



GO Virginia Region 1
2023 Growth & Diversification Plan Review
 October 17, 2023

The University of Virginia’s College at Wise

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Priority Industry Clusters:

The 2017, 2019, and 2021 Growth and Diversification Plans for Region 1 identified four targeted industries with the best potential to grow and create higher-paying employment opportunities. These include ***advanced manufacturing, agriculture/food and beverage manufacturing, energy and minerals, and information technology***. These industries remain industry targets for Region 1 given their significance to the region and their potential for growth. In 2023, Region 1 will be adding logistics, transportation, and warehousing as an additional industry target based on the quantitative data supporting it as an emerging industry cluster.

Priority Industry Cluster	Industries	Year Added to G&D Plan
Advanced Manufacturing	Chemical Products Automotive & Transportation Equipment Electrical Equipment & Components Plastics & Rubber Products	2017
Agriculture/Food & Beverage Manufacturing	Animal Processing Beverage Food Processing	2017
Information Technology	Computer Systems & Software Design Cybersecurity Data Centers/Telecommunications/Analytics	2017
Energy & Minerals	Energy Storage Alternative Energy	2017
Logistics, Transportation & Warehousing	Transportation Warehousing	2023 (New)

Logistics, Transportation & Warehousing (NAICS 48-49)

The Logistics, Transportation & Warehousing cluster is defined as NAICS 48-49 with a few exceptions (postal service, taxi and limousine service, scenic and sightseeing transportation, and bus transportation). The cluster also adds NAICS 541614, process, physical distribution, and logistics consulting services. Industries in the cluster provide transportation to cargo, support activities for transportation, and warehouse and store goods. The logistics consulting services industry provides advice and assistance to businesses on inventory management, distribution networks, warehouse use, and transportation and shipment of goods and materials. - Source: <https://www.census.gov/naics/>

Region 1 engaged Chmura Economics & Analytics in May 2023 to conduct research on the potential of including logistics, transportation, and warehousing as an industry priority for Region 1. Increased attention on the possibility of an inland port in Region 1 has renewed focus on the logistics, transportation, and warehousing cluster as a possible emerging opportunity in the region. The analysis included data on historical trends in the cluster focusing on industry employment and wages in the region and labor shed, GDP, and education requirements for occupations. In addition, Chmura discussed the potential impact an inland port could have in the region. A draft of this research was shared with various regional economic development partners across Region 1 and each was given an opportunity to provide feedback on the analysis.

The data and opportunities outlined in the analysis support including the cluster as an emerging industry cluster in the 2023 GO Virginia Region 1 Growth and Diversification Plan. The cluster has seen employment growth in the region and pays similar wages compared with the advanced manufacturing and food and beverage manufacturing industries. Given this data and the potential impact of an inland port in the region, the GO Virginia Region 1 Council voted to approve the addition of logistics, transportation, and warehousing as an industry target in the GO Virginia Region 1 Growth & Diversification Plan at the October 17, 2023 meeting.

Key Targets for GO Virginia Region One					
	Advanced Manufacturing	Food and Beverage Manufacturing	Energy and Minerals	Information Technology	Logistics, Transportation, and Warehousing
Location Quotient	1.56	0.94	3.44	0.57	0.63
Average Annual Wage	\$51,592	\$51,552	\$87,955	\$87,800	\$53,209
Employment	16,700	1,486	3,617	2,420	3,659
Export Sector	✓	✓	✓	✓	✓
	The region possesses above-average wages and competitive advantages in many manufacturing industries.	Prominence of agriculture in the region creates a fertile environment to attract food and beverage manufacturers to the area.	High wages and competitive advantages showcase the importance of energy to the region.	Defined at an occupation level due to their importance across many industries.	Above-average wages and rapid expansion of e-commerce over the pandemic support this emerging cluster.
Source: JobsEQ & Chmura; 2023 Q1					

State of the Regional Economy:

Economic & Workforce Data

Region 1 is conducting an update of the 2023 GO Virginia Region 1 Growth and Diversification Plan with an expected completion date by the end of December 2023. With the release of an updated Plan, it is necessary to update the region's baseline economic and workforce data for 2023. Region 1 experienced limited staff capacity this summer and therefore contracted Chmura Economics and Analytics to update the economic and workforce analysis in the 2021 Growth and Diversification Plan. The report includes an overview of the demographic trends, economic landscape, growth of targeted industry sectors, and gaps in occupations and skills critical to economic growth in Region 1 and the labor shed.

Region 1 has the second-lowest economic growth of all the GO Virginia regions in the state, with 1.4% employment growth in the four quarters ending with 2021Q1 compared to 2.6% growth in the state and 3.3% in the nation over the same period. However, employment in Region 1 has expanded recently during the recovery period following the COVID-19 pandemic, and wage growth has remained strong. Employment in Region 1 grew to 132,720 as of 2023Q1—marking eight straight quarters of employment growth. This is an increase in 5,549. However, this is still down from an employment level of 136,299 that was recorded in 2020Q1 prior to the pandemic-induced recession. The region's average annual wage by industry has increased over the past two years to \$42,517, marking a \$5,056 increase. The labor force participation rate stands at 49.1% in Region 1, compared to 63.4% in the nation. The unemployment rate stands at 3.3% in the region as of July 2023 compared with 3.8% in the nation. Per capita income increased to \$25,436 in the region compared to \$37,638 in the nation. Poverty levels decreased to 17.9% in the region and 12.6% in the nation.

The region's population decreased to 372,503 as of 2022 which is a loss of 10,133 people since it was recorded in 2021. Projections in JobsEQ estimate the population will contract annually by 0.9% through 2034 - a loss of 33,353 people. This projected population loss has increased from previous reports as county-level population data are revised. Population growth in the state of Virginia and the nation are both expected to increase an annual average of 0.5% and 0.6%, respectively, over the same period.

Targeted Industry Sectors

The Region 1 industry targets remain poised for future growth. Industry trends have shown significant growth over the past two years in the key target sectors for Region 1. Average annual wages increased in all key targets over the past two years and employment rose modestly in all four key sectors as well over the same time period. In advanced manufacturing, the average annual wage was \$51,592 for 16,700 people employed as of 2023Q1. The 1,486 workers employed in food and beverage manufacturing earned an average annual wage of \$51,552. The 3,617 energy workers earned \$87,955, due in large part to the high wages in coal mining. Coal mining employment has added over 300 jobs since 2021Q1 and wages in this industry have continued to grow, moving from \$81,648 in 2021Q1 to \$97,211 in 2023Q1. The 2,420 information technology workers in the region earned \$87,800. The region is well equipped for expansion in data centers, computer systems design, food and beverage manufacturing, animal slaughtering, and transportation equipment industries. The 3,659 workers employed in logistics, transportation, and warehousing earned an average annual wage of \$53,209.

Skills Gap Analysis & Talent Pathways:

Included in the updated data that Chmura Economics and Analytics completed for Region 1 is a skills gap analysis that details the immediate and potential gaps in occupations and skills to support employment growth in the region. As of 2023Q1, the table below presents the top 30 occupations, based on total annual demand

projected, that meet the criteria of significance or dominance in at least one of the key industry sectors and have average wages above the regional average. Fourteen of the top 30 occupations are attainable with less than an associate degree, including first-line supervisors of production and operating workers; industrial machinery mechanics; sales representatives; electricians; and machinists. The remaining 16 occupations typically require at least a bachelor’s degree or associate degree, including general and operations managers; industrial engineers; graphic designers; and electrical engineers.

