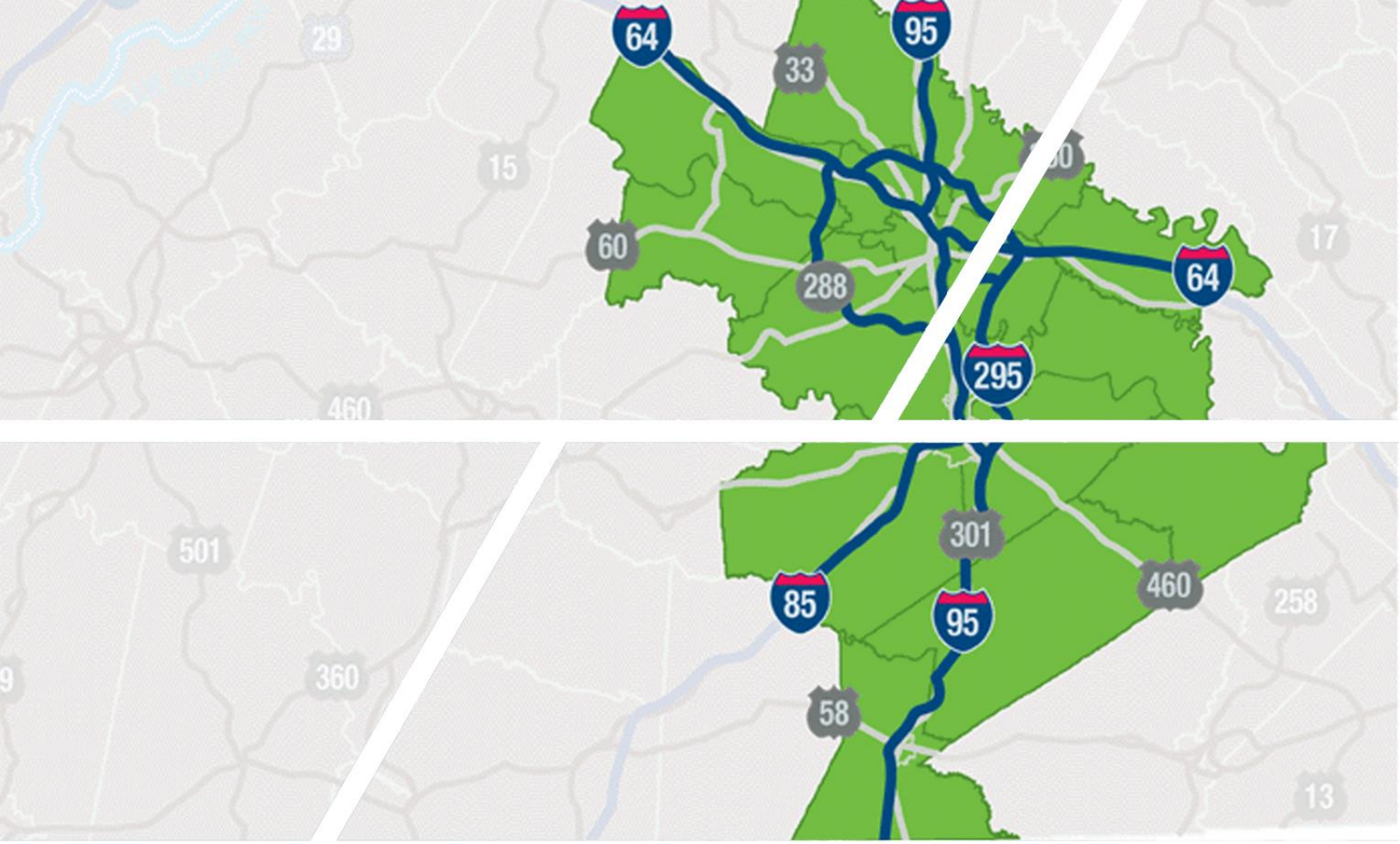

GROW Capital Jobs Economic Growth and Diversification Plan

August 27, 2025

DecideSmart

CHMURA
Economics & Analytics

GO VIRGINIA REGION 4
2025 GROWTH AND DIVERSIFICATION PLAN

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THE UPDATE PROCESS

The GO Virginia Region 4 Council views the Growth and Diversification Plan as a living document, one that has continually evolved since the formation of GO Virginia in 2016. In the past two years, a Council committee defined and monitored the production of the Talent Pathways Initiative and first steps in the implementation of the Regional Entrepreneurial Initiative. The Council formed a committee led by Vice-Chair Moses Foster that included representatives from the two planning district commissions, a regional educational institution, and the Community College Workforce Alliance to guide the formation of the 2025 Growth and Diversification Plan.

GROW Capital Jobs contracted with Chmura Economics & Analytics and Dr. Bob Holsworth, Managing Partner at DecideSmart, to provide consulting and research expertise for the process. In conjunction with the GROW Capital Jobs staff, ideation sessions were conducted with local and regional economic development officials and representatives of the Council's key clusters to gain deeper insight into the trends that the data identified and to understand specific project opportunities that the Council might pursue over the next two years and beyond. The 2025 Growth and Diversification Plan provides a roadmap for the Council's work and identifies a new Energy cluster that will be crucial to the region's success moving forward.

The GROW Capital Jobs staff wishes to thank the Region 4 Council, the Growth and Diversification Plan Update Committee, and individuals across the region who participated in interviews and focus groups during the planning process.

EXECUTIVE SUMMARY

Region 4 will retain its four priority clusters – Advanced Manufacturing, Information Technology, Logistics and Bioscience. The Council has endorsed adding Energy as a fifth cluster. The addition will reinforce economic growth, further enable existing clusters, and organize innovation, capital, and partnerships around a critical growth input.

- The Chmura data indicate that GO Virginia Region 4 continues to build momentum in its efforts to drive innovation, expand high-wage employment opportunities, and support strategic cluster growth. Since the last reporting period (2022 to 2024), the region has fully recovered from the pandemic-era economic contraction and is now surpassing pre-2020 employment levels. Employment across the four target clusters—Logistics, Warehousing, and Distribution; Biosciences/Life Sciences; Information Technology and Communication; and Manufacturing—has grown overall, with strong wage gains and major new project announcements poised to further accelerate diversification.

- The Logistics, Warehousing and Distribution cluster led in employment growth, up 16.3% between 2022-2024. Information Technology had the highest wage growth, growing to $89,037 annually. The Bioscience cluster also showed promising growth with traded sectors like pharmaceutical manufacturing and medical R&D providing an opportunity for continued export-oriented growth. While Manufacturing employment declined modestly (1.9%), it remains a crucial component of the regional economy, offering above average wages and significant future demand.

Target Cluster Summary: Employment and Wages (2022–2024)

Cluster	2024 Jobs	Job Growth	2024 Avg. Wage	Wage Growth
Logistics, Warehousing & Distribution	48,367	16.3%	$64,456	3.0%
Bioscience / Life Sciences	71,027	5.8%	$68,387	6.7%
Information Technology & Communication	48,497	1.9%	$89,037	8.0%
Manufacturing	32,523	–1.9%	$77,985	7.0%

Source: JobsEQ® by Chmura

- Region 4's support for advanced pharmaceutical research and manufacturing represents a unique combination of clusters. The research innovations developed at VCU's Medicines for All Institute under the leadership of Frank Gupton has catalyzed a pharmaceutical manufacturing renaissance embedded in both the RVA and Crater areas of the region. Region 4 is a crucial player in the emphasis the Commonwealth has placed on developing a life sciences value chain across research, manufacturing and distribution.

- Efforts to address occupational skill gaps remain important. Chmura data show that nearly 27,000 job postings in the region last year were associated with key cluster occupations. Many high demand roles in IT, engineering and production management remained unfilled for extended periods. The region also faces notable hiring challenges in its new Energy cluster that provide critical infrastructure for all priority clusters.
- The Council plans to implement the key recommendations its Talent Pathways Initiative for Advanced Manufacturing and Information Technology, generating projects that foster new business-education-workforce partnerships that enhance curriculum alignment and provide a rich array of internship, apprenticeship and mentorship opportunities.
- Given the rapid transformation that AI is bringing to all clusters, the Council will work cooperatively with statewide initiatives to develop a strategic framework for the region that can guide the key investment strategies of workforce development, cluster scale-up, entrepreneurial buildout and site development.
- The Council will continue to support site development in logistics and advanced manufacturing in the smaller and in the more rural jurisdictions of the region. New data centers have become a lower priority for the larger suburban jurisdictions since the last Growth and Diversification Plan and a significant portion of future growth is likely to occur in other parts of the region.
- New business formation is increasing in the region, especially in high paying professional and scientific services. Region 4 ranked second in the state for startup activity in the fourth quarter of 2024, with 606 new startups in 2024Q4 adding 1,415 new jobs. An encouraging trend in Region 4 is the formation of 124 new startups in the professional, scientific, and technological sector in 2024 Q4. Those new startups provided jobs for 176 people and represented 12% of all new startup employment.
- The contribution that the Council has made to the buildout of the region’s entrepreneurial ecosystem buildout has been highly impactful. The Council will be supporting the implementation of Startup Virginia’s expansion to an additional location. Region 4 is also a key component of Project VITAL, a statewide initiative that brings together biotech accelerators and research universities to power life sciences entrepreneurship.

DATA ANALYSIS

Employment growth slowed slightly since 2022, as employment levels fully recovered to pre-pandemic levels in the first quarter of 2023 and continued to expand into 2024. Between 2022 and 2024, the region saw employment and wage growth in the four target industry clusters (Manufacturing; Logistics, Warehousing, and Distribution; Information Technology and Communication; and Biosciences/Life Sciences) and overall. This report provides an overview of major trends since 2022 and changes in Region 4's target industry clusters.

Economic Overview

As of 2024 Q4, health care and social assistance is the largest industry sector in GO Virginia Region 4, employing 102,644 workers. The next-largest sectors in the region include retail trade (67,501 workers) and educational services (56,105). The sectors in GO Virginia Region 4 with the highest average wages per worker are management of companies and enterprises ($143,817); finance and insurance ($130,610); and utilities ($128,176). Each of these sectors pays annual average wages which are well above the region's average of $68,310. Every major two-digit NAICS industry in GO Virginia Region 4 experienced wage growth since 2022.

Regional industries demonstrating the greatest job growth over the last two years are health care and social assistance (7,227 jobs); transportation and warehousing (6,327); and educational services (3,421). Finance and insurance suffered the largest decline in employment since the fourth quarter of 2022, with a loss of 3,857 jobs. The finance and insurance industry, a cyclical industry, is sensitive to economic conditions and fluctuations in the housing market; this most recent decline is three times larger than the decline observed from 2021 Q1 to 2023 Q1. The non-depository credit intermediation drove declines over this period, especially credit card issuing firms in Henrico and at Capital One in Goochland.[1] However, projections in the finance and insurance sector anticipate the addition of 304 jobs over the next two years. Eight sectors declined during the observation period, including finance and insurance (-3,857), administrative and support and waste management and remediation services (-1,037), management of companies and enterprises (where headquarters are classified, -657 jobs) and manufacturing (-638). The retail trade (-147 jobs); agriculture, forestry, fishing, and hunting (-89); and information (-35) sectors also declined in overall employment from the last quarter of 2022 to the last quarter of 2024.

Over the next two years, employment in Region 4 is projected to expand by a total of 6,913 jobs. This projection represents a 0.5% average annual growth rate, faster than the 0.3% average annual growth expected for Virginia overall. The arts, entertainment, and recreation sector is expected to see the fastest growth in the region, with a 1.0% annual growth rate, driven by fitness centers and spectator sports that serve a growing population. Health care and social assistance (1,930 jobs) will add the largest employment increases in the number of jobs over this period (1,930 jobs), followed by professional, scientific, and technical services (767); and transportation and warehousing (666). These changes do not include demand due to retirements and career changes. Manufacturing, for example, is

[1] *Source: https://virginiabusiness.com/report-capital-one-cuts-1100-jobs/*

expected to need 6,500 workers to replace retirements and transfers, in addition to expected growth over the next two years.

NAICS Code	Industry	Employment		Average Annual Wages		Historical Employment Change 2022Q4-2024Q4	Forecast Employment Change 2024Q4-2026Q5
		2022Q4	2024Q4	2022Q4	2024Q4		
11	Agriculture, Forestry, Fishing and Hunting	2,273	2,184	$37,953	$42,483	(89)	8
21	Mining, Quarrying, and Oil and Gas Extraction	396	452	$80,724	$84,644	56	7
22	Utilities	3,427	3,444	$120,390	$128,176	17	(19)
23	Construction	46,391	47,431	$66,905	$74,378	1,040	631
31	Manufacturing	33,161	32,523	$72,864	$77,985	(638)	55
42	Wholesale Trade	22,925	23,058	$81,286	$85,860	133	166
44	Retail Trade	67,647	67,501	$37,718	$39,463	(147)	(296)
48	Transportation and Warehousing	36,601	42,927	$54,463	$56,206	6,327	666
51	Information	7,524	7,489	$77,134	$78,844	(35)	64
52	Finance and Insurance	38,856	34,999	$121,004	$130,610	(3,857)	304
53	Real Estate and Rental and Leasing	12,531	14,053	$77,787	$84,423	1,522	86
54	Professional, Scientific, and Technical Services	47,727	48,717	$94,264	$102,833	990	767
55	Management of Companies and Enterprises	22,092	21,435	$134,654	$143,817	(657)	284
56	Administrative and Support and Waste Management and Remediation Services	48,561	47,524	$50,571	$51,903	(1,037)	336
61	Educational Services	52,683	56,105	$51,918	$59,148	3,421	453
62	Health Care and Social Assistance	95,417	102,644	$61,880	$66,448	7,227	1,930
71	Arts, Entertainment, and Recreation	17,345	19,155	$26,201	$27,374	1,809	382
72	Accommodation and Food Services	50,901	53,547	$24,497	$26,422	2,646	494
81	Other Services (except Public Administration)	32,932	33,914	$41,477	$45,223	982	363
92	Public Administration	40,940	43,610	$72,099	$81,203	2,670	149
99	Unclassified	2,599	1,412	$56,240	$57,261	(1,186)	15
	Total – All Industries	**682,928**	**704,123**	**$63,927**	**$68,310**	**21,194**	**6,913**

Source: Chmura's JobsEQ® - NAICS Codes are the North American Industry Classification Codes assigned to classify companies according to their primary business activity.

