NC COMMUNITY COLLEGES
CREATING SUCCESS

Rural Advanced Manufacturing Partnerships Toolkit

How North Carolina's Rural-Serving Community Colleges Leverage Partnerships to Meet Advanced Manufacturing Workforce Needs

myFUTURENC
2 million by 2030

NC STATE UNIVERSITY
College of Education
Belk Center for Community College Leadership and Research

EdNC

ABOUT US

The Rural Postsecondary Practices Partnership (RP3) brings together a small group of close partners, including the North Carolina Community College System, Belk Center for Community College Leadership and Research, EducationNC, and myFutureNC.

The commitment of these partners is to understand, curate, and share practices and policies that strengthen rural-serving community colleges. Through a synthesis of conversations with college leaders, targeted research, and publicly available information, the RP3 team curates promising practices across the nearly 50 rural-serving institutions in North Carolina – the largest rural college network in the United States.

This collaborative research is ongoing, and we encourage you to reach out with additional examples, questions, updates, or feedback. Reach us at RP3@nccommunitycolleges.edu.

OUR PARTNERS

NC COMMUNITY COLLEGES
CREATING SUCCESS

The North Carolina Community College System's mission is to open the door to high-quality, accessible educational opportunities that minimize barriers to postsecondary education, maximize student success, develop a globally and multi-culturally competent workforce, and improve the lives and well-being of individuals.

NC STATE UNIVERSITY
College of Education
Belk Center for Community College Leadership and Research

The Belk Center for Community College Leadership and Research, housed in the College of Education at North Carolina State University, serves North Carolina's community colleges by convening leaders, creating tools, and catalyzing social and economic mobility for learners – building stronger, more resilient communities.

EdNC

EducationNC (EdNC) is a nonprofit news organization that provides essential news, important stories, and diverse perspectives about education in North Carolina, including coverage of the state's 58 community colleges and postsecondary issues and institutions. You can read EdNC's statement on its journalistic independence here.

myFUTURENC
2 million by 2030

myFutureNC is a 501(c)(3) nonprofit that aligns and coordinates local, regional, and state actions to dramatically increase the attainment of industry-valued credentials and postsecondary degrees in pursuit of our state's goal of having 2 million North Carolinians ages 25-44 hold an industry-valued credential or postsecondary degree by 2030.

ACKNOWLEDGMENTS

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ABOUT THIS TOOLKIT

The advanced manufacturing sector is a key driver of North Carolina's economy, requiring a skilled and adaptable workforce to meet the demands of rapidly growing and evolving industries such as aerospace, biotechnology, and renewable energy. Across the state, and particularly in rural areas, developing a sustainable pipeline of talent for the advanced manufacturing workforce is more critical than ever to the continued economic growth and resilience of entire regions and communities.

Every day, North Carolina's community colleges respond nimbly to employer needs in advanced manufacturing by serving as local and regional hubs for education and training. Collaborating with a wide variety of cross-sector partners, our institutions reach and support talented students of all ages and backgrounds and promote economic development and vitality through the services we provide to—and develop alongside—business and industry.

Through a series of conversations with college leaders and a scan of publicly available information, RP3 has identified dozens of examples of partnerships involving our state's rural-serving community colleges and mapped these back to a series of collaborative strategies being leveraged by colleges in response to advanced manufacturing workforce opportunities. While not unique to rural contexts, partnerships like these are especially critical for our state's rural-serving institutions, as collaboration maximizes the range of resources to which these colleges and their communities have access.

A framework for partnership strategies is summarized in Table 1 on the following page and explored in more detail throughout the toolkit. Whenever possible, we have provided links to additional information and/or related coverage about each partnership featured in this toolkit. While more than 45 of our rural-serving community colleges are represented in the pages that follow, this toolkit is not meant to be an exhaustive inventory of rural-serving advanced manufacturing partnerships; instead, we hope that by lifting up selected examples of successful partnership models, we can raise awareness about and promote additional support for these partnerships and the many others like them across the state.

This toolkit is part of a series focused on different high-demand workforce sectors. To check out our other toolkits, including one focused on rural healthcare partnerships, please click here.

Figure 1: Stages of Partnership

All are **evolving**, and some may have **ended or will be ending**. We believe there is something to be learned from all of them, which is why they are included here.

Figure 2

North Carolina's community colleges engage a **wide variety of cross-sector partners** including:

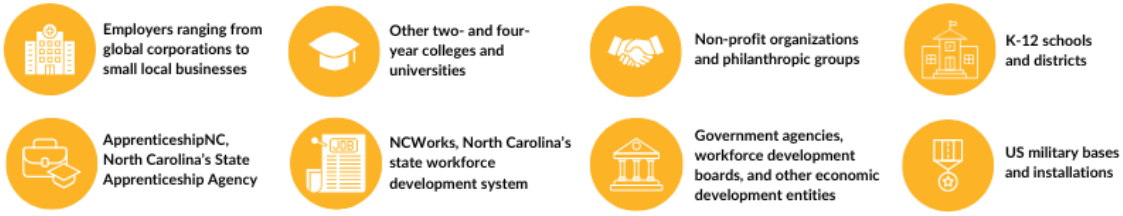


Table 1: Advanced Manufacturing Workforce Opportunities and Related Partnership Strategies Explored in This Toolkit