GO Virginia Region 1 Top 30 Occupations Supporting Key Drivers with Above-Average Wages					
SOC	Title	Typical Education Need For Entry	Current Employment 2023Q1	Avg. Annual Wages 2023Q1	Total Annual Demand Over the Next Ten Years
11-1021	General and Operations Managers	Bachelor's Degree	2,243	\$105,200	168
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	High school diploma or equivalent	926	\$69,400	77
51-1011	First-Line Supervisors of Production and Operating Workers	High school diploma or equivalent	832	\$66,200	72
47-1011	Supervisors of Construction and Extraction Workers	High school diploma or equivalent	875	\$68,300	61
49-9041	Industrial Machinery Mechanics	High school diploma or equivalent	708	\$53,900	59
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	High school diploma or equivalent	563	\$70,700	41
47-2111	Electricians	High school diploma or equivalent	459	\$60,300	36
51-4041	Machinists	High school diploma or equivalent	373	\$50,200	34
43-5061	Production, Planning, and Expediting Clerks	High school diploma or equivalent	273	\$52,600	26
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	Bachelor's Degree	274	\$63,300	21
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	High school diploma or equivalent	278	\$59,900	19
13-1081	Logisticians	Bachelor's Degree	147	\$74,600	15
17-2112	Industrial Engineers	Bachelor's Degree	261	\$89,600	15
47-5041	Continuous Mining Machine Operators	Less than high school	245	\$56,900	13
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Bachelor's Degree	150	\$97,000	13
11-3021	Computer and Information Systems Managers	Bachelor's Degree	177	\$143,000	11
49-9052	Telecommunications Line Installers and Repairers	High school diploma or equivalent	106	\$57,600	10
17-2141	Mechanical Engineers	Bachelor's Degree	222	\$95,900	10

GO Virginia Region 1 Top 30 Occupations Supporting Key Drivers with Above-Average Wages					
SOC	Title	Typical Education Need For Entry	Current Employment 2023Q1	Avg. Annual Wages 2023Q1	Total Annual Demand Over the Next Ten Years
27-1024	Graphic Designers	Bachelor's Degree	128	\$58,000	9
49-9051	Electrical Power-Line Installers and Repairers	High school diploma or equivalent	153	\$66,600	9
11-3121	Human Resources Managers	Bachelor's Degree	117	\$117,400	8
11-3051	Industrial Production Managers	Bachelor's Degree	144	\$111,400	8
49-9043	Maintenance Workers, Machinery	High school diploma or equivalent	93	\$59,000	7
17-2071	Electrical Engineers	Bachelor's Degree	131	\$100,700	7
17-3023	Electrical and Electronic Engineering Technicians	Associate degree	69	\$65,300	6
17-3026	Industrial Engineering Technicians	Associate degree	61	\$55,800	5
11-9041	Architectural and Engineering Managers	Bachelor's Degree	92	\$140,300	5
11-3061	Purchasing Managers	Bachelor's Degree	64	\$121,500	4
17-2199	Engineers, All Other	Bachelor's Degree	88	\$113,800	4
53-7021	Crane and Tower Operators	High school diploma or equivalent	45	\$59,500	4

Source: Chmura's [JobsEQ](#).[®]
Occupation wages are as of 2023Q1 and represent the average for all covered employment.

As noted in the above table, many of the occupations relating to Advanced Manufacturing will be in demand over the next ten years. In addition, Region 1 has heard from advanced manufacturers and workforce development partners that Advanced Manufacturers are facing labor shortages and a lack of skilled labor force. The Talent Pathways Initiative (TPI) will assist the region in addressing some of these challenges by conducting a situational analysis and developing a regional talent pathway strategy to support the workforce needs of Advanced Manufacturing throughout Region 1 localities. The Appalachian Council of Innovation with GENEDGE as the lead partner will coordinate the TPI to foster collaboration by business and education to meet workforce needs by developing, retaining, and attracting talent to the Commonwealth to meet the needs of Virginia businesses. The TPI planning effort will be done in two larger phases; Phase 1 is data collection and situational analysis with Phase 2 producing specific strategies and high-impact pathway projects. The scope of work for this initiative includes formation of industry coalitions to guide and advise on development of a quantitative and qualitative situational analysis, gap analysis, identification of skills and training needs to fill jobs, and an asset map evaluating the region's capacity to support the identified workforce needs. Based on the analysis', the project team will identify strategies and talent pathways projects for future implementation that support talent development in Advanced Manufacturing.

Goals, Strategies, & How to Achieve Them:

GO Virginia Region 1's foundation strategies/goals of the Growth and Diversification Plan continue to align with the goals of GO Virginia at the state level and will remain relatively the same with a few minor updates to specific outlined strategies. The goals and strategies represent a practical yet aspirational approach to diversifying the region's economy and provide guidance to stakeholders as to the priorities of the Region 1 Council. The strategies are tied to developing the talent pipeline, ensuring sites and infrastructure are adequate, and building an ecosystem which supports entrepreneurship and innovation. These underpin all of the industry sectors operating in the region, supporting both existing and new employers in the region. The 2023 regional strategy framework includes:

Talent Development

- 1:** Align education and training programs with needs and expectations of target industries; strengthen communication between educational providers and target industries; support the Talent Pathways Initiative focusing on Advanced Manufacturing and advance implementation strategies
- 2:** Build a strong pipeline of participants for programs (certifications, associates, bachelors and above) valued by the target market employers; promote career pathways to increase awareness of occupational, educational, and workforce opportunities available in the region
- 3:** Increase work-based learning experiences (internships, apprenticeships, on-the-job upskilling, and re-skilling programs)
- 4:** Increase industry recognized certifications, credentials and degrees related to the target industries

Changes made to Talent Development strategies include combining previous strategies that were similar, adding reference to the Talent Pathways Initiative, and adding a strategy focused on work-based learning experiences.

Sites and Infrastructure

- 1:** Ensure existing and new sites are certified for targeted industries; advance tier ranking of existing sites based upon VEDP Site Characterization and fully leverage the Virginia Business Site Readiness Program (VBRSP)
- 2:** Advance and support broadband initiatives and implementation to remain competitive and promote innovation
- 3:** Leverage newly created and existing Regional Industrial Facility Authorities (RIFAs) to establish larger, regional industrial sites attractive to the target industries

Changes made to Sites and Infrastructure strategies include clarifying the language in reference to supporting broadband initiatives.

Innovation and Scale Up Support

- 1:** Monitor and advance the implementation of Opportunity SWVA, as the region's entrepreneurship initiative coordinating entity, to ensure the region is making progress in enhancing the entrepreneurial ecosystem to focus on high-growth company development and support
- 2:** Develop programming at all levels of the educational infrastructure supporting innovation and entrepreneurship
- 3:** Grow entrepreneurs and existing businesses in targeted industries through identification of new products and markets, and access to capital

Changes made to Innovation and Scale Up Support strategies include specifically mentioning Opportunity SWVA as the region's entrepreneurial coordinating entity, removing the reference to the TEconomy report, and adding a strategy focused on growing small businesses through identification of new products and markets, and access to capital.

Goal	Strategies	Targeted Industries	Outcomes/Impact Measures	Strategic Partners	Current Projects / Updates
Talent Development	<p>1: Align education and training programs with needs and expectations of target industries; strengthen communication between educational providers and target industries; support the Talent Pathways Initiative focusing on Advanced Manufacturing and advance implementation strategies</p> <p>2: Build a strong pipeline of participants for programs (certifications, associates, bachelors and above) valued by the target market employers; promote career pathways to increase awareness of occupational, educational, and workforce opportunities available in the region</p> <p>3: Increase work-based learning experiences (internships, apprenticeships, on-the-job upskilling, and re-skilling programs)</p> <p>4: Increase industry recognized certifications, credentials and degrees related to the target industries</p>	All: Advanced Manufacturing; Food & Beverage Manufacturing; Information Technology; Energy & Minerals; Transportation & Warehousing	# of students trained # of upskilled employees # of existing jobs retained # of jobs created/filled # of businesses served # of businesses engaged # of new internships created # of new apprenticeships created # of new programs/credentials implemented # of credentials awarded # of students enrolled in dual enrollment programs # of students enrolled	<ul style="list-style-type: none"> • Community Colleges • Higher Education Institutions • United Way of SWVA • Southwest Virginia Higher Education Center • Southwest Virginia WDB • New River/Mount Rogers WDB • Mount Rogers Regional Partnership • Appalachian Council of Innovation • GENEDGE • Mount Rogers Regional Partnership • William King Museum of Art 	<p>Closed GO VA Projects: UWSWVA: Ignite Internships MECC: Smart Farming UWSWVA: Ignite Tech Talent WKMA: Digital Workforce Development</p> <p>Current GO VA Projects: MRRP: Make It Here Carroll County Public Schools: GO TEC Region 1 MECC: Project WELD UWSWVA: Employer Sponsored Childcare Benefit UWSWVA: GO TEC Expansion</p>