Since the last report, eight firms in Region 4 announced plans to add at least 100 jobs in target industry clusters, for a total of 3,539 new proposed jobs. At the time of the last report, ten firms in Region 4 had announced plans for a total of 6,540 new proposed jobs. Several of the firms have yet to realize those promised jobs; four of the firms (PPD; Aditxt; Starplast USA LLC; Grenova Inc.), referenced in the previous report have advertised for less than 5% of the promised new jobs. Critical for the Biosciences/Life Sciences cluster, CivicaRX and Phlow posted a higher number of job ads than employment estimated in the initial announcements. Since 2022, the largest announcements in Region

4 included Amazon (1,000 new jobs in the Logistics, Warehousing, and Distribution cluster) and for LEGO Systems Inc. (305 jobs within the Logistics, Warehousing, and Distribution cluster). Most of these announcements occurred in Manufacturing (five out of eight companies); the rest of the firms relate to the Logistics, Warehousing, and Distribution cluster (Amazon, Lego Systems, and UPS). These announcements should continue to increase occupation demand over the next few years.

Eight Firms in Region 4 Announced at Least 100 New Jobs in Target Industry Clusters

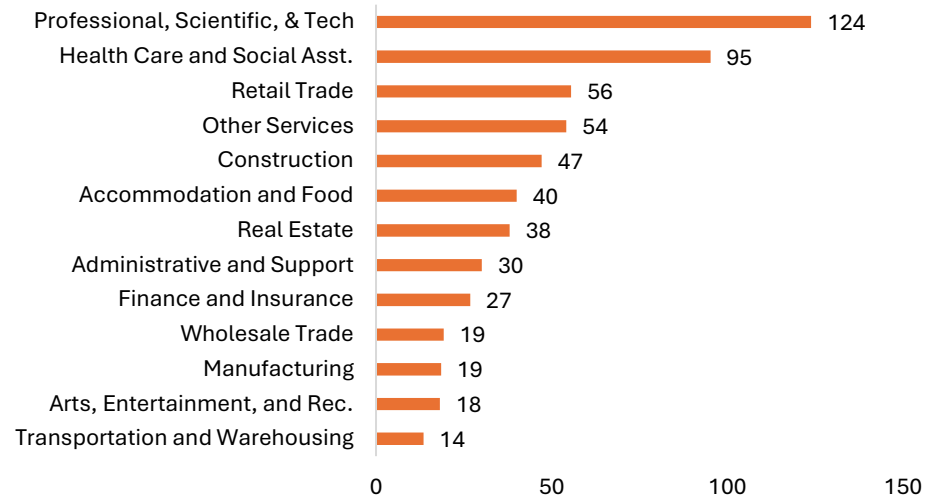
Company Name	Locality	Description	Month Announced	New Jobs
Nightingale Ice Cream Sandwiches	Richmond City	HQ; Ice cream manufacturer	May 2025	166
Amazon	Goochland	Robotics fulfillment center	May 2025	1000
LEGO Systems, Inc.	Prince George	Distribution and warehouse for LEGO	May 2025	305
Super Radiator Coils	Chesterfield	Manufactures heat exchangers and specialty coils for industries such as power generation, food processing, data center cooling, military	November 2024	160
Condair	Chesterfield	Manufactures HVAC systems that focus on humification for large scale cooling and heating	June 2024	180
UPS	Chesterfield	Shipping facility	June 2024	185
Topsoe	Chesterfield	Manufacturer of advanced, energy-efficient Solid Oxide Electrolyzer Cells (SOEC) for the hydrogen production industry	May 2024	150
Weidmuller Group	Chesterfield	Manufacturer of electrical components for EV market	April 2023	140

Source: VEDP Virginia Announcements Data, Chmura

Entrepreneurial activity, another important source of job creation, is a key indicator of innovative capacity in an economy. GO Virginia Region 4 showed the second-largest number of new startups[2] in the state in 2024 Q4. An encouraging trend in Region 4 is the formation of 124 new startups in the professional, scientific, and technological sector in 2024 Q4 – the largest sector in the region. Those new startups in a high-paying sector provided jobs for 176 people, or 12% of all new startup employment. The industry with the largest new startup employment in the region is accommodation and food services (254 employed among 40 new startups). Overall, over 600 businesses started up over this period. As these small businesses contribute to overall community attractiveness and character, a thriving entrepreneurial system, including industries outside of the target clusters, provides an important engine to support continued growth in high-wage jobs.

[2] *New startups are defined by Chmura and Virginia Innovation Partnership Corporation as businesses first appearing in quarterly data from the Virginia Employment Commission and having 20 or fewer employees. See the quarterly report at https://www.virginiaipc.org/resources#WcrHKP.*

Number of New Startups by Industry in Region 4; 2024Q4

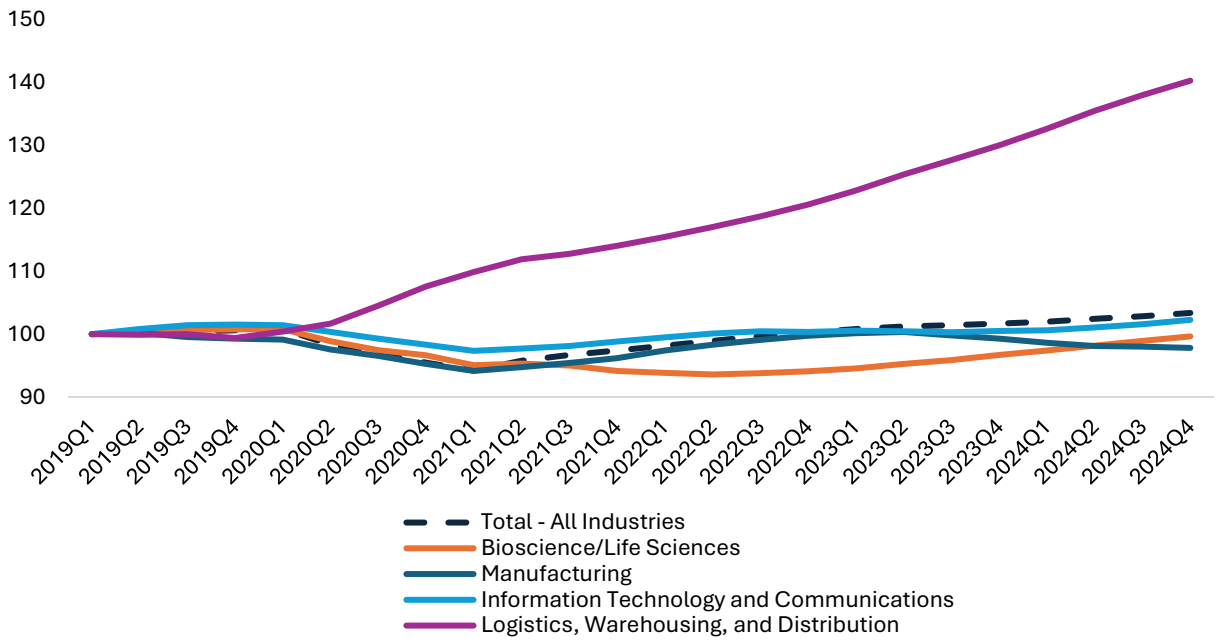


Source: Chmura and Virginia Employment Commission

Employment

Between the last quarter of 2022 and the last quarter of 2024, overall employment in Region 4 grew 3.1%, reaching 704,123 workers. In target industry clusters, Logistics, Warehousing, and Distribution experienced the fastest growth at 16.3% (to 48,367 workers). This growth was followed by Biosciences/Life Sciences, up 5.8% to 71,027 workers. Information Technology and Communication saw more modest growth of 1.9% (48,497 workers). The Manufacturing sector declined 1.9%, falling from over 33,000 employed in 2023 to 32,523 at the end of 2024.

Employment Growth (Index 2019Q1=100)



Overall employment recovered to pre-pandemic levels as of first quarter of 2023. Among target industry clusters, both the Biosciences/Life Sciences and Manufacturing sectors have not yet recovered to pre-pandemic levels of employment in the industry. Some of the growth in the Biosciences/Life Sciences industry cluster may relate to recovery from these pandemic-related job losses. As of fourth quarter 2024, overall employment in the region is 704,123, a 2.8% increase over average employment in 2019 and 8.3% higher than average employment in 2020. Over the same period, Logistics, Warehousing, and Distribution increased 16.3%, adding 6,792 new jobs. This industry cluster grew considerably since 2019, and employment is 41.1% higher in 2024 as compared to pre-pandemic levels.

Within the Manufacturing cluster, food and beverage manufacturing has also been declining in Region 4. Between 2022 and 2024, employment in food and beverage manufacturing declined 16%, much faster than the overall 1.9% decline in manufacturing. Employment fell from 7,240 in 2022 Q4 to 6,111 in 2024 Q4, a loss of 1,129 jobs. More than 700 of those jobs were lost in the animal slaughtering and processing industry, followed by more than 300 jobs lost in tobacco manufacturing. Three industries grew within the food and beverage manufacturing cluster; bakeries added the most jobs in this period (+90 jobs), followed by other food manufacturing (13), and fruit and vegetable preserving and specialty food manufacturing (12).

Bridging the definitions of Manufacturing and Biosciences/Life Sciences, the pharmaceutical cluster in Petersburg is poised for growth following substantial investment. The Alliance for Building Better Medicine won a nearly $4 million federal grant through the U.S. Economic Development Administration to support an advanced pharmaceutical manufacturing workforce initiative. The training is expected to prepare 228 individuals in the pharmaceutical and biotechnology sectors.[3] After jumping 28% between 2021 and 2022, employment in the pharmaceutical and medicine manufacturing industry has stayed flat in the region, ending 2024 with 1,014 workers.

The Biosciences/Life Sciences cluster began to rebound in 2024, increasing 5.8% and adding nearly 4,000 new jobs; this increase is driven primarily by increases in staffing at medical and surgical hospitals; home health care services; and outpatient mental health and substance abuse centers. However, this industry cluster has not recovered from the pandemic, and employment levels are 1.1% lower than 2019.

Employment in GO Virginia Region 4 (Four-Quarter Moving Average)						**2022 to 2024**	
	2020	**2021**	**2022**	**2023**	**2024Q4**	**%**	**#**
Manufacturing	31,685	31,986	33,161	33,011	32,523	-1.9%	-638
Logistics, Warehousing, and Distribution	37,092	39,328	41,575	44,820	48,367	16.3%	6,792
Information Technology and Communication	46,617	46,869	47,586	47,649	48,497	1.9%	912
Biosciences/Life Sciences	68,893	67,128	67,102	68,934	71,027	5.8%	3,924
Total - All Industries	**650,379**	**663,437**	**682,928**	**692,544**	**704,123**	**3.1%**	**21,194**

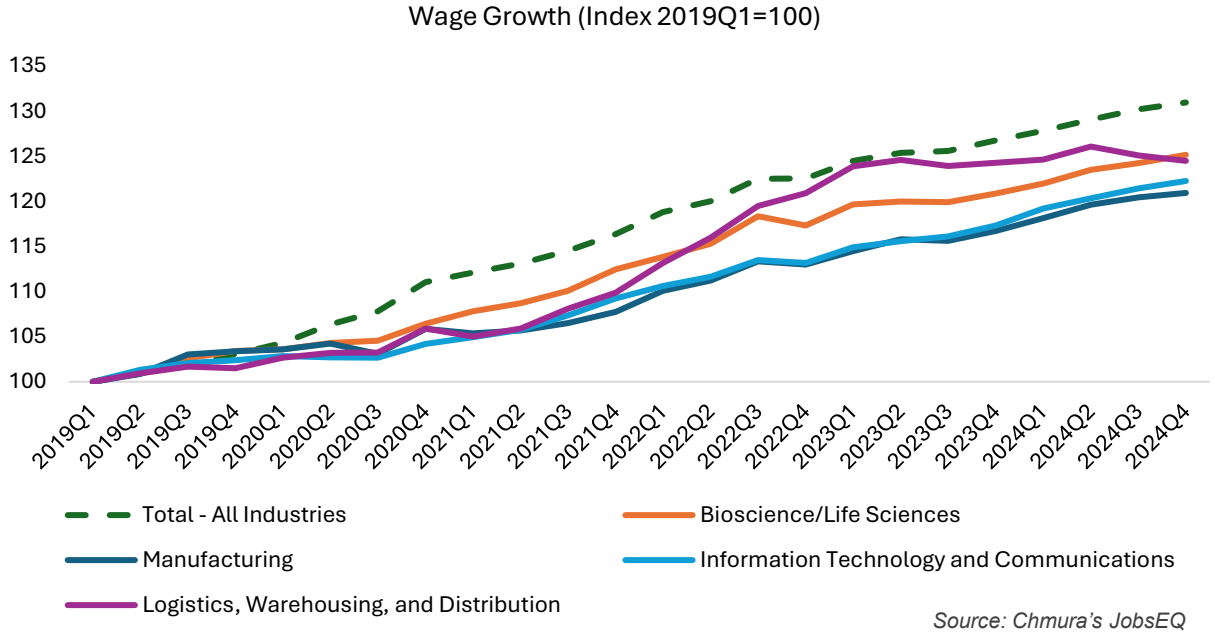
Source: Chmura's JobsEQ

[3] *"Richmond-Petersburg pharma effort secures $4m in federal funding" January 16, 2025. https://www.grpva.com/news/richmond-petersburg-pharma-effort-secures-4m-in-federal-funding/*

The number of new Biosciences/Life Sciences-related establishments dipped in 2020, with only 31 new establishments (approximately half of the annual average for the period from 2016 to 2019). Although there was a recovery period in 2021 and 2022 (90 and 190 new establishments, respectively), this recovery did not continue into 2023 (only 9 new establishments) and the region saw a significant contraction of 171 establishments in the second quarter of 2023. Industry sectors where the number of establishments since 2019 have contracted include: pharmaceutical and medicine manufacturing; waste treatment and disposal; and health and personal care retailers. Information Technology and Communication employment rose 1.9% from 2022 and increased 0.7% over pre-pandemic levels. Manufacturing was the only target industry cluster to decline from 2022 to 2024, with employment falling 1.9% (638 jobs). The poultry processing industry (-509 jobs) led this decline along with other significant declines in the tobacco manufacturing (-319) and air-conditioning and warm air heating equipment and commercial and industrial refrigeration equipment manufacturing (-256). The manufacturing industry cluster has not yet recovered to pre-pandemic levels, and in the last quarter of 2024, remained 1.5% below average employment in 2019. Looking ahead, five firms announced plans to add at least 100 jobs into the manufacturing industry, for a total of nearly 800 promised new jobs. The LEGO plant in Chesterfield is also expected to begin production in 2027 and ramp up to 1,700 jobs in professional and production positions.

