September 2019	E	44	\$1.80
Eagle Aviation Technologies, LLC	Newport News	336411	Manufactures and designs prototype systems and components for the aviation, space, and marine industries.	September 2019	E	75	\$0.21
Tegra Global	Norfolk	315280	Apparel manufacturer and supply chain provider	September 2019	E	200	\$0.00
Flower Baking Co.	Norfolk	311812	Commercial bakery	August 2019	E	16	\$0.00



POSH	Virginia Beach	561421	Virtual receptionist	August 2019	N	60	\$0.00
IP Configure	Norfolk	541715	Video surveillance research and development software	August 2019	E	0	\$12.00

\* Indicates that the Company has headquarters in another country.

## Appendix D – References

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## Appendix E - Go Virginia Regions and Localities

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<b>Region 1: Southwest</b>	<b>Region 2: West Central</b>	<b>Region 3: Southside</b>	<b>Region 4: South Central</b>	<b>Region 5: Hampton Roads</b>
Bland	Alleghany	Amelia	Charles City (County)	Accomack
Bristol City	Amherst	Brunswick	Chesterfield	Chesapeake City
Buchanan	Appomattox	Buckingham	Colonial Heights City	Franklin City
Carroll	Bedford	Charlotte	Dinwiddie	Hampton City
Dickenson	Botetourt	Cumberland	Emporia City	Isle Of Wight
Galax City	Campbell	Danville City	Goochland	James City (County)
Grayson	Covington City	Halifax	Greensville	Newport News City
Lee	Craig	Henry	Hanover	Norfolk City
Norton City	Floyd	Lunenburg	Henrico	Northampton
Russell	Franklin	Martinsville City	Hopewell City	Poquoson City
Scott	Giles	Mecklenburg	New Kent	Portsmouth City
Smyth	Lynchburg City	Nottoway	Petersburg City	Southampton
Tazewell	Montgomery	Patrick	Powhatan	Suffolk City
Washington	Pulaski	Pittsylvania	Prince George	Virginia Beach City
Wise	Radford City	Prince Edward	Richmond City	Williamsburg City
Wythe	Roanoke City		Surry	York
	Roanoke		Sussex	
	Salem City			

Region 6: Eastern	Region 7: Northern	Region 8: Valley	Region 9: Central	
Caroline	Alexandria City	Augusta	Albemarle	
Essex	Arlington	Bath	Charlottesville City	
Fredericksburg City	Fairfax City	Buena Vista City	Culpeper	
Gloucester	Fairfax	Clarke	Fauquier	
King And Queen	Falls Church City	Frederick	Fluvanna	
King George	Loudoun	Harrisonburg City	Greene	
King William	Manassas City	Highland	Louisa	
Lancaster	Manassas Park City	Lexington City	Madison	
Mathews	Prince William	Page	Nelson	
Middlesex		Rockbridge	Orange	
Northumberland		Rockingham	Rappahannock	
Richmond		Shenandoah		
Spotsylvania		Staunton City		
Stafford		Warren		
Westmoreland		Waynesboro City		
		Winchester City		



## Appendix F - GO Virginia Region 5 Leadership

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<b>Thomas R. Frantz, Chair</b>	<b>Lynn Taylor, Vice Chair</b>
Mayor Kenneth Alexander, Ph.D.	Mark Johnson
Shawn Avery	Sarah Jane Kirkland
Timothy Bentley, III	Aubrey Layne
Patrick Coady	Robert McKenna
Marcia Conston, Ph.D.	Jerry Miller
Mayor Robert "Bobby" Dyer, Ph.D.	John Olson, Ph.D.
Christen Faatz	Mayor Doug Pons
Sharon Goodwyn	John Reinhart
Sally Hartman	Casey Roberts
Maria Herbert	Katherine Rowe, Ph.D.
Jeffrey Holland	Bryan Stephens
Bob Howard	Thomas Tingle