<p>Sites & Infrastructure</p>	<p>1: Ensure existing and new sites are certified for targeted industries; advance tier ranking of existing sites based upon VEDP Site Characterization and fully leverage the Virginia Business Site Readiness Program (VBRSP) 2: Advance and support broadband initiatives and implementation to remain competitive and promote innovation 3: Leverage newly created and existing Regional Industrial Facility Authorities (RIFAs) to establish larger, regional industrial sites attractive to the target industries</p>	<p>All: Advanced Manufacturing; Food & Beverage Manufacturing; Information Technology; Energy & Minerals; Transportation & Warehousing</p>	<p># of acres advanced to higher tier per Virginia Business Ready Sites Program (VBRSP) # of increased locality engagement in establishing a RIFA/revenue sharing agreement # of prospects (active company visits) # of businesses attracted # of linear feet of sewer infrastructure # of linear feet of water infrastructure # of linear feet of gas infrastructure # of acres impacted/developed # of miles of middle mile broadband completed</p>	<ul style="list-style-type: none"> • Regional Industrial Facilities Authorities • Planning District Commissions • InvestSWVA • Mount Rogers Regional Partnership • Virginia Coalfield Economic Development Authority • Local governments; EDA/IDA • Virginia Economic Development Partnership 	<p>Closed GO VA Projects: LENOWISCO: LPRIFA Coordinator InvestSWVA: Project Oasis LENOWISCO: Project Energizer LENOWISCO: Project Innovation LPRIFA: Project Intersection BRCEDA: Wildwood Natural Gas Extension LENOWISCO: SMR Site Feasibility</p> <p>Current GO VA Projects: Smyth County EDA: Pathway Park Infrastructure Imp.</p>
<p>Innovation & Scale Up Support</p>	<p>1: Monitor and advance the implementation of Opportunity SWVA, as the region's entrepreneurship initiative coordinating entity, to ensure the region is making progress in enhancing the entrepreneurial ecosystem to focus on high-growth company development and support 2: Develop programming at all levels of the educational infrastructure supporting innovation and entrepreneurship</p>	<p>All: Advanced Manufacturing; Food & Beverage Manufacturing; Information Technology; Energy & Minerals; Transportation & Warehousing</p>	<p># of new businesses created # of businesses served # of entrepreneurs engaged # of mentors engaged Total capital raised Total capital deployed by fund # of fund investments Average deal size Venture capital investment in served businesses Research and development (R&D) funding deployed # of new products completed/released to production # of patents filed # of patents awarded</p>	<ul style="list-style-type: none"> • Opportunity SWVA • Virginia Community Capital • People Incorporated • Small Business Development Centers • Community Colleges • Higher Education Institutions • Appalachian Council for Innovation • United Way of SWVA • Southwest Virginia Energy Research & Development Authority 	<p>Closed GO VA Projects: MECC: Smart Farming ACI: SWVA HubLink VT: Coal to Graphene Market Study Appalachian Voices: Solar Playbook UVA Wise: REI VCE: SWVA Ag Project Manager LPRIFA: Project Fuse InvestSWVA: Project Thoroughbred UVA Wise: SWVA Startup</p>

	<p>3: Grow entrepreneurs and existing businesses in targeted industries through identification of new products and markets, and access to capital</p>		<p>Revenues increased from export-sales # of existing jobs retained # of businesses attracted # of businesses retained Revenues increased</p>	<ul style="list-style-type: none"> • Invest SWVA • Virginia Energy • Southwest Virginia Alliance for Manufacturing • Virginia Cooperative Extension • Appalachian Sustainable Development • GENEDGE • Appalachian Voices 	<p>Emory & Henry College: GROWTH: The Business of Ag in SWVA InvestSWVA: Project Veer VIAA: Perseverance Appalachian Sustainable Development: Farmer Pipeline ACI: COVID-19 Business Continuity & Resiliency GENEDGE: Retooling VA's Manufacturers for Strategic Industries</p> <p>Current GO VA Projects: Appalachian Voices: Energy Storage & Electrification Manufacturing Jobs Appalachian Sustainable Development: Mobilizing the Supply Chain for Critical Infrastructure LENOWISC: SMR Supply Chain Analysis</p>
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Region 1 has attached the required chart outlining the goals/strategies, outcomes, partners, and projects. As outlined previously, these strategies support all of the industry sectors that Region 1 has prioritized. The specific strategies have been grouped together under the main goal, as many of the strategies consist of the same metrics and partners, and many of the projects aligning with the main goal also align with multiple strategies.

Project Development:

The review and update of the Growth and Diversification Plan will assist Region 1 in prioritizing projects to grow industry clusters. Revisiting the Plan, specifically the strategies and industry targets, has allowed Region 1 to evaluate their relevancy, obtain updated regional data, and work closely with regional partners to confirm the path forward. With this update, Region 1 has added a new industry target, which will open up various opportunities for funding regional projects in logistics, transportation, and warehousing. In addition, Region 1 assessed the goals and strategies of the initiative, making minor changes to clarify the strategies and better align with the types of projects that can create regional outcomes. Although drastic changes in the regional economic and workforce data are not seen between the updates of the Growth and Diversification Plan, it is helpful for the region to continue updating this analysis to remain knowledgeable of the state of the region and the trends. Outreach conducted during the review and update of the Growth and Diversification Plan assisted Region 1 in reconnecting with regional partners to understand their priorities and current initiatives that may fit well into the goals of GO Virginia. Through this review and update, Region 1 anticipates seeing an increase in the GO Virginia project pipeline.

During the review of the Growth and Diversification Plan and development of the Region 1 Annual Report, Region 1 completed a thorough review of the current and closed Region 1 awarded projects. The review enabled staff to see how the region is progressing related to our GO Virginia strategies and the outcomes the projects are producing. Region 1 has invested almost equally in projects relating to all of the industry targets, aside from the newly added industry target. However, most of the Region 1 investments relating to the strategies have been in Innovation and Scale Up Support. Some of this has to do with projects being funded from the Economic Resilience and Recovery fund. While this is still a vital strategy for investment, Region 1 would like to see more impactful projects in Sites and Infrastructure and Talent Development. In addition, Region 1 continues to fund more planning projects than implementation projects. There are several planning projects underway that staff will continue to work with to increase the potential of these projects applying for implementation funds. Region 1 is specifically looking forward to the outcomes of the Talent Pathways Initiative (TPI) for the Advanced Manufacturing sector. The Council assembled a TPI Council Advisory Committee that will support the planning effort to ensure it produces a valuable analysis with regional input that can be utilized throughout Region 1 for talent development. Through this process, the committee will be able to guide the planning effort as research is collected and help determine next steps.

Region 1 is currently analyzing the project pipeline to determine the reasons for a decrease in application submissions. Since organizing, the Region 1 Council has focused on building a strong project pipeline through a variety of means. Stakeholder relationship building and outreach has been a cornerstone of the strategy and continues to be an effective way to generate potential GO Virginia projects. Staff is currently working with the Region 1 Council to develop a strategy document with activities to increase the project pipeline. Activities will relate to outreach and collaboration with regional and statewide partners, as well as gathering and distributing information related to the GO Virginia program and regional opportunities. With the recent hire of a new Program Director and Program Manager for GO Virginia Region 1, the timing is right to take a closer look at

how the region can be more successful in generating larger, regional projects that create true economic impact.