Wages

Between 2022 and the last quarter of 2024, average annual wages in Region 4 grew 6.9%, reaching an annual average of $68,310. Among the target industry clusters, Logistics, Warehousing, and Distribution is the only cluster with below-average wages, with an average annual wage of $64,456, up 3.0% from 2022. Wages in the Information Technology and Communication cluster grew the fastest during the period, increasing 8.0% from 2022 to an average wage of $89,037. The Manufacturing cluster had similarly high wage growth, increasing 7.0% since 2022 for an average wage of $77,985. Wages in Biosciences/Life Sciences grew 6.7% to $68,387.



Source: Chmura's JobsEQ

Average Annual Wages in GO Virginia Region 4

	2020	2021	2022	2023	2024Q4	2022 to 2024 %	2022 to 2024 #
Manufacturing	$68,283	$69,480	$72,864	$75,278	$77,985	7.0%	$5,121.53
Logistics, Warehousing, and Distribution	$54,845	$56,896	$62,609	$64,354	$64,456	3.0%	$1,847.16
Information Technology and Communication	$75,886	$79,568	$82,427	$85,449	$89,037	8.0%	$6,609.82
Biosciences/Life Sciences	$58,156	$61,453	$64,111	$66,039	$68,387	6.7%	$4,275.05
Total-All Industries	**$57,928**	**$60,706**	**$63,927**	**$66,115**	**$68,310**	**6.9%**	**$4,382.76**

Source: Chmura's JobsEQ

Intraregional Differences

Between 2022 and the last quarter of 2024, employment in the Crater Planning District Commission[4] (Crater PDC) region grew 3.0% to 230,100, on par with the 3.1% growth in Region 4 overall. All of the target industry clusters, except for Manufacturing, experienced employment growth over this period. The Logistics, Warehousing, and Distribution cluster experienced the fastest growth (up 16.4%), followed by Information Technology and Communication (3.0%) and Biosciences/Life Sciences (1.4%). Employment in the Manufacturing cluster declined slightly by 0.5%, with a loss of 76 jobs from 2022.

Employment in the Crater PDC Region (Four-Quarter Moving Average)

	2020	2021	2022	2023	2024Q4	2022 to 2024 %	2022 to 2024 #
Manufacturing	14,945	14,875	15,388	15,432	15,312	-0.5%	-76
Logistics, Warehousing, and Distribution	17,641	18,697	20,044	21,451	23,333	16.4%	3,289
Information Technology and Communication	11,494	11,600	11,878	11,974	12,236	3.0%	358
Biosciences/Life Sciences	19,296	18,771	19,246	19,787	19,525	1.4%	279
Total - All Industries	**213,368**	**218,117**	**223,362**	**226,318**	**230,100**	**3.0%**	**6,738**

Source: Chmura's JobsEQ

The rise of e-commerce in the region drove substantial growth in Logistics, Warehousing, and Distribution. As of the last quarter of 2024, employment in this cluster is up more than 42% over 2019 levels and adding nearly 7,000 jobs since 2019. On a more modest scale, Information Technology and Communication employment levels rose 1.3% and Manufacturing employment rose 1.0% over pre-pandemic levels in the Crater PDC region. Only the Biosciences/Life Sciences cluster has not seen recovery in employment levels, with the cluster down 4.1% from 2019 average employment levels.

As of the last quarter of 2024, the average annual wage in the Crater PDC region is $59,873, an 8.6% increase since 2022. Over the same period, all the target industry clusters experienced wage growth, except for the Logistics, Warehousing, and Distribution cluster. Wages for this cluster contracted 0.3% to $61,724; previously, this cluster saw high wage growth during the 2021 to first quarter 2023 reporting period, with 14.4% growth during that period. The Information Technology and Communications sector grew 8.5%. Manufacturing wages grew 5.6%, followed by Biosciences/Life Sciences wages, which rose 5.0%. All of the target industry clusters pay above-average wages for the region, except for the Biosciences/Life Sciences cluster. The Crater PDC region shows a high concentration of residential

[4] *The Crater PDC region includes the counties of Charles City, Dinwiddie, Greensville, Prince George, Surry, and Sussex, and the cities of Colonial Heights, Emporia, Hopewell, and Petersburg.*

care facilities and home health care services that pay below-average wages and bring down the average wage for the cluster.

Average Annual Wages by Target Industry Cluster, Crater PDC Region						2022 to 2024	
	2020	2021	2022	2023	2024Q4	%	#
Manufacturing	$71,800	$73,078	$76,725	$79,084	$81,009	5.6%	$4,284
Logistics, Warehousing, and Distribution	$52,478	$55,260	$61,932	$63,838	$61,724	-0.3%	$(208)
Information Technology and Communication	$63,812	$67,034	$70,272	$72,618	$76,256	8.5%	$5,984
Biosciences/Life Sciences	$47,171	$49,523	$52,769	$54,337	$55,414	5.0%	$2,645
Total-All Industries	**$49,710**	**$52,039**	**$55,136**	**$58,010**	**$59,873**	**8.6%**	**$4,737**

Source: Chmura's JobsEQ

Cluster Highlight: Traded Biosciences/Life Sciences

The Biosciences/Life Sciences cluster can be separated into traded sectors (export-oriented) and local sectors (primarily serving the local population). Traded sectors are often favored in economic development as these businesses export goods and services and drive economic growth by bringing money back into the region.[5,6] Examples of local Biosciences/Life Sciences industries include home health care services, nursing care facilities, medical laboratories, kidney dialysis centers, and hospitals. Traded industries include research and development (R&D) in life sciences; pharmaceutical preparation manufacturing; and medical, dental, and hospital equipment and supplies wholesalers. Virginia Commonwealth University Health blurs these lines as typically, and in this report, hospital systems are considered local. Research activity, however, can contribute to growing traded industries in the cluster—such as the partnership between VCU's Medicines for All Institute and the pharmaceutical industry.[7]

Between 2022 and 2024, employment in the traded cluster grew 2.0% to 6,129 workers. The growth was driven primarily by research and development in nanotechnology, as well as medical, dental, and hospital equipment and supplies merchant wholesalers.

Employment in Biosciences/Life Sciences, GO Virginia Region 4				2022 to 2024	
	2022	2023	2024	%	#
Traded	6,009	6,135	6,129	2.0%	120
Local	61,093	62,799	64,898	6.2%	3,805
Total Biosciences/Life Sciences	**67,102**	**68,934**	**71,027**	**5.80%**	**3,924**

The traded Biosciences/Life Sciences cluster generally pays much higher wages compared to local industries, reflecting higher levels of innovation and productivity. Between the end of 2022 and 2024, wages in this cluster grew 7.1%, reaching an annual average of $113,584. This represents an average

[5] Delgado, M., M.E. Porter, and S. Stern, "Defining Clusters of Related Industries", National Bureau of Economic Research, August 2014, w20375.pdf (nber.org).

[6] *U.S. Cluster Mapping, "Cluster Mapping Methodology", accessed September 2023, https://clustermapping.us/content/cluster-mapping-methodology.*

[7] *Virginia Commonwealth University, "VCU's Medicines for All Institute partners with industry to secure the domestic pharmaceutical supply chain", VCU news, May 19, 2020, https://news.vcu.edu/article/VCUs_Medicines_for_All_Institute_partners_with_industry_to_secure.*

wage increase of about $7,500. In comparison, wages in the much larger local Biosciences/Life Sciences cluster grew similarly at 7.0%, adding $4,199 on average. Note that overall wage growth is slower than either of the components due to the larger share of employment in the lower-wage, slower-growing local sector.

Average Annual Wages in Biosciences/Life Sciences, GO Virginia Region 4				2022 to 2024	
	2022	2023	2024	%	#
Traded	$106,035	$108,875	$113,584	7.1%	$7,549
Local	$59,904	$61,993	$64,103	7.0%	$4,199
Total Biosciences/Life Sciences	**$64,111**	**$66,039**	**$68,387**	**6.7%**	**$4,276**

Site Availability

Region 4 continues to offer a wide variety of sites for development; as of January 2025, Region 4 had the most available sites of any GO Virginia Region (23% of total characterized sites statewide/22% of all identified sites statewide).

Level	What this means?	# of Sites
Tier 5	Site is considered “shovel ready” with all site permits in place or identified such that building construction can begin as soon as necessary land disturbance permits can be obtained by prospective industry.	0
Tier 4	Site is positioned to support development such that building construction can take place in 12-18 months or less, with all infrastructure improvements in place, or plans for necessary infrastructure improvements completed and approved and deemed deliverable within 12-18 months by a Virginia-licensed Professional Engineer. All infrastructure permit issues are identified and quantified.	9
Tier 3	Site is zoned for industrial or commercial development land use. Site could have minimal or no infrastructure in place. Due diligence is complete including, but not limited to, a waters of the US (wetlands and streams) delineation with US Army Corps of Engineers approval within the last five years, geotechnical borings and preliminary evaluation, boundary survey with easements and encumbrances identified, one-foot topographic survey completed for the purposes of design or real property improvements signed and sealed by a duly licensed professional, a current cultural resources review, a current threatened and endangered species review, a Phase I Environmental Site Assessment within the last five years and, if necessary, a floodplain study or geological / karst evaluation. Master planning and preliminary engineering work is complete with associated reports and estimated costs and timelines for infrastructure development quantified.	3
Tier 2	Site is under (a) public ownership, (b) public/private ownership, or (c) private ownership with an option agreement or other documentation of a commitment by the private owner(s) to a competitive sales price; permit access to the site for site assessment, construction, and marketing; and market the site for industrial or commercial economic development purposes. Comprehensive Plan reflects that the site is intended for industrial or commercial development land use, but site is not zoned as such and a rezoning hearing needs to be scheduled. Preliminary evaluation is complete to confirm site has minimal or no infrastructure and/or minimal or no due diligence in place.	67
Tier 1	Site is under public ownership, public/private ownership, or private ownership, and of which such owner(s) are agreeable to marketing the site for economic development purposes and allowing access to the property for site assessment and marketing purposes. The site has no established sales price, has minimal or no infrastructure, and has been subject to minimal or no due diligence.	12
TOTAL Characterized		**91**
Uncharacterized	Additional Region 4 sites where characterization work has not been completed.	108

In addition to the largest number of available sites, Region 4 sites also offer 28% of available acreage across all regions.

In 2022, Region 4 funded a project led by Virginia's Gateway Region to upgrade 15 sites across the region to Tier 4 status. This $1.6M project resulted in the sale of three sites and increased activity across the region. The Council recently approved a $100,000 planning grant to evaluate sites able to support energy-intensive industries; an implementation grant to upgrade 5 to 10 sites is expected after completion of the planning grant. The Council has also received feedback related to developing a more strategic approach to site development within industry clusters (pharmaceuticals, energy), with an effort to links research space, growth needs for developing firms, and manufacturing infrastructure requirements. This work may inform future site development activities.

See Appendix C for VEDP Site Inventory Data.

SKILLS GAPS IN TARGETED CLUSTERS

Occupational Demand

This section details immediate and potential gaps in occupations and skills to support employment growth in GO Virginia Region 4. Current demand is based on Real-Time Intelligence (RTI) gathered and analyzed by Chmura from online job postings over the last 12 months, ending July 1, 2025.

Job openings identify an immediate skills gap for employers and an opportunity for job seekers. Large numbers of job postings for individual occupations suggest that a specific skill is in high demand. The table below identifies demand for key occupations in the target industry clusters based on job ads over the past year. Specifically, these occupations account for a large share of employment in the cluster, or a substantial amount of total employment in the occupation is in that cluster. These occupations also typically pay above the regional average wage. For some occupations, pay range may depend on employment within the cluster – for example, computer user support specialists typically earn more in the Biosciences/Life Sciences cluster than in the same role in other industries.

Over the last 12 months, nearly 27,000 job posts relating to a key cluster occupation were advertised online, with an average wage of $96,931. The average duration of activity across all job ads in the region is 30 days; ads that stay active for longer than this benchmark indicate difficulty in filling those positions. Occupations such as electrical and electronics repairers (47 days), sales engineers (43), and technical writers (41), represent some occupations where demand for skills likely outstrips supply.