Future Planning/G&D Plan Efforts:

Region 1 is going beyond the 2023 Growth & Diversification Plan requirements and will be releasing an update to the Growth & Diversification Plan in December 2023. The process to complete this review of the 2021 Plan was instrumental in assisting with the update the 2023 Growth and Diversification Plan to analyze the progress in the region over the last two years and determine focus areas. Region 1 completed the review of the plan following the same steps for updating the regional Growth and Diversification Plan. The guidelines for the review were shared with the Region 1 Council at the April and July 2023 meetings, where information was presented and feedback was requested. The plan for the update of the Growth and Diversification Plan were shared with the Region 1 Joint Subcommittee at the July meeting. This group specifically discussed the logistics, transportation, and warehousing cluster and the opportunities for adding it as an industry sector. All members of the Joint Subcommittee were invited to participate, but an invitation was also sent out to regional and local economic developers and higher education institutions. In addition, various emails sharing information and requesting feedback related to updating regional industry priorities and regional strategies were sent out to regional partners.

Region 1 engaged Chmura Economics and Analytics to update the regional economic and workforce data, and to conduct the analysis on the logistics, transportation, and warehousing industry. This data was shared with the regional council and stakeholders to allow them the opportunity to review the data and provide feedback and recommendations.

The process to review and update the Growth and Diversification Plan has been a collaborative process involving the Region 1 Council and strategic partners. When the update to the Growth and Diversification Plan is complete later this year, the Plan will continue to assist the council in evaluating which potential projects best address the identified priorities, and will guide the council's work to develop talent pipelines, grow existing businesses, encourage the region's entrepreneurial activity, and advance joint site and infrastructure development. The document will include updated regional economic and workforce data including a skills analysis for the targeted sectors, data analysis on logistics, transportation, and warehousing, a focus on Region 1 growth strategies and opportunities for funding, and updated lists and charts for Region 1 progress toward implementation of GO Virginia.



PREPARED FOR
GO Virginia Region 1



September 13, 2023

Logistics, Transportation, and Warehousing Cluster Analysis

GO Virginia Region 1

1. Introduction

Increased attention on the possibility of an inland port in GO Virginia Region 1 has renewed focus on the logistics, transportation, and warehousing cluster as a possible emerging opportunity for the region. Chmura Economics & Analytics¹ was engaged to review historical trends in the cluster and qualitatively discuss the potential impact of an inland port in the region.

2. Historical Trends

Despite declines prior to the pandemic, the logistics, transportation, and warehousing cluster has grown in GO Virginia Region 1 since 2020. Employment in the cluster declined at an average annual rate of 1.1% in the region over the past five years (2017Q4 to 2022Q4). In the fourth quarter of 2017, the cluster employed 3,840 workers in the region and saw a steady decline until the second quarter of 2020, reaching a low point of 3,318 employees. However, the cluster has since been recovering steadily as e-commerce rose rapidly due to the pandemic, growing at a 3.9% average annual rate through 2022Q4. The most recent measurement reported 3,639 employees in the fourth quarter of 2022, 201 fewer workers than at the end of 2017, but 321 workers above the trough in 2020.

As shown in the following table, 13 of the 20 logistics, transportation, and warehousing industries² lost jobs over the last five years. The largest job losses were in warehousing and storage, with a decrease of 373 jobs, followed by rail transportation with 113 jobs and specialized freight trucking with 107 jobs lost.

The three industries in the cluster that added more than 50 employees over the past five years were:

- Couriers and express delivery services (+225)
- General freight trucking (+113)
- Process, physical distribution, and logistics consulting services (+81)

However, since 2020, employment has grown in 11 of the 18 industries (industries with zero employees were excluded), led by process, physical distribution, and logistics consulting services with an average annual increase of 83.6%, support activities for air transportation with 57.5%, and couriers and express delivery services with 49.0%. Recently, the logistics, transportation, and warehousing cluster in GO Virginia Region 1 has shown significant promise. In fact, last year employment increased by 6.9%, more than three times as much as the average for all industries in the region (2.2%).

Industry Snapshot, Logistics, Transportation, Warehousing

NAICS	Industries	GO VA 1				Labor Shed			
		Four Quarters Ending 2022Q4		Historical 5-yr.		Four Quarters Ending 2022Q4		Historical 5-yr.	
		Empl.	Avg. Annual Wages	Empl. Change	Annual %	Empl.	Avg. Annual Wages	Empl. Change	Annual %
4921	Couriers and Express Delivery Services	400	\$28,169	225	18.0%	3,611	\$39,609	1,471	11.0%
4841	General Freight Trucking	955	\$57,745	113	2.6%	4,555	\$63,453	-23	-0.1%
541614	Process, Physical Distribution, and Logistics Consulting Services	108	\$41,272	81	32.2%	187	\$45,840	51	6.6%

¹ Chmura provides economic software, consulting, and data to our clients that help them make informed decisions to benefit their communities.

Chmura's PhD economists, data scientists, and strategic planners guide clients through their local labor market. Over the past 25 years, Chmura has served hundreds of clients nationwide with thoroughness, accuracy, and objectivity.

² Industries are used to classify business establishments according to the type of economic activity. A cluster is a geographic concentration of interrelated industries or occupations.

Industry Snapshot, Logistics, Transportation, Warehousing

		GO VA 1				Labor Shed			
NAICS	Industries	Four Quarters Ending 2022Q4		Historical 5-yr.		Four Quarters Ending 2022Q4		Historical 5-yr.	
		Empl.	Avg. Annual Wages	Empl. Change	Annual %	Empl.	Avg. Annual Wages	Empl. Change	Annual %
4884	Support Activities for Road Transportation	104	\$34,620	32	7.7%	716	\$42,493	157	5.1%
4859	Other Transit and Ground Passenger Transportation	42	\$27,722	32	32.8%	403	\$31,762	14	0.7%
4881	Support Activities for Air Transportation	66	\$32,397	29	12.0%	418	\$46,625	-151	-6.0%
4922	Local Messengers and Local Delivery	28	\$22,682	15	15.9%	265	\$30,174	114	12.0%
4862	Pipeline Transportation of Natural Gas	52	\$85,885	4	1.6%	125	\$109,902	43	8.8%
4851	Urban Transit Systems	6	\$34,933	-1	-2.5%	247	\$38,891	-42	-3.1%
4811	Scheduled Air Transportation	1	\$32,099	-1	-13.4%	381	\$76,999	-14	-0.7%
4883	Support Activities for Water Transportation	1	\$35,201	-1	-14.5%	16	\$53,177	-6	-6.1%
4869	Other Pipeline Transportation	0	n/a	-3	n/a	46	\$92,563	27	19.4%
4882	Support Activities for Rail Transportation	0	n/a	-6	n/a	76	\$50,443	-31	-6.6%
4885	Freight Transportation Arrangement	14	\$42,922	-7	-8.0%	128	\$50,093	7	1.2%
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	44	\$49,996	-15	-5.6%	361	\$61,240	101	6.8%
4812	Nonscheduled Air Transportation	42	\$79,069	-46	-13.8%	87	\$87,209	-36	-6.8%
4889	Other Support Activities for Transportation	52	\$53,244	-59	-14.1%	91	\$50,960	-24	-4.7%
4842	Specialized Freight Trucking	747	\$55,702	-107	-2.6%	2,036	\$56,488	-115	-1.1%
4821	Rail Transportation	253	\$90,696	-113	-7.1%	946	\$89,091	-444	-7.4%
4931	Warehousing and Storage	726	\$46,516	-373	-8.0%	3,735	\$44,352	-313	-1.6%
	Logistics, Transportation, and Warehousing Cluster	3,639	\$52,282	-201	-1.1%	18,430	\$53,101	784	0.9%
	Total - All Industries	132,918	\$41,942	-5,774	-0.8%	554,788	\$50,280	-8,605	-0.3%

Source: JobsEQ® by Chmura

The GO VA 1 labor shed shows stronger growth, as the cluster has seen a 0.9% annual increase in employment over the past five years. Following a decline through the start of the pandemic, the cluster in the labor shed has been recovering rapidly, growing at a 4.4% average annual rate through 2022Q4. The most recent measurement reported 18,430 employees in the fourth quarter of 2022, 784 more workers than at the end of 2017 and 1,673 workers above the trough in 2020.