The Information Technology and Communication target cluster has the highest volume of related new job posts released during the last 12 months, with nearly 25,000 high-wage job openings from 20 different occupations. Most of these occupations require a bachelor's degree (17 out of 20 occupations), with one occupation requiring a master's degree and all other occupations in this cluster requiring only a high school diploma or equivalent. The average estimated wage for this target cluster is $95,855 with job openings remaining unfulfilled for an average duration of 29 days. Software developers had the largest volume of advertised job openings in this cluster with 4,120 active job ads in the last twelve months, followed by sales representatives of services (3,514 job ads) and computer and information systems managers (3,462). Five key occupations among these top jobs advertised are shared with the traded Biosciences/Life Sciences cluster and three are shared with the Logistics, Warehousing, and Distribution cluster (indicated by check marks in the table below).

Seven of the in-demand occupations are in the traded Biosciences/Life Sciences cluster[8], representing over 12,500 new jobs; typical education requirements for these occupations require a bachelor's degree, with all occupations requiring at least this education level. The average estimated wage for this cluster is $91,157 – above the average for all job posts – with job openings remaining active for an average of 29 days. Software developers saw the highest volume of active job ads, with 4,120 active ads. This level was followed by computer and information systems managers (3,462 job ads); management analysts (2,745); and sales representatives, wholesale and manufacturing (924). Five of the key traded Biosciences/Life Sciences occupations cross over with the Information Technology and Communication cluster; two occupations cross over with the manufacturing cluster and two with the Logistics, Warehousing, and Distribution cluster.

The Logistics, Warehousing, and Distribution key cluster showed the third highest volume of active job ads over the last 12 months, with 6,556 ads in three key high-paying occupations. The Manufacturing cluster posted 1,739 active ads during the period across five occupations.

Occupations with a high number of job postings that typically require only a high school diploma include sales representatives of services and first-line supervisors of construction trades and extraction workers (across multiple industries).

Job Postings for Key Cluster Occupations Paying Above-Average Wages

SOC Code	Occupation	Active Job Ads	Median Duration	Median Wage	Typical Education Required	Relevant Cluster			
						MFG	BIO	IT	LWD
15-1252	Software Developers	4,120	22	$121,100	Bachelor's		□	□	
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	3,514	39	$76,700	High school diploma or equivalent			□	□
11-3021	Computer and Information Systems Managers	3,462	26	$114,600	Bachelor's		□	□	
13-1111	Management Analysts	2,745	25	$83,300	Bachelor's		□	□	□
15-1299	Computer Occupations, All Other	2,409	26	$114,600	Bachelor's			□	
15-1244	Network and Computer Systems Administrators	1,830	24	$82,800	Bachelor's			□	
17-2071	Electrical Engineers	926	41	$83,200	Bachelor's			□	
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	924	35	$80,300	Bachelor's		□	□	
15-1212	Information Security Analysts	833	22	$104,300	Bachelor's			□	
15-1211	Computer Systems Analysts	812	27	$92,900	Bachelor's			□	
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	790	39	$75,100	High school diploma or equivalent			□	
15-2051	Data Scientists	619	21	$93,400	Bachelor's			□	
17-2112	Industrial Engineers	605	33	$84,700	Bachelor's	□	□		

[8] Note the analysis here is limited to traded Biosciences/Life Sciences industries, see section 6 for discussion of traded vs. local industries.

Job Postings for Key Cluster Occupations Paying Above-Average Wages

SOC Code	Occupation	Active Job Ads	Median Duration	Median Wage	Typical Education Required	Relevant Cluster			
						MFG	BIO	IT	LWD
15-1254	Web Developers	464	18	$108,300	Bachelor's			□	
11-3051	Industrial Production Managers	392	35	$74,000	Bachelor's	□			
17-2141	Mechanical Engineers	374	29	$82,700	Bachelor's	□	□		
15-1253	Software Quality Assurance Analysts and Testers	322	23	$93,400	Bachelor's			□	
11-9199	Managers, All Other	297	33	$71,400	Bachelor's		□	□	□
15-1243	Database Architects	249	22	$128,000	Bachelor's			□	
27-3042	Technical Writers	204	41	$68,400	Bachelor's			□	
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	197	37	$83,300	Bachelor's	□			
15-1221	Computer and Information Research Scientists	172	22	$124,400	Master's			□	
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	171	47	$73,600	Postsecondary non-award	□			
41-9031	Sales Engineers	142	43	$99,800	Bachelor's			□	
15-1251	Computer Programmers	120	22	$101,100	Bachelor's			□	

Source: Chmura's JobsEQ.
RTI Data reflect online job postings for the 365-day period ending 7/01/2025.
SOC Code is the Standard Occupational Code assigned to classify workers into occupational categories.
MFG = Advanced Manufacturing. BIO = Traded Biosciences/Life Sciences. IT = Information Technology and Communication. LWD = Logistics, Warehousing, and Distribution.

Cluster Highlight: Energy Industry Analysis

Stakeholders report difficulty filling jobs in the energy sector. Reliable and cost-effective energy availability underpins business attraction and retention, particularly in target clusters such as Manufacturing and Information Technology. Online job ads currently indicate likely gaps in several key occupations for the energy sector, specifically for utilities.[9] The greatest number of ads for key above-average wage energy occupations over the year ending July 1, 2025 is for office workers and supervisors, such as business operations specialists, management analysts, and accountants and auditors. Note that not all the ads are specific to energy employers, but demand for these key workers in other industries influences the availability of workers with necessary skills in the region for energy employers.

Occupations more closely tied to the energy sector generally stay online longer, indicating employers are having greater difficulty filling those roles. Nationally over this period, the median duration that an ad remained online is 31 days. In Region 4, ads for first-line supervisors of mechanics, installers, and repairers stayed online on average for 41 days, as did ads for electrical engineers. Occupations staying online the longest, indicating greatest difficulty of filling the positions, include project management

[9] *The energy sector is defined here as the Utilities (22) NAICS code, including electric power distribution, fossil fuel electric power generation, natural gas distribution, nuclear electric power generation, solar electric power generation, and biomass electric power generation.*

specialists (179 days), control and valve installers and repairers and electrical power-line installers and repairers. While the median ad for nuclear engineers was up for a shorter time of 24 days, other nuclear jobs were up for longer, including nuclear power reactor operators (55 days), and nuclear technicians (43 days).

Job Postings for Key Utility Sector Jobs Paying Above-Average Wages

SOC Code	Occupation	Active Job Ads	Median Duration	Median Wage	Typical Education Required
13-1199	Business Operations Specialists, All Other	3,040	31	$60,800	Bachelor's degree
13-1111	Management Analysts	2,745	25	$83,300	Bachelor's degree
13-2011	Accountants and Auditors	1,804	35	$64,900	Bachelor's degree
11-1021	General and Operations Managers	1,264	39	$64,900	Bachelor's degree
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	1,225	41	$65,200	High school diploma or equivalent
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,036	33	$54,700	High school diploma or equivalent
17-2071	Electrical Engineers	926	41	$83,200	Bachelor's degree
47-2111	Electricians	474	33	$59,800	High school diploma or equivalent
51-1011	First-Line Supervisors of Production and Operating Workers	476	39	$66,800	High school diploma or equivalent
49-9041	Industrial Machinery Mechanics	199	39	$62,500	High school diploma or equivalent
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	81	37	$83,700	Postsecondary non-degree award
17-2161	Nuclear Engineers	73	24	$156,400	Bachelor's degree
49-9051	Electrical Power-Line Installers and Repairers	52	79	$57,100	High school diploma or equivalent
19-4051	Nuclear Technicians	39	43	$122,900	Associate's degree
51-8012	Power Distributors and Dispatchers	19	33	$62,200	High school diploma or equivalent
51-8013	Power Plant Operators	17	28	$61,700	High school diploma or equivalent
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	16	91	$49,200	High school diploma or equivalent
51-8011	Nuclear Power Reactor Operators	7	55	n/a	High school diploma or equivalent
13-1082	Project Management Specialists	4	164	$46,800	Bachelor's degree

Source: JobsEQ® by Chmura

Occupational Supply

Educational institutions in Region 4 are well positioned to support the priority clusters with workforce education and training. The top ten schools by enrollment size together account for nearly 60,000 students enrolled in Region 4. These schools accounted for 94% of the total awards in the region.

More than 60,000 Students Are Enrolled in Postsecondary Institutions in Region 4

School	Certificates and 2 yr Awards	4 yr Awards	Total School Enrollment
Virginia Commonwealth University	80	4,875	28,082
Brightpoint Community College	1,490	0	8,792
J Sargeant Reynolds Community College	1,653	0	7,527
Virginia State University	0	620	4,648
University of Richmond	18	989	3,876
Richard Bland College	162	0	2,051
Virginia Union University	0	128	1,860
Randolph-Macon College	0	404	1,490
Bon Secours Memorial College of Nursing	0	145	481
South University-Richmond	16	34	442
GO Virginia Region 4 Total	**4,125**	**7,195**	**60,827**

Source: JobsEQ® by Chmura, Awards data are for the 2022-2023 academic year

To further analyze occupation training and identify potential gaps, Chmura translates the awards by training program into occupation output.[10] The target range of awards (including certificates, two-year degrees, and four-year degrees) is determined using 1) regional projected annual growth in employment for each occupation and 2) a national benchmark of average awards granted in regions with similar levels of employment. In the long-term, the market will need to resolve a potential supply shortfall in one way or another. Industries may draw applicants from outside the immediate market area, raise wages to attract more candidates, and/or hire individuals that lack the desired specific skills and training. Postsecondary institutions can contribute to closing these gaps by increasing enrollment and offering training programs if none are currently available.

[10] To relate training programs to occupations, this report uses a modified version of the CIP to SOC crosswalk from the National Center for Education Statistics (NCES). While the crosswalk is helpful for estimating occupation production from training program awards data, it is neither perfect nor comprehensive, as graduates for various reasons may not end up employed in occupations that are most related to the training program from which they graduated.

Addressing the Skills Gaps

Award Gap / Surplus for Key Cluster Occupations in GO Virginia Region 4

For the key occupations identified in the occupation demand section, Region 4 shows a modest surplus or matches demand for several occupations in the bioscience/ life sciences cluster. The surplus for chemical engineers, biological scientists, health and safety engineers, and bioengineers shows awards in the region are ramping up to support expected growth in the cluster. Data scientists, supporting the information technology & communications cluster, show alignment between annual demand and awards supply.

The data also indicate several potential gaps for key cluster occupations. Many of these are in the information technology & communications cluster, led by software developers, with a potential annual gap of 188 awards. Evaluating this alignment should be a key consideration in any studies of the evovling impact of Artificial Intelligence on workforce demand in the region. Computer and information systems managers, information security analysts, and computer systems analysts also show an

estimated undersupply of local awards to meet demand. Filling gaps for engineers, including industrial, mechanical, electronics, and aerospace, can support demand in the advanced manufacturing cluster. Electrical and industrial engineers can also support demand in the energy cluster. Few occupations in the logistics, warehousing, and distribution cluster typically require postsecondary education, but graduates with relevant degrees may find work in the cluster as management analysts and information security analysts, filling estimated gaps.

Significant Region 4 work over the past two years has focused on addressing these gaps. As noted, many of the occupations where shortfalls in supply exist, as shown above, are in Information Technology, and a number of recent Region 4 projects are relevant. These projects include the Talent Pathways Initiatives with Brightpoint Community College focused on IT and Advanced Pharmaceutical Manufacturing as well as the expansion of GO TEC and the Rowanty Technical Center's advanced manufacturing and robotics project. Other recent workforce projects focus on life sciences, another area of focus for Region. See the Project Development section of this report for more details. Specific to Energy, Region 4 is recommending the formation of a working group made up of energy stakeholders; workforce needs will be a primary consideration of that work. In addition, at least two current pipeline projects focus on related topics: a K12 STEM education proposal and a Cybersecurity/AI project.

SITUATION ANALYSIS: PRIORITY CLUSTERS

The situation analysis examines the key changes in the four priority clusters since the last Growth and Diversification Plan, identifying the strengths, challenges, and opportunities within each cluster. It also identifies a fifth cluster, Energy, that the Council believes has become a critical priority for the region's current and future development.

Logistics, Warehousing & Distribution

Overview

Virginia stands at the forefront of logistics innovation, boasting a robust infrastructure that positions it as an East Coast premier hub. The Virginia Economic Development Partnership (VEDP) highlights Supply Chain Management as a priority traded cluster. Virginia's strategic investments in infrastructure have positioned it as a leader in the sector. With world-class port, rail, roadway and airport infrastructure, Virginia has more than 4,600 companies focused on supply chain operations employing more than 300,000 individuals. The Logistics cluster benefitted from the pandemic more than Region 4's other priority clusters as companies in multiple industries worked to address supply chain issues. In Region 4, the cluster added more jobs from 2021–2023 than any priority sector and wages increased to become slightly above the regional mean.

The employment momentum in the cluster has continued in the last two years as well.

- Overall employment in the Logistics cluster is 41.1% over pre-pandemic levels compared to a 2.3% increase in employment in the region at large.

- From 2022–24, employment in Logistics grew by 16.1% compared to 3.1% across all Region 4's traded sector clusters.
- From 2022–24, Logistics accounted for 32% of the new jobs across the region's priority clusters.
- Although Logistics counts for a significant percentage of the job growth in Region's 4 priority traded clusters, it was at the bottom of wage growth between 2022–2024. Average wages in the cluster grew from $62,609 to $64,456, a growth rate of 3%.
- At the time of the last Growth and Development Plan, wages in the Logistics cluster had increased significantly (perhaps because of the demand for drivers with commercial licenses) and had approached the average wage of all industries in Region 4. Today, average wages in Logistics once again lags the $68,310 average wage across all industries.

Strengths

Region 4 presents a compelling package of strategic location, robust infrastructure, skilled workforce, and cost advantages, making it an attractive hub for logistics operations.

- Region 4 has a central mid-Atlantic location that offers strategic access to both the northeastern corridor and the growing southeast markets.
- The region is at the convergence of four Interstates (I-64, I-85, I-95 and I-295) and has Class 1 rail service with significant intermodal facilities.
- The region has proximity to the Port of Virginia, has direct barge service from the Port, and Richmond International Airport includes a foreign trade zone.
- The region has major UPS and FedEx district hubs, along with the national headquarters of UPS Freight.
- The region has a skilled workforce with over 48,000 workers employed in the supply chain industry and is home to the Army Logistics University and the Defense Logistics Agency Aviation (DLA).
- The Community College Workforce Alliance offers logistics certification programs.
- Building costs are below the national average.
- The region is developing a specialty in handling temperature-controlled goods in cold storage facilities.

Challenges

- Despite the excellent transportation system, the cluster may have to deal with infrastructure bottlenecks such as port congestion, manufacturing issues overseas, and delays in vessels and container arrivals.
- The rapid evolution of technology in logistics presents challenges such as the high cost of upgrading hardware and software, cybersecurity risks, and the challenge of integrating multiple technologies seamlessly.
- The increasing number of "big builds," especially those connected with data centers, can lead to potential shortages of an available workforce in the region.

- *Virginia Business* has identified a potential shortage of logistics sites, especially in the northern part of the region as economic development organizations and local governments prioritize other projects that are typically a larger source of tax revenue.
- Emerging issues in international trade can heighten uncertainty in the logistics sector.

Opportunities

- Logistics remains a key component of several site development efforts, especially the Crater District. Economic development officials in the region continue to view Logistics as a crucial component in their strategic outlook. As supply chains become more regionally oriented, the locational advantages of Region 4 will become even more attractive.
- Logistics is an integral element of the Value Chain across Region 4's other priority clusters. VEDP employs the Value Chain concept in manufacturing and life sciences to indicate the end-to-end solutions that Virginia offers in these clusters, linking research, production, and distribution.
- The impact of AI and automation is rapidly reshaping the cluster, replacing some roles, and simultaneously creating new opportunities. The composition of the workforce will continue to change, heightening the needs for digitally skilled individuals.
- Upskilling in the logistics workforce due to task and process automation, which will rely on robotics, artificial intelligence, and the Internet of Things, will become increasingly critical and necessary. The implementation of the region's talent pathways initiative focused on information technology will become far more relevant to the logistics cluster.
- The skills needed among employees in an automated facility typically lead to an average wage higher than in a traditional warehouse as employees bring a skill set that more closely resembles operators and technicians within a manufacturing environment.

Information Technology & Communications

Overview

Region 4's IT sectors are broad and vibrant, providing critical support to companies in a wide array of fields, including finance, telecommunications, marketing, internet publishing, data processing, and media. The rise of AI and new data centers are rapidly transforming the region's IT landscape.

The Council has traditionally operated with a broad definition of the IT sector. It has focused on the talent pipeline and talent attraction for the specific occupational categories that require sophisticated technical skills (listed below). The Council has also prioritized meeting the expressed interest from the business community in hiring employees who are technically literate, capable of using state-of-the-art IT tools to support company goals, and who can make strategic decisions about IT priorities within a business environment. The Talent Pathways Initiative commissioned by the Council addresses both aspects of the Region's IT cluster.

Between 2022 and 2024:

- Employment within the sector in Region 4 grew by 1.9%, to a total of 48,497 jobs, approximately 16,000 more jobs than in the Manufacturing sector and approximately equal to the number of jobs in the Logistics sector.
- Between 2022–2024, average wages in the Information Technology sector grew by 8% to $89,037.
- Wages in this sector grew faster than Region 4's other priority clusters; it is the highest paid sector in Region 4's priority clusters.
- In-depth examination of the Chmura data shows exactly how important IT occupations are to the region's growth and development:
    - IT jobs comprised 58% (15,412) of the 26,693 of the jobs posted in our key priority traded clusters in the 12-month period ending July 1, 2025.
    - There were eight advertised occupations in the region's 4 priority clusters that had a median wage (MW) over $100,000. Every one of these high demand-high wage occupations was in IT. 78% of the IT job postings in the past 12 months had an MW of more than $100,000.
    - The demand for specific IT occupations with over $100,000 MW in 2024-2025 was as follows:
        - Software developers: 4,120 postings, $121,000 MW
        - Information system managers: 3,462 postings, $114,600 MW
        - Computer operations: 2,409 postings, $114,600 MW
        - Information security analysts: 833 postings, $104,300 MW
        - Web developers: 464 postings, $108,300 MW
        - Database architects: 249 postings, $128,000 MW
        - Computer research scientists: 172 postings, $124,000 MW
        - Computer programmers, 120 postings, $101,100 MW
- Regional development officials and leaders of RVA757 Connects indicated in our interviews that they believe the region can take advantage of the successes emerging from the Talent Pathways and Regional Entrepreneurial Initiative and become a magnet for tech talent and tech-based companies seeking to relocate or expand. They highlighted the importance of talent attraction strategies that can complement the GO Virginia funded workforce development initiatives.
- There is a significant intraregional difference in the IT/Communications sector. In the Crater Planning District, IT employment lags behind Logistics by more than 11,000 jobs and Manufacturing by more than 3,000 jobs. In addition, Crater District's average IT wage, $76,256, is lower than the average Manufacturing wage of $81,009.

Strengths

The Commonwealth and the region are receiving increased recognition and support for IT capacity and potential.

- According to the Computing Technology Industry Association, Virginia ranks second in the nation in the number of new tech business establishments, third for tech job postings, and seventh in tech economic impact.
- The real estate form CBRE identified the Greater Richmond region as a top 50 tech-talent market in 2025.
- The region is home to major tech-oriented employers such as Capital One, CarMax, CoStar group, and Red Hat.
- The region is emerging as a location for data centers, driven by its proximity to Northern Virginia's world-leading aggregation and to the deep-sea fiber cables in Virginia Beach that enhance connectivity. Companies such as Meta and QTS have been attracted to the region due to reliable infrastructure and available power.
- The region is receiving increasing recognition for the momentum of its IT-grounded entrepreneurial ecosystem.

Region 4 has also developed a wide range of educational programs that support the cluster and its future growth.

- Dual enrollment programs and industry recognized certifications in secondary education offer expedited pathways for students still in high school.
- Community College Workforce Alliance training programs provide rapid upskilling opportunities.
- Community colleges with a wide range of IT offerings work in collaboration with industry to align with local workforce needs.
- The growth in IT and computer science degrees at the region's universities have been on an upward trajectory.

Region 4 also has multiple organizations dedicated to expanding the information tech cluster.

- Organizations like the Richmond Technology Council, rvatech, AI Ready RVA, and Startup Virginia foster a supportive environment for tech entrepreneurs and professionals and sponsor events/meetups providing networking and professional development opportunities.
- RVA757 Connects supports investment in growing the digital infrastructure of the Richmond-Hampton Roads megaregion, including the growth of data centers, to be a world recognized Global Internet Hub.

The region offers several key advantages for data center development.

- Henrico is a key termination point for several subsea cables connecting the region to Europe, South America, and other parts of the world.
- The presence of Internet Exchanges (IX) in Henrico enables efficient data exchange between different networks.

- The region has competitive electricity rates and is expanding its renewable energy options.
- Building costs are lower than the national average and the region has a lower risk for natural disaster.
- RVA-based firms are leaders in developing new and sustainable models for data center construction.

Challenges

The Region 4 Council included Information Technology as one of its two focus areas in its Talent Pathways Initiative after business leaders requested help finding and recruiting IT professionals. The resulting report analyzed workforce assets, identified gaps between education and business needs, and offered recommendations to strengthen partnerships and address misalignment.

The Talent Pathways Initiative Report identified a set of barriers to bridging skill gaps that limit the acquisition of IT capacities. These include:

- Alignment between skills training and industry needs
- Lack of practical hands-on experience due to lack of internships, labs, and project-based learning.
- Unclear pathways to IT careers
- Insufficient support for diverse populations and resource inequities across the region
- Insufficient support for lifelong learning and skills adaptation.

Since the last Growth and Diversification Plan update in 2023, two major developments – the movement of data centers to the region and the rise of AI – have rapidly gained momentum that pose exciting opportunities and new challenges for the region.

Data center growth is inextricably linked to the power demands that have accompanied the increased deployment of AI. Local governments have sought data centers because of the substantial tax revenues these facilities generate without a commensurate demand on local services such as schools and roads. Increasingly, data centers in the region are being located in smaller jurisdictions that are land-rich and have adequate access to the necessary utilities.

At the same time, the region faces several challenges in attracting and developing data centers, primarily revolving around infrastructure limitations, environmental concerns, and community pushbacks. Our interviews with local development officials noted that new data centers have become a far lower priority for the largest suburban localities in the region than at the time of the last Growth and Diversification Plan.

Data center location decisions have taken place primarily on the local level and have not been a regional issue. But to the extent that data centers are an integral component of the region’s digital infrastructure, the issues associated with data centers will impact the work of the Council.

The Virginia Chamber’s Blueprint Virginia process is developing an AI Landscape Assessment that provides a useful framework for thinking about its impact on the Commonwealth. Its preliminary takeaways are:

- AI is coming quickly; it is a huge opportunity but one with uneven impacts and disruptions to jobs and businesses.
- AI is likely to have an incredibly positive impact on innovation, enabling small firms to achieve expansive goals.
- Training resources for workers are not fully in place today and the ones that are will be challenged to respond to the pace of technological change.
- AI offers huge benefits, but deployment needs to be strategic and integrated.
- Virginia has a unique opportunity to benefit from AI if the infrastructure is there to support it.

Regions that can identify the most productive use of AI, the necessary education and training, and the most effective career pathways will obtain a valuable competitive advantage. The challenge for the Region 4 Council is to develop a process that can build upon Blueprint Virginia's AI Landscape Assessment and leverage the work of organizations such as rvatech and AI Ready RVA for a coordinated strategy, enabling the region to assume a leadership role in successfully integrating the AI transformation into business practices and in training and reskilling programs for the priority clusters.

Opportunities

The recommendations in the Talent Pathways Initiative Report are thoughtful, extraordinarily detailed and offer a roadmap for project development in the next few years. A key theme at the core of the recommendations is partnership alignment, a coordinated strategic effort to bridge the gap between educational institutions, employers, and workforce development agencies. This would include:

- Expanding structured internship and apprenticeship opportunities to provide students with real hands-on experience before entering the workforce full-time.
- Ensuring better curriculum alignment, mentorship, and industry participation in education by actively integrating employer feedback into program development for both supportive and high-tech IT.
- Developing structured pathways from community colleges to bachelor's degrees and industry certifications that can enable individuals to obtain progressively more advanced skills.

Simultaneously implementing the recommendations in the Talent Pathways report, the Regional Council must also focus on the transformational changes that Artificial Intelligence is rapidly bringing to business, education, and workforce development.

- Nurturing AI initiatives that bring innovation to the Council's priority clusters through machine learning, generative AI and, increasingly, collaboration between the two forms.
- Fostering AI-driven academic-industry collaborations
- Developing state-of-the-art educational, training, and reskilling programs for workers in the priority clusters.
- Collaborating with organizations such AI Ready RVA, rvatech, Plan RVA, the Crater Planning District and economic development organizations on major elements of a region-wide strategy.

Advanced Manufacturing

Overview

Advanced Manufacturing, long a strength in Region 4, is now further supported by new pharmaceutical manufacturing alongside its established focus on chemicals and advanced materials.

Overall employment in Manufacturing declined by 1.9% in the 2022–2024 period, the lowest growth rate among the region's 4 priority traded clusters. Manufacturing wages, however, grew by 7% in the same period, only exceeded by the 8% wage growth in Information Technology. In the Crater District, manufacturing employment declined by 5% and wages grew 5.6% to an average of $81,009.

Advanced Manufacturing continues to be one of the principal target areas for state, regional and local economic development officials. Economic development initiatives in both parts of Region 4 remain focused on attracting and expanding manufacturing operations. Chmura notes that at least five firms have made announcements for growing more than 100 new employees; the LEGO plant in Chesterfield in development in Chesterfield will eventually employ 1700 individuals.

The two planning districts in Region 4 are also engaged in promoting manufacturing opportunities. The Crater District's 2023–2028 CEDS highlights chemical and pharmaceutical manufacturing and is focused on enhancing the region's infrastructure and workforce to position it for further growth. Plan RVA is in the process of updating its CEDS plan and is also focusing on enhancing the conditions that can promote economic growth and resilience.

At the same, the region has the capacity to expand and attract significant manufacturing facilities across industries as diverse as chemicals, food and beverages, energy, and controlled environment agriculture.

Strengths

Region 4 has historically been a strong manufacturing hub.

- It hosts manufacturing facilities such as DuPont producing advanced materials such as Kevlar.
- It has a special strength in fine chemicals and advanced materials (including composite fibers, polymers, and coatings), and packaging and distribution.

Region 4 has helped drive the growth of Advanced Pharmaceutical Manufacturing (APM), combining advanced engineering with innovative production methods. This cluster aims to address medicine shortages and national security through modern manufacturing, positioning the region as a potential global leader in pharmaceutical knowledge and processes.

The cluster has already developed a strong record of funding success:

- Federal Funding for Phlow Corporation: Phlow, a public benefit corporation, has received more than $600 million in federal funding to advance manufacturing for essential medicines since its launch in 2020.
- Strategic Planning at VCU: VCU's College of Engineering and the Medicines for All Institute received funding from GO Virginia Region 4 to develop a strategic plan for APM. (2020)

- The Alliance for Building Better Medicine: Activation Capital led a coalition that secured $2.5 million in seed funding from GO Virginia Region 4 and other sources, establishing the Alliance for Building Better Medicine (ABBM) as a cluster development initiative. (2020)
- Phase 1 Build Back Better Regional Challenge (BBBRC) Award: The coalition successfully advanced in Phase 1 of the Economic Development Administration's BBBRC, receiving $500,000 to support detailed planning for six integrated impact projects. (2021)
- Major BBBRC Investment: The ABBM was awarded $52.9 million as winners of the BBBRC, matched by $13.6 million from local public and private partners, resulting in a total investment of $66.5 million. (2022)
- The Commonwealth of Virginia allocated $44.6 million in its budget to enhance pharmaceutical science and manufacturing statewide.
- EDA Tech Hub Designation: The ABBM APM Consortia was designated as an EDA Tech Hub, with the Commonwealth Center for Advanced Manufacturing (CCAM) serving as the lead applicant. (2023)
- The APM Coalition received a National Science Foundation (NSF) Engines Type-1 grant ($2 million) and an EDA Tech Hubs Accelerator Award ($500,000). (2024)
- EDA Good Jobs Challenge: Under the leadership of Reynolds Community College, the ABBM secured a landmark $3.94 million federal grant through the U.S. EDA's Good Jobs Challenge.