Since 2020, employment has grown in 13 of the 20 industries in the labor shed, led by process, physical distribution, and logistics consulting services with an average annual increase of 48.9%, local messengers and local delivery with 22.8%, and couriers and express delivery services with 15.9%. Additionally, within the last year, employment in this cluster increased by 3.9%, 1.5% more than the average for all industries in the labor shed (2.4%).

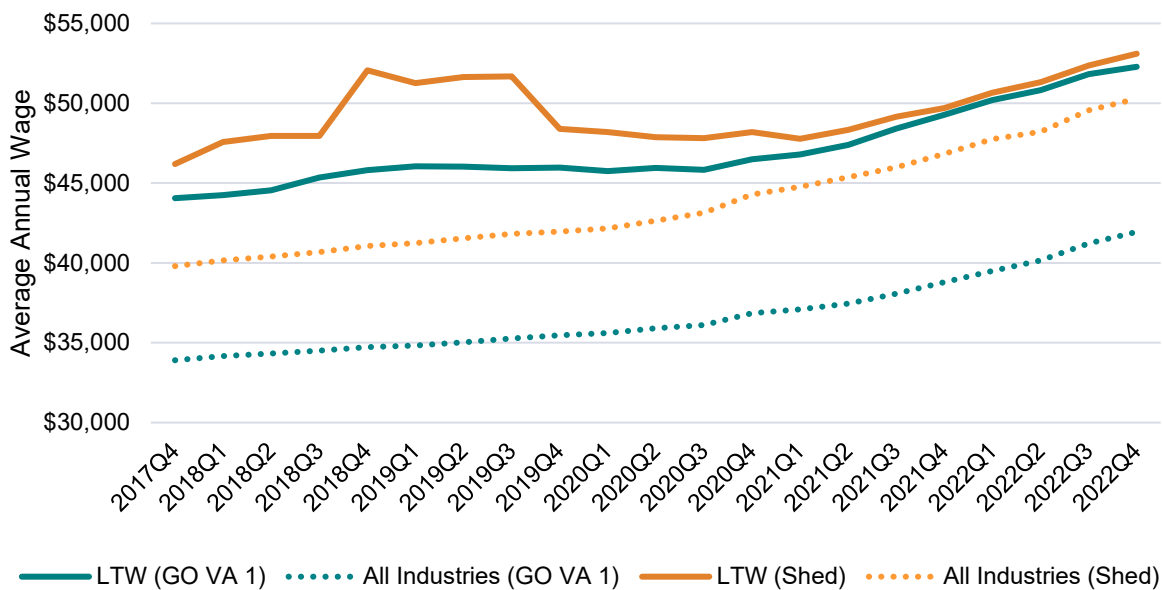
In the baseline forecast scenario, more than 3,800 jobs will need to be filled in cluster in the GO Virginia 1 Region over the next decade as individuals currently in those positions retire or move to alternative occupations. Over 21,000 jobs will also be needed to meet demand in the cluster in the labor shed region over the next decade.

Logistics, Transportation, and Warehousing- Industry Wages

The logistics, transportation, and warehousing cluster pay above-average wages for the region and has seen an acceleration of average annual wages since the start of the pandemic. During the fourth quarter of 2017, the average annual wage in the cluster was \$44,054. In the fourth quarter of 2022, the average annual wage for a worker in this industry was \$52,282, over \$10,000 more than the average wage for all industries in the region (\$41,942).

Similarly, the cluster in the labor shed pays an above average wage compared to all industries in the region. The average annual wage in the cluster was \$46,192 in the fourth quarter of 2017. In the fourth quarter of 2022, the average annual wage for a worker in this industry was \$53,101, roughly \$3,000 more than the average wage for all industries in the region. The region did, however, experience a spike in wages between 2018Q3 and 2018Q4, seeing an average increase of more than \$4,000.³ After a year, wages did drop back to around where they were in 2018Q3 and remained steady until it experienced consistent increase starting 2021Q1.

Logistics, Transportation, and Warehousing Consistently Pays Higher Than Average



Source: JobsEQ® by Chmura

³ The wage spike was driven by the support activities for air transportation industry which saw a 109% increase from 2018Q3 (\$108,106) to 2018Q4 (\$226,030). The industry's average wage dropped back to near-original levels in 2019Q4 (\$109,769). Industry wages include bonuses, stock options, severance pay, and profit distributions, which could explain the bump. Support activities for air transportation include airport operations, air traffic control, other airport operations, aircraft maintenance and repair services, and aircraft passenger screening security services.

Logistics, Transportation, and Warehousing- GDP Contributions by Industry

GDP is the final output from products and services produced in any region during a specific time and provides the broadest measure of economic performance.

In 2021, the logistics, transportation, and warehousing cluster made up 3.1% of total GDP in GO Virginia Region 1 and 3.2% in the labor shed. Looking at the detailed industries within the cluster, the largest contributions to the industry's GDP are from:

- General freight trucking (25.9%)
- Rail transportation (20.1%)
- Specialized freight trucking (17.0%)

The industry GDP contributions, high GDP per employee, and above-average wages in the cluster in both the region and labor shed suggest investments in the cluster will have a high return. The smallest contributions were from other transit and ground passenger transportation (0.4%), local messengers and local delivery (0.3%), and freight transportation arrangement (0.2%). Moreover, four of the detailed industries had a GDP per employee (productivity) contribution greater than \$100,000. The most productive industries include support activities for air transportation (\$189,969) and rail transportation (\$279,917). Support activities include towing, packing and crating, and servicing and routine repairing of transportation equipment.

Gross Domestic Product by Industry by % of GDP Cluster in GO VA 1 (2021)

NAICS	Industries	GO VA 1			Labor Shed		
		GDP	% of Cluster GDP	GDP per Employee	GDP	% of Cluster GDP	GDP Per Employee
4841	General Freight Trucking	\$91,380,000	25.9%	\$95,686	\$472,747,000	26.4%	\$103,786
4821	Rail Transportation	\$70,819,000	20.1%	\$279,917	\$275,897,000	15.4%	\$291,646
4842	Specialized Freight Trucking	\$59,863,000	17.0%	\$80,138	\$171,069,000	9.6%	\$84,022
4921	Couriers and Express Delivery Services	\$28,085,000	8.0%	\$70,213	\$235,564,000	13.2%	\$65,235
4862	Pipeline Transportation of Natural Gas	\$21,187,000	6.0%	\$407,442	\$69,442,000	3.9%	\$555,536
4881	Support Activities for Air Transportation	\$12,538,000	3.6%	\$189,970	\$54,374,000	3.0%	\$130,081
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	\$12,549,000	3.6%	\$285,205	\$112,770,000	6.3%	\$312,382
4884	Support Activities for Road Transportation	\$5,296,000	1.5%	\$50,923	\$61,320,000	3.4%	\$85,642
4851	Urban Transit Systems	\$4,643,000	1.3%	\$773,833	\$19,821,000	1.1%	\$80,247
4889	Other Support Activities for Transportation	\$4,551,000	1.3%	\$87,519	\$4,974,000	0.3%	\$54,659
541614	Process, Physical Distribution, and Logistics Consulting Services	\$2,915,000	0.8%	\$26,991	\$9,585,000	0.5%	\$51,257
4812	Nonscheduled Air Transportation	\$2,365,000	0.7%	\$56,310	\$6,402,000	0.4%	\$73,586
4859	Other Transit and Ground Passenger Transportation	\$1,473,000	0.4%	\$35,071	\$20,629,000	1.2%	\$51,189

Gross Domestic Product by Industry by % of GDP Cluster in GO VA 1 (2021)