The region has also made noteworthy progress in creating a foundation for development and expansion of the Manufacturing cluster. This includes:

- A best-in-class end-to-end career pathway with middle school exposure, high school CTE programs, and complementary university programs.
- Rapid upskilling through the Community College Workforce Alliance.
- Virginia Commonwealth University and Virginia State University provide research and degree pathways, including VCU's Ph.D. in pharmaceutical engineering, the first of its kind in the U.S.
- The Commonwealth Center for Advanced Manufacturing drives innovation in materials science and additive manufacturing.
- Brightpoint and Reynolds Community College offer specialized certificates and associate degrees in pharmaceutical manufacturing. Brightpoint recently launched its Pharmaceutical Manufacturing Career Studies Certificate, training 98 students and awarding 64 credentials.
- Region 4 has been instrumental in bringing Go-TEC programs to K-12 systems, introducing students to emerging careers in manufacturing at an early age.
- A growing cluster of Energy-related businesses, particularly along the I-95 corridor. Since 2023, four companies have announced the addition of at least 100 new energy manufacturing jobs in the region. These include Super Radiator Coils (heat exchangers and coils for power generation and data center cooling), Condair (data center cooling products), Topsoe (electrolyzer cells to produce clean hydrogen), and Weidmuller Group (electrical components for EVs). Additionally, other facilities in the region include Accelevation (power distribution products for data centers), ABB Traction (products for passenger railway cars and e-mobility commercial vehicles), Eaton

PDI (core electrical backbone equipment for data centers), GE Vernova (manufacture, service, and repair of power plant turbines and generators), and Independence Hydrogen (gaseous hydrogen production).

- Virginia's Gateway Region and Dominion Energy Innovation Center won a joint $50,000 planning grant from the Tobacco Region Revitalization Commission's Energy Ingenuity program to explore energy-related opportunities in Dinwiddie County, adjacent to the Locks Campus (Dominion Energy's new high voltage testing lab and research facility).
- Region 4 recently awarded a $100,000 site planning grant to VGR to identify top sites that can support energy-intensive projects, including manufacturing.

Challenges

- Research from Chmura Analytics indicates that the aging of the manufacturing workforce will require significant numbers of new workers even if growth in the sector remains modest.
- The workforce requirements of "big builds" such as data centers can limit the pool of workers seeking employment in traditional manufacturing companies.
- Geo-political considerations have introduced uncertainty and a degree of hesitancy into decision-making about expansion and growth in the manufacturing arena.
- Pharmaceutical manufacturing companies note that they have become reliant on out-of-state recruitment for more highly technical and experienced workers. Enhancing and building out the regional talent development ecosystem at advanced levels will be crucial to sector development.
- The Talent Pathways Initiative Report notes that despite the impressive progress in building out workforce programs for the cluster, alignment issues with educational institutions and the need to develop hands-on opportunities for students remain a challenge.
- A similar challenge exists for other advanced manufacturing firms. Again, progress has been made in demonstrating career opportunities that do not require college degrees to high school students and their parents, but there remain gaps that weaken the alignment between education, business, and workforce organizations.

Opportunities

Region 4 continues to be well positioned to make substantial advances in the Manufacturing cluster.

- The onshoring of pharmaceutical manufacturing is increasingly recognized as a critical health policy and national security issue. Region 4 has the potential to be a major contributor to this effort.
- The Talent Pathways Initiative report offers a detailed roadmap for project development in the workforce arena for both pharmaceutical manufacturing and the entire advanced manufacturing sector.
- The alignment across regional organizations such as the Greater Richmond Partnership, Plan RVA, Virginia's Gateway Region, the Crater Planning District, regional and local chambers, community colleges and, increasingly K-12, is better developed today than at any previous time.

- Business leaders across the region have become more engaged in partnering with educational institutions in highlighting opportunities in the manufacturing sector, contributing to curriculum development, and addressing the challenge of expanding hands-on education.
- Region 4 has been successful in bringing Go-TEC to several middle schools in the region, introducing students to in-demand career pathways in order to bridge the demonstrated gap between industry demand and student awareness.

Biosciences/Life Sciences

Overview

The Biosciences/Life Sciences sector in the Richmond region has a rich history, evolving from early healthcare and research institutions to a thriving hub for biotechnology and pharmaceutical innovation. This development is characterized by collaborations between colleges and universities, research parks, and private companies, fueled by a focus on advanced technologies and a skilled workforce. The research innovations of VCU Medicines for All Institute led by Professor Frank Gupton have formed the basis the advanced pharmaceutical manufacturing cluster.

The Biosciences/Life Sciences cluster can be separated into traded sectors (export-oriented) and local sectors (primarily serving the local population). Examples of local Biosciences/Life Sciences industries include home health care services, nursing care facilities, medical laboratories, kidney dialysis centers, and hospitals. Local jobs constitute most of the employment in the sector. Traded-industries jobs include research and development (R&D) in life sciences; pharmaceutical preparation manufacturing; and medical, dental, and hospital equipment and supplies wholesalers.

VCU Health blurs these lines. This report, as is typical for cluster analysis, considers hospital systems local. But it should be noted that a certain percentage of patients come to VCU Health from outside the region as a “destination” facility and that research activity at VCU Health contributes to growing traded sector industries in the cluster.

- Total employment in the Biosciences cluster is, by far, the largest among the region’s four priority clusters at 71,027. The next largest cluster is Information Technology/Communication at 48,497.
- When the strictest definition of traded sector cluster jobs is applied, only 8.6% of the total Biosciences/Life Sciences jobs (6,129) are included.
- Average annual wages in the Biosciences/Life Sciences Traded sector far exceeds the annual wage in any other priority cluster at $113,584. In addition, for every job in the cluster, it supports the creation of five jobs in other industries.

Strengths

Virginia is becoming recognized as an emerging force in the life sciences industry on the East Coast, joining Massachusetts and North Carolina as a state recognized for its significant strengths.

- Virginia is the second largest recipient nationwide of federal grants in the medical and life sciences field. VEDP notes that 25% of federally funded research and development centers are in Virginia.
- Virginia is developing a comprehensive life sciences value chain, encompassing R&D, manufacturing, and distribution, with a strong focus on attracting and developing talent and leveraging its strategic location.

Region 4 is becoming a significant hub for the Commonwealth's entire life sciences value chain, encompassing research, manufacturing, and logistics.

- Richmond ranks 30th nationally in pharmaceutical research and development. VCU is a major force with its growing research portfolio, the nation's first Ph.D.in pharmaceutical engineering, and the Medicines for All Institute.
- The VA Bio+Tech Park houses 70 companies, research institutes, state and federal labs, and a wet lab incubator.
- Activation Capital is playing a crucial role in optimizing the translation and value of life sciences discoveries.
- The region is developing a robust manufacturing presence, driven by companies such as Civica, Phlow, Fareva, Haleon and Granules Pharmaceuticals, and Novo Nordisk, supported by the Alliance for Better Medicine.
- The region is home to several surgical and medical instrument manufacturing companies, including Kaleo Pharmacy and Bio Track.
- Global companies like Thermo Scientific are investing in the region to expand their bioanalytical capabilities, supporting drug development and vaccine research.
- The biotech sector is growing with companies like Aditxt Therapeutics, Contraline and Armata Pharmaceuticals, driving innovation in immune health, drug delivery, and bacteriophage therapies.
- The region is a leader in healthcare logistics with companies like McKesson and Owens and Minor.

Challenges

Major challenges to the growth of the life sciences sector include:

- Talent development and attraction: the industry faces a shortage of individuals trained in data scientists, bioinformatics, and regulatory affairs. Attracting and retaining talent to the region will be critical to future success.
- Startup Infrastructure: there is a need to put infrastructure in place to ensure that Virginia and Region 4 become a premier destination for biotechnology startups.
- Integration of emerging technologies: AI and machine learning present both exceptional opportunities for drug discovery, development, and manufacturing. Companies need to adopt these innovative technologies while ensuring regulatory compliance and data security.

- Supply Chain Disruption: The life sciences industry relies on complex and often global supply chains for raw materials, components and finished products. Disruptions to these supply chains, whether due to natural disasters, geopolitical instability or other factors can significantly impact the availability of critical medicines.
- Uncertainty about NIH, NSF, and FDA funding: It is uncertain how the budget proposals and funding priorities will impact the NIH, NSF and the FDA and the resulting funding to institutions such as VCU.

Opportunities

- Regional Alignment: Region 4 has developed a strong consensus across both planning districts, regional development organizations, local economic development officials, educational institutions, and workforce organizations that growing the life sciences value chain is vital to the economic success of the region. This is a significant win-win that can catalyze future growth.
- The pharmaceutical cluster continues to develop and grow, attracting grant support and private funding. It provides a model for how to link cutting edge life sciences research with practical applications that can achieve a major national policy goal- making the U.S. less reliant on foreign sources for necessary medicines.
- Project VITAL, part of a statewide competitive GO Virginia grant, is bringing a focused effort on linking VCU-based life sciences innovations with experienced entrepreneurial executives to catalyze life sciences innovation and realize the potential of biotech startups in the region.

Energy

Overview

GROW Capital Jobs is proposing the addition of Energy as a fifth priority industry cluster in GO Virginia Region 4. The addition will reinforce economic growth, further enable existing clusters, and organize innovation, capital, and partnerships around a critical growth input.

Why Energy, and Why Now?

- Power demand is skyrocketing**.** Estimates forecast load growth of 6.3% annually for the next 10 years in PJM's DOM zone (covers much of VA and E. NC), the highest in the nation. JLARC estimated that with unconstrained demand, average monthly use is expected to almost triple by 2040.

- Data center and AI workloads now drive the power conversation**.** 26% of Dominion's power sales are to data centers and the company expects to connect 15 new data centers annually.

- Data centers are moving south from NoVA. Region 4 now hosts or has in planning 66 data centers, and more are in the works as NoVA localities begin to push back on development. A recent report from commercial real estate company Avison Young tagged Richmond as the fastest growing data center market in the country for the first half of 2025.

- Energy supply chains are re-localizing around advanced energy manufacturing. Numerous companies already exist in the region.

- Virginia's "All-American-All-of-the-Above" strategy, the federal push for energy dominance, accelerated permitting, renewed interest in advanced nuclear, and new state flexibility for co-ops and behind-the-meter power are all changing conversations around energy.

Strengths

Energy is both a standalone traded sector, with generation, transmission, and utility services sold beyond the region, and a foundational input crucial to all four existing clusters. Recognizing Energy as its own cluster focuses strategies and resources and accelerates development. Regional strengths include:

- Traded sector dynamics**:** Energy comprises exportable services and products, including market operations, transmission, capacity, and environmental attributes that contribute non-local revenue and high-value jobs. Data centers and Dominion Energy function as anchors, and energy and data center supply chain companies can be categorized as traded industrial products and services.

- Unique regional assets**:** Four unique regional assets contribute to an economic and locational moat around energy. These include Commonwealth Fusion Systems (developing the world's first commercial grid-scale fusion plant in Chesterfield), Dominion Energy Headquarters (8th largest utility by customer count, employing 5,400 in the Richmond area. Innovator in nuclear, offshore wind, solar, renewable natural gas, battery-storage, microgrids, and next-generation grid evolution), Dominion Locks Campus (one of just four high-voltage testing labs in North America), and Dominion Energy Innovation Center (only energy and cleantech accelerator in the Commonwealth; offers startup incubation and acceleration, education, networking, and other programming).

- Strong workforce opportunities**:** In 2023, Virginia had 191,851 energy-sector jobs, representing 4.8% of total state employment. Nearly 120,000 of these are in clean energy, which grew 5.8% year-over-year. Anticipated job growth is strong, particularly in battery storage and energy efficiency roles. Chmura data shows Region 4 had over 13,000 utility-sector job postings in the past year. Annual utility wages in 2024 were $128,176, well above regional norms. Significant statewide work around energy workforce and training is already underway. Virginia recognized Energy as the 17th Career Cluster in 2019, enabling skill and curriculum alignment.

- High locality interest**:** Significant interest exists around the sector in Region 4, and localities are working to attract energy businesses. Data centers are of particular interest to exurban and rural communities. Virginia's Gateway Region was just awarded a site planning grant to identify sites suitable for high-energy users.

- Deep integration with other priority clusters**:** Energy plays a critical role in each of Region 4's other priority clusters. Advanced Manufacturing requires always-on factories with stable power and thermal systems. Logistics increasingly depend on hydrogen fuels and alternative energy sources. Bioscience and pharmaceuticals require validated environmental controls and a

reliable cold chain. IT and knowledge work scale where power and networks are abundant and reliable.

Challenges

- Energy production constraints**:** Demand for power is growing faster in Virginia than anywhere else in the US, and Virginia was the top net importer of electricity in 2024. Utilities are working to offset demand with production and procurement on the supply side, but there also needs to be focus on the demand side. Dominion Energy is doing innovative work on this, testing new technologies and materials. The Dominion Energy Innovation Center is also focused on this through work with accelerator portfolio companies on both the utility and data center tracks.

- Workforce Constraints: Chmura data showed difficulty filling rising energy-related roles, especially specialized technical and engineering positions, as evidenced by long-standing job postings. In a 2024 federal Department of Energy survey, 20.2% of Virginia energy employers said hiring is ‘very difficult’ and 23.2% said it is ‘somewhat difficult’; just 9.2% said hiring was ‘not at all difficult’. Although many projects around workforce development are underway, there is no single, centralized effort connecting all of the work.

- Site Readiness**:** Availability of sites that can be used by energy producers, energy-related supply chain manufacturers, and data centers is limited. Factors vary by locality and may include regulatory and permitting complexity and timeline risk, infrastructure and grid interconnect bottlenecks, environmental and land-use constraints, community/stakeholder resistance, and more. Efforts to increase the number of sites are underway; one example is VGR’s recent GO Virginia site planning grant to identify sites for heavy-energy users.

- Climate & Community Considerations**:** Potential resistance to new electrical infrastructure or large energy projects due to land use, environmental concerns, or lack of community alignment may impact projects and efforts.

Opportunities

- Name Energy as a standalone cluster**:** Enables coordinated, proactive development of energy assets, which in turn accelerates growth across other priority sectors. With the addition of Energy as a fifth priority cluster, Region 4 has the opportunity to craft a thoughtful and intentional strategy to support other priority clusters and support energy-specific work around all four funding priorities: cluster scale up, business attraction, site development, and entrepreneurial support for the industry. This can be done by leveraging existing assets, tapping into existing workforce development programs, creating site development strategies, and utilizing the strong knowledge base across the industry available in the region.

- Create an Energy Stakeholders Group and build tracking capabilities around Energy industry data for the region. This group can create the regional energy strategy, evaluate and address workforce needs, and identify projects for funding.

- Leverage energy-specific funding**:** Beyond GO Virginia, two new funding mechanisms (The Virginia Clean Energy Innovation Bank and the Tobacco Region's Energy Ingenuity Fund) offer options for stackable project funding.

- Coordinate workforce pathways: Build on existing frameworks to develop or expand energy-focused talent initiatives within Region 4. Currently, numerous statewide energy workforce efforts exist, including the Virginia Energy Workforce Consortium's effort to engage utilities and leverage resources around energy workforce development; workforce advisory groups from Virginia Energy, the Virginia Nuclear Energy Consortium, and the Virginia Energy Efficiency Council; Virginia Energy's Skilled Pathways for Advancement, Resilience & Knowledge Youth Workforce Pilot Program, which targets ages 14-25 for training and mentorship. The region would benefit from more targeted education pathways and upskilling initiatives tailored to Region 4, building on these programs, integrating educational institutions, and customizing efforts as possible for the region. An inventory of available programs will be a starting point to further develop relevant strategies for Region 4 in this new target sector.

- Engage locality partners**:** Use strong interest and activity from regional localities to create an energy-focused working group or advisory group to advance energy-related work, including workforce issues.

- Support the energy-focused innovation ecosystem**:** Better coordinate unique regional assets to support cluster scale up. Utilize Dominion Energy Innovation Center as a resource to convene and connect stakeholders.

PROJECT DEVELOPMENT

The Region 4 Council will utilize the 2025 Growth and Diversification Plan update to shape project development. The Council and the GROW Capital Jobs staff will utilize the four major investment categories – workforce and talent development, cluster-scaleup, entrepreneurial ecosystem buildout, and site development – to support growth in traded sector jobs in Region 4's priority clusters.

The 2025 GROW Capital Jobs Annual Report notes that since the inception of GO Virginia, Region 4 has received funding from the State Board for 37 projects for a total dollar amount of $21,135,387. The table below summarizes the number of projects and the total amount in each major investment category. Several projects may actually cross-investment categories, but the table uses the category under which the project was funded.

Investment Category	Projects Funded	Total $ Amount
Workforce	20	$6,476,973
Cluster Scale-up	7	$8,208,712
Start-up Ecosystem	6	$2,345,346
Site Development	4	$4,104,356

Since the last Growth and Diversification Plan in 2023, Region 4 has received funding for 8 projects for a total dollar amount of $8,502,045.

Workforce and Talent Development

- The Council has focused its project efforts on addressing identified workforce and talent gaps, constructing a workforce and talent development pipeline, and supporting programs that that overcome the shortcomings of traditional workforce development efforts.
- Over time, the emphasis has moved from addressing specific shortage occupations to focusing on strategies necessary to enhance the overall workforce in the priority clusters and building a pipeline that reaches down to middle school.
- The two reports that comprise the Talent Pathways Initiative –on advanced pharmaceutical manufacturing and IT – will provide a foundation for a significant component of future initiatives.

Recent Projects

Name	Subgrantee	Purpose	Dollar Amount
Brightpoint College TPI for Region 4	Brightpoint College	Support the development of a talent strategy in APM and IT	$250,000
ARISE- Advancing a Regional Skilled Ecosystem for the Life Sciences	Reynolds Community College	Award credentials and create jobs for skilled lab technicians	$253,500
GO TEC Expansion	CCAM	Bring GO TEC to new schools, including three in Richmond City	$970,835
Advanced Engineering, Manufacturing Technician Program	Rowanty Technical Center	Advanced manufacturing and robotics program to serve Dinwiddie, Prince George, and Sussex	$520,000
Future AI Learning and Cloud Network Project	VCU College of Engineering	Planning grant to integrate computing methods into the bioscience industry	$100,000

Future Directions

During the next two years, the Council's workforce priorities will be:

- Implementing the recommendations of the Talent Pathways Initiative reports for Advanced Pharmaceutical Manufacturing and Information Technology. The two reports provide a roadmap for more effectively linking educational institutions, the business community and workforce organizations within Region 4 to support the Council's priority clusters. GROW Capital Jobs will work with these institutions to develop implementation proposals.
- Aggressively pursuing AI development and integration by:
    - Supporting projects that leverage AI to boost productivity and innovation in the region's priority clusters.
    - Developing AI literacy, training, and reskilling projects to ensure that students and workers can flourish in the emerging economy.
    - Encouraging collaborative projects between academia, industry, and workforce organizations to foster a thriving AI ecosystem.

The Council has emphasized pipeline projects such as GO TEC that have provided opportunities for students across the varied communities in the region. In the next two years, the Council will work to develop projects to ensure that opportunities in the AI-driven economy are available to students and workers throughout the region.

Cluster Scale Up

Cluster scale up has been a major focus of the Region 4 Council since the inception of GO Virginia.

The Council has consistently aligned its investment strategies with the statewide cluster priorities identified by the Virginia Economic Development Partnership (VEDP) and the regional emphases contained in the strategic plans of the Greater Richmond Partnership, Virginia's Gateway Region, and the Comprehensive Economic Development Strategy (CEDS) of Crater Planning District and PlanRVA.

The Council has been a catalyst and a source of continuing support for the scale-up of the emergent Advanced Pharmaceutical Manufacturing cluster, one that is a critical feature not only of a Commonwealth-wide priority, but of a national strategy to reshore an industry that has left the country's medical system dependent on the variability of foreign based production. The Region 4 Council is fully committed supporting the further buildout and maturation of the cluster.

The Council continues to evaluate how evolving economic trends will impact the region's cluster mix. With the growing emphasis on data centers and AI in central Virginia, increased power requirements of multiple industries, and concern about its availability, Energy has become a far more important cluster than ever before. Region 4 is well positioned to become an important innovator in this cluster with a fusion plant in Chesterfield, the Dominion Locks research campus in Dinwiddie, and a nationally recognized energy incubator, Dominion Energy Innovation Center, in Hanover.

Recent Projects

Name	Subgrantee	Purpose	Dollar Amount
Richmond MSA Cluster Study	GRP	Identify clusters for strategic plan	$87,500
TPI for Region 4 (APM)	Brightpoint	Develop Talent Strategy for APM	$125,000
TPI for Region 4 (IT)	Brightpoint	Develop Talent Strategy for IT	$125,000
Project Vital	Activation Capital	Bolster Bioscience Innovation	$5,000,000

Future Directions

- The Council will collaborate with the Alliance for better Medicine to develop next-step investment strategies for the continued development of the APM cluster.
- GROW Capital Jobs will convene the major stakeholders in the region's energy sector to coordinate a cluster development strategy that could catalyze energy as a regional priority.

Site Development

VEDP has noted that the availability of business-ready sites has been a significant obstacle to attracting major manufacturing projects to the Commonwealth. VEDP's site development study in 2021

indicated that Region 4 has more available sites than any other GO Virginia region (91 already characterized, 108 additional not characterized), although many were not business ready (79, or 87% of total characterized sites, are currently Tier 1 or Tier 2; just 12 are Tier 3+). This high percentage of lower-tiered sites offers significant opportunity for Region 4 to fund additional site development projects, moving additional properties from Tier 2 to Tier 4. The large number of uncharacterized sites (108) offers ongoing opportunity.

The Region 4 Council has supported several site development projects designed to upgrade the readiness of sites in the region. The majority of Site Development projects in Region 4 have been centered in the Crater Planning District for the purpose of upgrading sites that could attract advanced manufacturing and logistics facilities.

In addition, the Council's support for the Pharmaceutical Manufacturing cluster was instrumental in developing the Build Back Better grant proposal to the federal Economic Development Administration that has provided significant funding for upgrading infrastructure in Petersburg to support manufacturing facilities.

The larger localities in the PlanRVA district have been active in site development for attracting manufacturing and research facilities as well as data centers but have typically not sought GO Virginia funds for these initiatives.

Recent Projects

Since the last Growth and Diversification Plan, the major GO Virginia funded site development activity has been the implementation of the project funded in 2022 led by Virginia's Gateway Region that bundled 15 sites across Region 4 for upgrading to Tier 4 status. Three of the sites have now been sold and there is increased activity in multiple other sites. The single project funded since the 2023 Growth and Diversification report listed below is a planning grant led by the Gateway region to upgrade up to ten additional sites for the purpose of attracting "energy intensive" facilities in the priority clusters. This project will also potentially identify additional new sites in the region.

Name	Subgrantee	Purpose	Dollar Amount
Preparing for Energy Intensive Industry	Virginia's Gateway Region	Identify sites that can attract "energy intensive" facilities	$100,000

Future Directions

- The Council will continue to work on upgrading the number of business-ready sites throughout the region, especially where limited resources need to be supplemented by external funds.
- Besides the planning project in the Gateway region, GROW Capital Jobs will work with the smaller localities in PlanRVA to assist with site development opportunities that can promote the region's priority clusters.
- Region 4 will collaborate with local economic development officials to demonstrate how GO Virginia funding for workforce development, cluster scale-up and entrepreneurial start-ups can enhance their site development and business attraction and retention initiatives.
- The Greater Richmond Partnership and local economic development officials that represent GRP's member communities have identified the need to "reimagine" office space and address

vacancies that have not fully recovered from the consequences of COVID as a major priority. This currently does not fall under GO Virginia funding guidelines; however, the Council should continue to explore the need to fund projects that address this issue.
- The Council should consider a more strategic approach to site development, especially in the pharmaceutical area, and perhaps around energy. A comprehensive site development strategy that links research space, growth needs for developing firms, and manufacturing infrastructure requirements could provide a roadmap that would make the region even more attractive.

Entrepreneurial Ecosystem Buildout

The entrepreneurial ecosystem in the region has significantly matured since the inception of GO Virginia.

- Organizations such as Startup Virginia, Lighthouse Network, the 1717 Collective, the Dominion Energy Innovation Center, Bridging Virginia, Activation Capital, and others support entrepreneurs at crucial stages of the growth cycle, and the region has had the second largest number of startups in Virginia in the last two years.
- In addition, the entrepreneurial support organizations in the region cooperate and collaborate not only with each other but with complementary organizations across the Commonwealth.
- More importantly, the region has begun to receive national recognition for its successful incubation and growth of startups.

The Regional Council has contributed positively to this success. It supported several projects to cultivate and expand the pool of early-stage startups in the region, to establish an accelerator program of startups with high growth potential, and to increase the number of scalable minority enterprises. Shortly after the development of the previous Growth and Diversification Plan in 2023, Activation Capital completed the “Strategic Roadmap for Entrepreneurial Growth,” a report intended to guide the Region 4 Council’s strategic investments in high-impact opportunities to grow entrepreneurship and business formation.

The report developed two complementary strategies and action plans:

An innovation-based entrepreneurial strategy in a) Scalable Tech (companies finding new ways to use technology platforms for products and services) and b) Deep-Tech (research-intensive firms making innovative technology, scientific and medical discoveries).

A business strategy and action plan that could promote how Main Street and small business entrepreneurship could link to the region’s priority traded clusters.

Five common strategies emerged across both roadmaps.

- Fostering ideation and early wins by creating more awareness of entrepreneurship opportunities
- Strengthening the ecosystem by ensuring effective support resources for entrepreneurs
- Providing physical space and relevant infrastructure to startups
- Expanding availability and access to capital at all stages of business development
- Elevating entrepreneurial success by promoting regional success stories

Recent Projects

The Council has focused its strategy on implementing the Regional Entrepreneurial Initiative's action plan. In the last funding cycle, GO Virginia has supported two major projects for strengthening the region's ecosystem. Region 4 has been one of three participants in a statewide initiative proposed by Activation Capital, CVille BioHub and Verge Alliance to bridge translation gaps in regions with major research universities. The Council has also supported funding a major expansion and an additional location in Henrico County for Startup Virginia.

Name	Subgrantee	Purpose	Dollar Amount
PROJECT Vital	Activation Capital	Bolster translation effort and position Virginia as a frontrunner in bioscience innovation	$5,000,000
Startup Virginia Incubator	Startup Virginia	Locating a second incubator in Henrico to provide structured support for startups.	$1,473,710

Future Directions

- Continue to implement and monitor the outcomes of Project Vital and Startup Virginia expansion.
- Develop specific strategies for linking small businesses in the less urbanized areas of the region with opportunities connected to priority clusters.
- Support AI-driven innovation that can enhance performance in the priority clusters.
- Support activity in new Energy cluster through possible work with the Dominion Energy Innovation Center.