NAICS	Industries	GO VA 1			Labor Shed		
		GDP	% of Cluster GDP	GDP per Employee	GDP	% of Cluster GDP	GDP Per Employee
4922	Local Messengers and Local Delivery	\$1,082,000	0.3%	\$38,643	\$14,498,000	0.8%	\$54,709
4885	Freight Transportation Arrangement	\$869,000	0.2%	\$62,071	\$13,085,000	0.7%	\$102,227
4811	Scheduled Air Transportation	N/A	N/A	N/A	\$35,250,000	2.0%	\$92,520
4869	Other Pipeline Transportation	N/A	N/A	N/A	\$22,478,000	1.3%	\$488,652
4882	Support Activities for Rail Transportation	N/A	N/A	N/A	\$7,254,000	0.4%	\$95,447
4883	Support Activities for Water Transportation	N/A	N/A	N/A	\$1,755,000	0.1%	\$109,688
	Logistics, Transportation, and Warehousing Cluster	\$352,203,000	100%	\$96,786	\$1,789,294,000	100.0%	\$97,086
	Total - All Industries	\$11,270,598,000		\$84,794	\$55,086,876,000		\$99,294

Source: JobsEQ® by Chmura

Logistics, Transportation, and Warehousing- Occupation Snapshot

The occupation mix in GO Virginia Region 1 follows the mix of industries. As of the fourth quarter of 2022, the 40 occupations in the logistics, transportation, and warehousing cluster saw a mean occupation wage of \$46,900, and \$49,800 in the labor shed.⁴ More than 18,000 workers were employed in occupations linked to this cluster during the fourth quarter of 2022, accounting for 13.7% of all workers in the region. This expands to 79,499 workers employed in occupations related to this cluster in the labor shed, accounting for 14.3% of all workers in the region.

Over the past five years, the cluster’s related occupations saw a 0.1% average annual decrease in employment, significantly slower than the average decline by all occupations in the region (0.8%). Currently, data show that stockers and order fillers, customer service representatives, heavy and tractor-trailer truck drivers, general and operations managers, and office clerks (general) all have more than 2,000 employees.

Occupations related to the logistics, transportation, and warehousing cluster pay \$5,000 more on average for entry-level positions than all occupations in the region (\$25,600). Courier and messengers and passenger attendants pay the least with a mean annual wage of just over \$29,000. The four occupations that pay an average over \$100,000 are:

- Airline Pilots, Copilots, and Flight Engineers (\$193,500)
- Commercial Pilots (\$118,300)
- Transportation, Storage, and Distribution Managers (\$112,900)
- General and Operations Managers (\$101,900)

This region also has 24 occupations paying above-average wages, many of which require minimal education to enter. For instance, only two occupations typically require a bachelor’s degree—airline pilots, copilots, and flight engineers (\$193,500) and general and operations managers (\$101,900). An associate’s degree is typically needed for avionics

⁴ To develop the list of relevant occupations, Chmura included those which either 1) accounted for more than 1% of total employment in the cluster or 2) had 10% or more of all employment of the occupation within the cluster. Workers in occupations may be employed in other industries, but have relevant skills which can support growth in this cluster.

technicians (\$56,600). However, occupations like transportation, storage, and distribution managers (\$112,900), gas plant operators (\$80,300), and transportation inspectors (\$77,700) typically require a high school diploma or equivalent, 16 above-average paying occupations require no previous work experience, and all but four have zero to short/moderate-term on-the-job training associated.

Top 20 Occupations by GO VA 1 Average Wage (Four Quarters Ending 2022Q4)

SOC	Occupation Group	GO VA 1			Labor Shed		
		Empl.	Avg. Annual Wages	Unemployment Rate	Empl.	Avg. Annual Wages	Unemployment Rate
53-2011	Airline Pilots, Copilots, and Flight Engineers	6	\$193,500	N/A	105	\$210,500	1.0%
53-2012	Commercial Pilots	35	\$118,300	N/A	106	\$118,500	1.1%
11-3071	Transportation, Storage, and Distribution Managers	81	\$112,900	1.0%	426	\$104,300	1.1%
11-1021	General and Operations Managers	2,245	\$101,900	1.5%	9,679	\$108,000	1.6%
51-8092	Gas Plant Operators	18	\$80,300	2.9%	77	\$77,400	3.2%
53-6051	Transportation Inspectors	12	\$77,700	N/A	51	\$79,200	3.6%
53-4011	Locomotive Engineers	41	\$73,400	N/A	192	\$76,700	0.5%
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	13	\$72,300	3.3%	50	\$78,500	3.6%
49-9097	Signal and Track Switch Repairers	16	\$70,300	N/A	50	\$72,100	2.8%
49-3011	Aircraft Mechanics and Service Technicians	50	\$67,200	1.2%	364	\$69,400	1.4%
53-7071	Gas Compressor and Gas Pumping Station Operators	5	\$64,200	N/A	15	\$66,400	N/A
49-3043	Rail Car Repairers	45	\$64,100	1.2%	174	\$65,500	1.2%
53-4031	Railroad Conductors and Yardmasters	62	\$63,000	N/A	228	\$66,400	N/A
53-4022	Railroad Brake, Signal, and Switch Operators and Locomotive Firers	20	\$61,400	N/A	74	\$62,600	1.6%
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	12	\$58,900	N/A	47	\$61,900	N/A
53-1041	Aircraft Cargo Handling Supervisors	3	\$58,600	N/A	19	\$63,800	N/A
49-2091	Avionics Technicians	7	\$56,600	7.4%	26	\$60,900	7.9%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	23	\$55,100	2.1%	N/A	N/A	N/A
53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	531	\$54,700	1.2%	2,233		

Top 20 Occupations by GO VA 1 Average Wage (Four Quarters Ending 2022Q4)

SOC	Occupation Group	Empl.	GO VA 1		Empl.	Labor Shed	
			Avg. Annual Wages	Unemployment Rate		Avg. Annual Wages	Unemployment Rate
						\$55,900	1.3%
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,184	\$54,300	1.6%	6,217	\$57,400	1.7%
53-2022	Airfield Operations Specialists	2	\$54,000	N/A	34	\$53,400	3.7%
27404	All Logistics, Transportation, and Warehousing Occupations	18,168	\$46,900	3.6%	79,499	\$49,800	3.7%
	Total- All Occupations	132,918	\$48,800	3.2%	554,788	\$52,500	3.3%

Source: JobsEQ® by Chmura

Unlike GO Virginia Region 1, the labor shed region saw an average increase in employment for the logistics, transportation, and warehousing cluster-related occupations. The occupations experienced an average 0.5% annual increase in employment over the past five years while all occupations in the region saw an average annual decrease of 0.3%. Currently, data show stockers and order fillers, customer service representatives, general and operations managers, and office clerks (general) each account for over 9,000 employees. Passenger attendants, gas compressor and gas pumping operators, aircraft cargo handling supervisors, and rail yard engineers, dinkey operators, and holsters have under 20 workers.

Moreover, occupations related to the logistics, transportation, and warehousing cluster pay \$6,100 more on average for entry-level positions than all occupations in the labor shed (\$25,900). The occupations paying above-average wages have a similar distribution of typical entry-level education requirements in the labor shed as in GO Virginia Region 1.

2. Potential Inland Port

A recent study commissioned by the Virginia General Assembly assessed the feasibility of opening a new inland port in the Central Virginia Planning District or the Mount Rogers Planning District. An inland port is defined as an intermodal facility used to transfer containers from trucks to rails and vice versa. The study concluded that the Mount Rogers Planning District meets the physical condition and market-driven requirements to justify further investigation of the feasibility and impact of an inland port in the area.⁵ Such an investment could mean significant economic development in Southwest Virginia including job creation, business expansion, and infrastructure development. An analysis of the economic impact of existing inland ports serves as the basis for a discussion on the potential impact of a new inland port in Southwest Virginia.

The Virginia Inland Port (VIP) opened in 1989, and, in its over three decades of operation, has grown to become a valuable economic asset for the Shenandoah Valley and beyond. In the Virginia Port Authority report for Fiscal Year 2022, the estimated economic impact contribution of the Virginia Inland Port was nearly \$1.5 billion in output, \$750 million in value-added purchases (GSP), and \$500 million in labor income from 6,724 workers.⁶ From 2021 to 2022, VIP

⁵ Virginia Economic Development Partnership, Virginia Port Authority, and Moffatt & Nichol. *Inland Port Study: Feasibility Analysis of Locating an Inland Port in the Commonwealth*. Reports to the General Assembly, 2023.

⁶ Swan, K. Scott. "The Fiscal Year 2022 Virginia Economic Impacts of The Port of Virginia." *Virginia Port Authority*. Last modified April 26, 2023.

employment has increased by nearly 1,000 workers.⁷ The Virginia Port Authority estimates that over the last three decades, 8,500 jobs and over \$950 million in investments have been brought to the region thanks to the existence of the inland port. Much of the growth attributed to the inland port has come from the development and expansion of businesses surrounding VIP. For example, Nature's Touch Frozen Foods plans to invest over \$40 million to create a new 126,000-square-foot facility near VIP and bring 67 new jobs to Warren County.⁸

In South Carolina, Inland Port Greer opened in 2013, and Inland Port Dillon opened in 2018. Chmura analyzed the economic impact of both ports in 2018. In the Greer region, the growth of the logistics industry was compared to the state average before and after the port opened. Prior to the opening of the port, growth in the regional logistics sector lagged behind the state average, at 1.14% and 1.81% per year respectively. After the opening of the port, Greer surpassed the state average growing 5.06% per year from 2013 to 2017 compared to the state average of 4.99% per year at that time.

In the 2018 study, Inland Port Dillon was projected to contribute to 1,534 additional logistics sector jobs by 2040. Further, the ripple impact from the expanding logistics industry in South Carolina was projected to support 964 additional jobs and contribute \$188 million in economic impact. The total annual economic impact of the expanded logistics sector, including direct and ripple effects, was projected to be \$495.5 million by 2040. Combined, the total economic impact of Inland Port Dillon operations and the expanded logistics sector was estimated to be \$502.6 million per year, supporting 2,532 new jobs, and generating \$214.8 million in employment compensation by 2040. In terms of fiscal impact, Inland Port Dillon and expanded logistics sector were expected to bring in \$6.8 million in state corporate and personal income taxes in 2040, based on the state corporate income tax rate and the average personal income tax rate of 5.0% each.⁹

The Virginia General Assembly study, conducted by Moffatt and Nichol in coordination with Insight Research Corporation, estimated the potential economic impact of a proposed new inland port in Virginia. While the economic impact was not site specific to the Mount Rogers Planning District, it offered projections worth noting on the potential impacts in the region. First, the study assumed a modest sized inland port facility on a 100-acre lot with a 50,000 annual lift capacity, costing \$55 million excluding the price of land. In comparison, VIP is located on a 161-acre lot and carries approximately 35,000 annual lifts, Inland Port Greer exists on a 100-acre lot and handles over 150,000 annual lifts, and Inland Port Dillon is on a 40-acre lot and was initially designed with a 45,000 annual lift capacity but is quickly growing. The proposed facility would open in four years, handling 15,000 annual lifts in the first year and growing to 25,000 and 45,000 annual lifts in years six and ten respectively. The initial annual capacity is small for the size of the proposed port in comparison with Inland Ports Greer and Dillon, meaning the port has room to expand as demand increases in the first decade of operation, bringing with it new economic growth. The study estimates that in the first year of operation, the port could attract a 100,000-square-foot manufacturing facility nearby, and over ten years, two additional manufacturing facilities and two 450,000-square-foot warehouses could be drawn to the region. Under these assumptions, the study projects a cumulative economic impact of \$1.75 billion over twenty years, with 1,370 permanent new jobs. Of those jobs, 675 are reported to be a direct impact of the port, and 695 are reported to be an indirect impact. With the construction of the port itself, as well as the surrounding manufacturing facilities and warehouses, 1,363 temporary construction jobs are expected to be created. Because the report was not location specific, fiscal impact was not projected in the study, as taxes vary by site.¹⁰

With the introduction of the Virginia Inland Port in Warren County, local manufacturing companies experienced significant growth due to the new resource. It is estimated that 90% of the companies that use VIP are within a 30-mile radius of the

⁷ Swan, K. Scott. "The Fiscal Year 2021 Virginia Economic Impacts of The Port of Virginia." *Virginia Port Authority*. Last modified January 18, 2022.

⁸ Schnabel, Megan. "Virginia is Studying Whether to Open a Second Inland Port. Here's What Inland Ports Are and Why They Matter." *Cardinal News*. Last modified December 7, 2022. <https://cardinalnews.org/2022/12/06/virginia-is-studying-whether-to-open-a-second-inland-port-what-are-inland-ports-and-why-do-they-matter/>.

⁹ Chmura. *Economic Impact of Inland Port Dillon in South Carolina*. Chmura, 2018.

¹⁰ Virginia Economic Development Partnership, Virginia Port Authority, and Moffatt & Nichol. *Inland Port Study: Feasibility Analysis of Locating an Inland Port in the Commonwealth*. Reports to the General Assembly, 2023.

port.¹¹ For GO Virginia Region One, an inland port near Bristol, VA could directly impact 19 manufacturing establishments within Bristol, and nearly 100 establishments within a 30-mile radius in Virginia, in addition to the 178 establishments in the neighboring county of Sullivan, Tennessee. For these establishments, an inland port could motivate expansion, bringing new jobs to the region and creating a large economic ripple effect. As of 2022, GO Virginia Region One employs 16,718 people in manufacturing industries and 3,639 people in the transportation and logistics industries. An inland port could be expected to generate significant positive annual employment changes in these industries as existing establishments expand and new businesses are drawn to the region. Given the relative sizes and lift capacities of the ports discussed above, a new port in Bristol, VA with a 50,000 annual lift capacity can expect an economic impact most similar in size to that of Inland Port Dillon.

Manufacturing companies stand to benefit from increased access to the transportation resources provided by a new inland port. Some examples include Line Power Manufacturing Corporation, GFG Bag Manufacturer, and Paramount Manufacturing. Pre-existing anchor customers, such as the BMW manufacturer located in Greer, SC, reduce the economic risks associated with opening a new inland port. The existing manufacturing companies in the GO Virginia One Region set a foundation for a new inland port to succeed, which will attract new companies in the future and contribute to economic growth.

¹¹ Schnabel, Megan. "Virginia is Studying Whether to Open a Second Inland Port. Here's What Inland Ports Are and Why They Matter." Cardinal News. Last modified December 7, 2022. <https://cardinalnews.org/2022/12/06/virginia-is-studying-whether-to-open-a-second-inland-port-what-are-inland-ports-and-why-do-they-matter/>.