GOALS AND STRATEGIES

Target Industry	Goals	Strategies	Outcomes and Impact Measures	Strategic Partners	Current Projects/Update
Advanced Manufacturing and Bioscience	Prioritize buildout of Pharma Manufacturing Cluster	Implement TPI in APM, Support Alliance for Building Better Medicine	Certificates completed, new jobs created, jobs filled, access to TPI in southernmost part of region	Medicine for All, Alliance for Building Better Medicine, CCWA, VCU, VSU, Brightpoint CC, Reynolds CC	Talent Pathways Initiative for Pharmaceutical Manufacturing
Pharma Manufacturing Innovation	Develop an advanced pharma manufacturing innovation pipeline	Support Alliance for Building Better Medicine program for developing and attracting startup companies solving key issues in pharma manufacturing	Identification of key scientific and manufacturing challenges, development of best-in-class innovation models, starting and attracting new companies	Alliance for Building Better Medicine, Activation Capital, VCU, VSU	New projects focused on innovation in the cluster

Advanced Manufacturing	Grow the Talent Pipeline	Enhance Career Pathways, Work-Based learning, Bring training programs to underserved parts of the region	Programs completed, Credentials granted, job offers for program completers	GO-TEC, CCAM, Community College Workforce Alliance, Brightpoint, Reynolds, Richard Bland	Expand GO-TEC in Middle Schools, Implement Talent Pathways Initiative (TPI), Bring Mobile-based training projects to underserved areas
Logistics, Advanced Manufacturing	Increase Business Ready Sites in Crater District	Upgrade Portfolio of Sites	Upgrade 5-10 sites to Tier 4	Virginia's Gateway Region, Local Econ. Development Offices	Implement VGR Planning Grant
Information Technology	Fill TPI identified gaps in tech talent production	Implement TPI for IT	Certificates completed, jobs filled, new business, academia partnerships	CCWA, Brightpoint, Reynolds, VSU, VCU	Talent Pathways Initiative for Information Technology
Information Technology	Successfully integrate to AI transformation, complete and integrate landscape assessment	Academia-business partnerships, workforce training programs, reskilling	Landscape Assessment, Partnerships developed, training programs implemented	Chambers, CCWA, Tech-organizations, higher ed at every level, Crater Planning District and Plan RVA	FALCN (VCU Engineering), Community Colleges proposals
Entrepreneurial Ecosystem	Grow companies, expand footprint	New Henrico location for Startup Virginia	New companies served, better collaboration with smaller localities	Startup Virginia, VCU, VSU, Plan RVA and Crater PDC	Startup Virginia Expansion
Bioscience and Entrepreneurial Buildout	Commercialize Medical and Scientific Discoveries	Implement Project VITAL	Companies created, capital accessed	Activation Capital, University innovation programs, VIPC	Project VITAL
Bioscience/Life Science	Firm and Talent Attraction	Develop regional plan for bioscience growth	Companies attracted, talent shortages reduced	GRP, Virginia Gateway, LEDOs, Alliance for Building Better Medicine	GRP Industry Councils Plan
Energy	Workforce	Coordinate Workforce Pathways	Additions to workforce programs	Brightpoint, Reynolds, Energy Stakeholders group	Build upon the Council's TPI initiatives
Energy	Cluster Scale-up	Coordinate with and leverage other funding sources	Projects with VA. Clean Energy Innovation Bank and Tobacco Region Energy Ingenuity Fund	Energy Stakeholders Group, Dominion Energy Innovation Center	Establish Energy Stakeholders Group

COMPLEMENTARY EFFORTS

During the interviews and ideation sessions that occur during the process of updating the G&D Plan, individuals and organizations often identify issues that they believe are drivers of economic growth or obstacles to its full realization in the region.

Economic development officials mention the lack of marketing dollars for talent attraction efforts and raising the visibility of the region among CEOs and site selection consultants is a significant drawback. Airport leaders have told us that businesses considering relocating to the region may be deterred by the

lack of direct connections to other cities and a scheduled flight to Europe compared with other choices they are considering.

For others working on the ground level, issues such as housing availability and affordability, the prohibitive cost of childcare, and unequal access to educational and job training opportunities are significant barriers to region-wide prosperity.

Organizations such as the regional and local chambers, the two planning districts that serve Region 4, RVA Rising, the United Ways and multiple community and faith-based groups often address a broader array of issues in promoting economic prosperity than the Region 4 Council has as its charge.

GROW Capital Jobs views all these efforts as complementary to its focus on traded sector clusters and the four major investment strategies of GO Virginia. The Council will continue to look for opportunities to collaborate when our missions intersect. And, it will continue to advocate for matters such as making job training for careers that serve the traded sector and addressing shortages in the health care workforce eligible for project funding. As GO Virginia evolves as a statewide initiative, The Council believes that it should consider how matters such as available housing, affordable childcare, upgraded infrastructure and quality of life concerns are increasingly relevant to economic growth and regional prosperity.

GO Virginia was founded in the belief that more effective regional cooperation and collaboration was instrumental to the long-term success of the Commonwealth. GROW Capital Jobs and its Council is committed to cooperating and collaborating with organizations with a similar mission across the entire region. Finally, there are trends and actions that verify better collaboration.

APPENDICES

Appendix A: Wage Changes by Locality

Average Annual Change in Wages by Locality, 2022 to 2024

	Manufacturing	Logistics, Warehousing, and Distribution	Information Technology and Communication	Bioscience/ Life Sciences	Total All Industries
Charles City County	24.6%	5.4%	-4.5%	-1.7%	7.3%
Chesterfield County	5.6%	-4.6%	7.9%	4.0%	8.6%
Dinwiddie County	9.9%	4.0%	12.1%	5.0%	5.1%
Goochland County	14.4%	3.9%	-5.4%	5.2%	6.4%
Greensville County	10.2%	-4.5%	13.0%	-16.9%	9.8%
Hanover County	15.1%	14.5%	9.6%	1.7%	2.5%
Henrico County	4.8%	4.5%	6.9%	7.2%	6.6%
New Kent County	2.5%	1.7%	9.4%	-5.7%	5.9%
Powhatan County	13.6%	7.8%	-8.9%	-10.2%	9.6%
Prince George County	4.8%	8.5%	12.7%	16.2%	8.9%
Surry County	4.8%	109.2%	35.6%	138.2%	9.0%
Sussex County	17.4%	20.4%	9.2%	-1.9%	6.7%
Colonial Heights City	7.2%	59.9%	42.2%	7.1%	9.9%
Emporia City	7.5%	35.7%	21.9%	18.0%	11.3%
Hopewell City	1.3%	14.1%	-4.3%	1.0%	4.6%
Petersburg City	7.4%	10.8%	2.8%	5.8%	10.7%
Richmond City	9.1%	5.2%	11.4%	7.0%	7.0%

Source: Chmura's JobsEQ

Appendix B: Employment Growth by Locality

Employment Growth by Locality, 2022 to 2024

	Manufacturing	Logistics, Warehousing, and Distribution	Information Technology and Communication	Bioscience/ Life Sciences	Total All Industries
Charles City County	-7.2%	-10.8%	11.2%	22.0%	1.7%
Chesterfield County	-1.2%	17.0%	5.9%	3.6%	3.5%
Dinwiddie County	10.0%	27.3%	23.4%	0.3%	12.6%
Goochland County	-5.1%	-49.0%	-29.7%	0.1%	-7.2%
Greensville County	-6.0%	12.6%	-51.2%	-61.2%	-3.2%
Hanover County	-4.2%	24.5%	6.3%	4.6%	5.5%
Henrico County	-2.0%	25.6%	2.6%	1.7%	-0.1%
New Kent County	1.2%	0.7%	-4.2%	0.4%	9.7%
Powhatan County	3.5%	6.6%	-1.9%	-20.5%	7.9%
Prince George County	6.7%	-0.6%	-30.2%	-6.9%	3.1%
Surry County	-26.0%	44.5%	13.8%	218.7%	1.8%
Sussex County	100.2%	-14.7%	-29.8%	128.6%	1.0%
Colonial Heights City	-4.1%	88.1%	53.9%	-2.1%	1.1%
Emporia City	10.9%	14.6%	33.7%	-9.9%	-0.1%
Hopewell City	-3.1%	11.4%	-14.4%	9.7%	-1.1%
Petersburg City	0.2%	-0.4%	-8.9%	-6.0%	-2.3%
Richmond City	-4.4%	0.9%	-0.1%	14.5%	7.1%

Source: Chmura's JobsEQ

Appendix C: Site Availability by Tier

Region 4 Site Availability by Tier	Locality	Total Acreage	Largest Contiguous Acreage
Tier 4			
City Owned Parcel	Colonial Heights	19	13
Holland Technology Park	Hanover	288	220
James River Industrial Center	Chesterfield	823	186
Meadowville Technology Park	Chesterfield	1262	49
Mid-Atlantic Advanced Manufacturing Center	Greensville	1560	1000
Southpoint VP-166 (lot 15)	Prince George	20	15
Southpoint VP-169 Lot 16	Prince George	16	13
Sussex Green Enterprise Park North	Sussex	156	112
Sussex Green Enterprise Park South	Sussex	1130	595
TOTAL Acreage Tier 4		***5,274***	
Tier 3			
East Coast Commerce Center (Graymont) - Sites	Hanover	197	20
FASTA Site	Greensville	52	37
Upper Magnolia Green	Chesterfield	1728	1000
TOTAL Acreage Tier 3		***1,977***	
Tier 2			
12152 - 12174 Washington Highway (Barnes)	Hanover	75	38
1931 Old Bermuda Hundred Rd	Chesterfield	206	166
2233 Halifax Road	Petersburg	173	111
39 Broad Street	Goochland	47	31
8401 Whitepine Road	Chesterfield	34	20
Ashton Creek Industrial Park	Chesterfield	79	45
Batterson Road Property	Powhatan	28	25
Beale Site	Hanover	135	95
Binns Road - Thunder Properties	Hanover	106	104
Boxwood Farm	Hanover	95	95
Brooks Site	Hanover	277	277
Crater Property	Petersburg	143	143
Creighton & Cold Harbor Road	Hanover	34	34
Crosspointe Centre Pad Site	Prince George	29	23
Crosspointe Logistics Centre	Prince George	806	132
Dinwiddie Airport Industrial Park	Dinwiddie	250	130
Dinwiddie Motorsports Park	Dinwiddie	500	267
Dragway Site	Henrico	93	92
Fareva Site - Surplus Land	Henrico	141	141
Forge Logistics Center	New Kent	612	500
Freeman Parcels	Chesterfield	81	63

Greensville County Industrial Park	Greensville	36	18
Grosik Site	Sussex	147	89
Hardware Drive County Owned Land	Prince George	40	27
Heath Property	New Kent	27	21
Henry Road/I-95 (Route 631) Industrial Park	Sussex	199	182
Henry Technology Park and Commerce Center	Sussex	537	180
Holland PG Property	Prince George	203	100
Horsley Tract	New Kent	50	30
Kinney 220 Interchange	New Kent	65	36
Kinney Tract 1	New Kent	605	115
Kinney Tract 2	New Kent	787	518
Lowe Tract	New Kent	442	275
Midpoint Industrial Park Lot 10	Goochland	5	5
Midpoint Industrial Park Lot 12	Goochland	8	8
Midpoint Industrial Park Lot 22	Goochland	4	4
New Kent City Center	New Kent	1061	500
Norwood Estate Property	Emporia	38	32
NS - Prince George Property	Prince George	233	139
Oilville Road Parcel 33-1-0-4-0	Goochland	52	47
Oilville Road Parcels 33-1-0-11-0; 33-1-0-11-A1	Goochland	100	84
Old Ridge Road Site	Hanover	54	25
Patton Commerce Park	Dinwiddie	30	17
Pocahontas Station	New Kent	75	36
Pole Green Commerce Center	Hanover	113	50
Power Road	Hanover	214	79
Prince George Drive Site	Prince George	295	127
RBC Site	Dinwiddie	188	28
RIC Beulah Site	Henrico	219	180
Ritchie Tract	Dinwiddie	30	30
Roberts - Industrial Park Expansion	Greensville	221	204
Seven Hills Commerce Park	Henrico	95	95
Simpson Road Rebkee 41 Acre Site	Dinwiddie	41	19
Skippers Property	Greensville	134	109
Sluka Tract	Prince George	88	76
Surry West Business Center	Surry	168	77
Theatre Square LC Tract	New Kent	49	20
Urbine Property	Powhatan	56	19
Watkins Centre	Chesterfield	285	155
West Creek Business Park - 23 acre site	Goochland	23	23
West Creek Campus 1: The Notch	Goochland	57	57
West Creek Campus 2	Goochland	490	343

West Creek Campus 3	Goochland	366	120
West Creek Campus 4: Oak Hill	Goochland	140	140
West Creek Campus 5	Goochland	187	76
West Creek Campus 7	Goochland	421	421
West Creek Campus: Markel Site	Goochland	227	227
TOTAL Acreage Tier 2		***12,849***	
Tier 1			
460 Rail Site	Dinwiddie	183	177
Carson Road I-85 Site	Dinwiddie	187	117
Horne Site	Prince George	103	48
Kinney Tract 3	New Kent	700	265
Mason Farms (Copper Station)	Sussex	5422	2007
Pleasant Shade	Greensville	851	650
Sauer Industrial Center	Henrico	299	105
Skalsky 156/460	Prince George	155	45
Spring Branch	Powhatan	37	28
Squirrel Level Road Site	Dinwiddie	353	311
Surry Green Energy Center	Surry	600	481
Utt Property	Powhatan	35	27
TOTAL Acreage Tier 1		***8,925***	
TOTAL Acreage all Tiers		***29,025***	