3. Conclusion

The data and opportunities reviewed in this analysis support including the logistics, transportation, and warehousing cluster as an emerging cluster in GO Virginia Region 1’s Growth and Diversification Plan. As summarized in the table below, the cluster pays similar wages compared with the advanced manufacturing and food and beverage manufacturing industries. The expansion of e-commerce activity over the pandemic has driven employment growth in the cluster to surpass employment in the energy and minerals cluster. Finally, a location quotient below one and the potential impact of an inland port in the region indicate that the logistics, transportation, and warehousing cluster is emerging as a key cluster in Region 1.¹²

Key Targets for GO Virginia Region One					
	Advanced Manufacturing	Food and Beverage Manufacturing	Energy and Minerals	Information Technology	Logistics, Transportation, and Warehousing
Location Quotient	1.55	0.96	3.38	0.58	0.62
Average Annual Wage	\$51,044	\$52,583	\$87,081	\$83,800	\$52,282
Employment	16,718	1,511	3,542	2,443	3,639
Export Sector	✓	✓	✓	✓	✓
	The region possesses above-average wages and competitive advantages in many manufacturing industries.	Prominence of agriculture in the region creates a fertile environment to attract food and beverage manufacturers to the area.	High wages and competitive advantages showcase the importance of energy to the region.	Defined at an occupation level due to their importance across many industries. CGI, DP Facilities South, and Northrop Grumman are examples of this emerging cluster.	Above-average wages and rapid expansion of e-commerce over the pandemic support this emerging cluster.
Source: JobsEQ & Chmura					

¹² Location quotient (LQ) is a measurement of concentration in comparison to the nation. By formula, LQ is the ratio of an industry’s share of total employment within the region to the same industry’s share of employment in the region. An LQ of 1.00 indicates a region has the same concentration of an industry/occupation as the nation. An LQ of 2.00 would mean the region has twice the expected employment compared to the nation and an LQ of 0.50 would mean the region has half the expected employment compared to the nation. By formula, LQ is calculated as:

$$\text{Location Quotient (LQ)} = \frac{\left(\frac{\text{Region's Industry Employment}}{\text{Region's Total Employment}}\right)}{\left(\frac{\text{U.S. Industry Employment}}{\text{U.S. Total Employment}}\right)}$$

4. Appendix

Industry Snapshot, Logistics, Transportation, Warehousing (Wages Above Region Total - All Industry Average Noted in Green)

NAICS	Industries	GO VA 1		Labor Shed	
		Four Quarters Ending 2022Q4		Four Quarters Ending 2022Q4	
		Empl.	Avg. Annual Wages	Empl.	Avg. Annual Wages
4841	General Freight Trucking	955	\$57,745	4,555	\$63,453
4842	Specialized Freight Trucking	747	\$55,702	2,036	\$56,488
4931	Warehousing and Storage	726	\$46,516	3,735	\$44,352
4921	Couriers and Express Delivery Services	400	\$28,169	3,611	\$39,609
4821	Rail Transportation	253	\$90,696	946	\$89,091
541614	Process, Physical Distribution, and Logistics Consulting Services	108	\$41,272	187	\$45,840
4884	Support Activities for Road Transportation	104	\$34,620	716	\$42,493
4881	Support Activities for Air Transportation	66	\$32,397	418	\$46,625
4862	Pipeline Transportation of Natural Gas	52	\$85,885	125	\$109,902
4889	Other Support Activities for Transportation	52	\$53,244	91	\$50,960
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	44	\$49,996	361	\$61,240
4859	Other Transit and Ground Passenger Transportation	42	\$27,722	403	\$31,762
4812	Nonscheduled Air Transportation	42	\$79,069	87	\$87,209
4922	Local Messengers and Local Delivery	28	\$22,682	265	\$30,174
4885	Freight Transportation Arrangement	14	\$42,922	128	\$50,093
4851	Urban Transit Systems	6	\$34,933	247	\$38,891
4811	Scheduled Air Transportation	1	\$32,099	381	\$76,999
4883	Support Activities for Water Transportation	1	\$35,201	16	\$53,177
4869	Other Pipeline Transportation	0	n/a	46	\$92,563
4882	Support Activities for Rail Transportation	0	n/a	76	\$50,443
Logistics, Transportation, and Warehousing Cluster		3,639	\$52,282	18,430	\$53,101
Total - All Industries		132,918	\$41,942	554,788	\$50,280

Source: JobsEQ® by Chmura

Occupations and Education Requirements by GO VA 1 Average Wage (Four Quarters Ending 2022Q4)
(Occupations Typically Requiring a High School Diploma or Less Highlighted in Green)

SOC	Occupation Group	GO VA 1		Labor Shed	Typical Education Requirements
		Employment	Avg. Annual Wages	Avg. Annual Wages	
53-2011	Airline Pilots, Copilots, and Flight Engineers	6	\$193,500	\$210,500	Bachelor's degree
53-2012	Commercial Pilots	35	\$118,300	\$118,500	Postsecondary non-degree award
11-3071	Transportation, Storage, and Distribution Managers	81	\$112,900	\$104,300	High school diploma or equivalent
11-1021	General and Operations Managers	2,245	\$101,900	\$108,000	Bachelor's degree
51-8092	Gas Plant Operators	18	\$80,300	\$77,400	High school diploma or equivalent
53-6051	Transportation Inspectors	12	\$77,700	\$79,200	High school diploma or equivalent
53-4011	Locomotive Engineers	41	\$73,400	\$76,700	High school diploma or equivalent
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	13	\$72,300	\$78,500	High school diploma or equivalent
49-9097	Signal and Track Switch Repairers	16	\$70,300	\$72,100	High school diploma or equivalent
49-3011	Aircraft Mechanics and Service Technicians	50	\$67,200	\$69,400	Postsecondary non-degree award
53-7071	Gas Compressor and Gas Pumping Station Operators	5	\$64,200	\$66,400	High school diploma or equivalent
49-3043	Rail Car Repairers	45	\$64,100	\$65,500	High school diploma or equivalent
53-4031	Railroad Conductors and Yardmasters	62	\$63,000	\$66,400	High school diploma or equivalent
53-4022	Railroad Brake, Signal, and Switch Operators and Locomotive Firers	20	\$61,400	\$62,600	High school diploma or equivalent
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	12	\$58,900	\$61,900	Postsecondary non-degree award
53-1041	Aircraft Cargo Handling Supervisors	3	\$58,600	\$63,800	High school diploma or equivalent
49-2091	Avionics Technicians	7	\$56,600	\$60,900	Associate's degree
47-4061	Rail-Track Laying and Maintenance Equipment Operators	23	\$55,100	N/A	High school diploma or equivalent
53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	531	\$54,700	\$55,900	High school diploma or equivalent
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,184	\$54,300	\$57,400	High school diploma or equivalent
53-2022	Airfield Operations Specialists	2	\$54,000	\$53,400	High school diploma or equivalent
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	3	\$52,700	\$58,700	High school diploma or equivalent
53-2031	Flight Attendants	3	\$51,300	\$50,700	High school diploma or equivalent
53-3032	Heavy and Tractor-Trailer Truck Drivers	2,267	\$48,300	\$49,100	Postsecondary non-degree award
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	296	\$46,600	\$49,700	High school diploma or equivalent

SOC	Occupation Group	GO VA 1		Labor Shed	Typical Education Requirements
		Employment	Avg. Annual Wages	Avg. Annual Wages	
43-5032	Dispatchers, Except Police, Fire, and Ambulance	160	\$44,500	\$44,900	High school diploma or equivalent
43-5011	Cargo and Freight Agents	14	\$43,700	\$49,400	High school diploma or equivalent
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	14	\$39,900	\$44,200	High school diploma or equivalent
53-7051	Industrial Truck and Tractor Operators	561	\$38,000	\$40,200	None
43-5071	Shipping, Receiving, and Inventory Clerks	700	\$36,800	\$38,100	High school diploma or equivalent
53-3033	Light Truck Drivers	685	\$36,500	\$41,300	High school diploma or equivalent
53-6032	Aircraft Service Attendants	4	\$33,700	\$37,100	High school diploma or equivalent
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1,517	\$33,400	\$35,500	None
43-9061	Office Clerks, General	2,108	\$33,300	\$35,900	High school diploma or equivalent
53-6099	Transportation Workers, All Other	9	\$32,600	\$35,200	High school diploma or equivalent
43-4051	Customer Service Representatives	2,347	\$32,500	\$36,300	High school diploma or equivalent
53-7065	Stockers and Order Fillers	2,977	\$30,300	\$31,300	High school diploma or equivalent
43-5021	Couriers and Messengers	87	\$29,800	\$31,400	High school diploma or equivalent
53-6061	Passenger Attendants	2	\$29,400	\$30,500	High school diploma or equivalent
All Logistics, Transportation, and Warehousing Occupations		18,168	\$46,900	\$49,800	
Total- All Occupations		132,918	\$48,800	\$52,500	

Source: JobsEQ® by Chmura