Opportunity: Recruiting the next generation of talent to a changing manufacturing landscape 5

PARTNERSHIP STRATEGIES:

- Offering special events, camps, demos, tours, and other programs for youth focused on promoting awareness of careers in advanced manufacturing and bridging students into related dual enrollment opportunities 6
- Connecting adults who advise and support youth—including K-12 educators, school counselors, and family members—with opportunities to learn more about modern-day careers in advanced manufacturing 11
- Coordinating and/or supporting work-based learning opportunities in advanced manufacturing—including job shadowing, internships, and Youth or Pre-Apprenticeship Programs that bridge into Registered Apprenticeship Programs—for high school students and recent graduates 13
- Engaging high-potential populations—including opportunity youth, members of our state's military-affiliated community, neurodiverse students, and justice-involved individuals—to expand the state's advanced manufacturing talent pool 15

Opportunity: Keeping pace with evolving industry demands via updates to space, equipment/technology, and curriculum 18

PARTNERSHIP STRATEGIES:

- Creating flexible, innovative spaces dedicated to workforce development in advanced manufacturing and other trades; these often boost economic development by offering prototyping, incubation, and customized training spaces for businesses in the region 19
- Developing fast and flexible pathways, including stackable and micro-credentials and Pre- and Registered Apprenticeship Programs, for learners to acquire the specific skills and competencies needed for their current or desired roles in advanced manufacturing 25
- Creating regular opportunities for meaningful dialogue and knowledge sharing with colleagues in the advanced manufacturing industry and across the education continuum, with a special focus on identifying mutual workforce development goals and priorities and collaborative approaches to achieving them 28

Opportunity: Responding nimbly and collaboratively to meet the real-time and future needs of advanced manufacturing employers across the state 30

PARTNERSHIP STRATEGIES:

- Leveraging regional and statewide networks—including industry-specific hubs—to offer training, recruitment support, and other services to employers at scale 31
- Providing tailored training solutions to employers through programs like NCEdge, an innovative customized training program coordinated by the North Carolina Community College System to help employees upskill, reskill, and learn new skills 33
- Collaborating with other two- and four-year institutions to align educational offerings with local and regional industry needs and expand career opportunities for students 36

ADVANCED MANUFACTURING IN NORTH CAROLINA

Advanced manufacturing refers to **using innovative technologies, processes, and methods to improve product design, production, and distribution.** It emphasizes the integration of cutting-edge technologies, automation, and data-driven decision-making to enhance efficiency, quality, and customization in manufacturing processes.

Specific industries contributing to North Carolina's advanced manufacturing sector include:

- Advanced materials including semiconductors, nonwoven textiles, advanced filtration systems, and composites
- Renewable energy including sources like solar, wind, and water
- Aerospace and defense
- Biotechnology and pharmaceuticals
- Automotive, truck, and heavy machinery including electric vehicles
- Food and beverage manufacturing
- Plastics and chemicals

NORTH CAROLINA MANUFACTURING BY THE NUMBERS

The average NC manufacturing salary is **$79,519**

Manufacturing generates **17%** of NC's gross state product

The manufacturing sector employs **474,000** North Carolinians, representing **10%** of the state's workforce

NC manufacturers account for **$102 billion** of the state's total yearly output

Source: *The National Association of Manufacturers (2021)*

NORTH CAROLINA'S MANUFACTURING REVOLUTION: BOOMING DEMAND IN A RAPIDLY EVOLVING SECTOR

North Carolina has long been a leader in manufacturing, beginning with industries like tobacco, textiles, and furniture, which dominated the state's economy in the 19th and 20th centuries. More recently, advanced manufacturing—blending traditional manufacturing expertise with cutting-edge technologies—has become a cornerstone of North Carolina's economic evolution. Today, North Carolina is home to the largest manufacturing workforce in the southeastern United States, and the industry supports more than 474,000 jobs across the state. In the last decade, the state's manufacturing workforce has grown by seven percent and now contributes approximately $100 billion annually to North Carolina's economy.[1]

In December 2024, North Carolina was named the top state for manufacturing by Site Selection Group, a national firm that specializes in helping companies make informed decisions about where to locate their facilities. Each year, the firm evaluates and ranks states' competitiveness for manufacturing investments, and North Carolina consistently ranks near the top thanks to its skilled workforce, renowned education system, strategic location, well-developed infrastructure, and business-friendly environment, among other factors.[2]

While North Carolina is well-positioned for continued growth and success as an advanced manufacturing leader, the speed with which specific industries are expanding and evolving means that the demand for highly skilled workers often exceeds the available supply. Similarly, the rapid evolution of technology—including the increasing focus and reliance on "Industry 4.0" or "Fourth Industrial Revolution" technologies like robotics, automation, the Internet of Things (IoT), and artificial intelligence—presents various financial, technological, and human capacity challenges to employers and colleges alike in their work to keep pace with these changes.[3]

NORTH CAROLINA'S COMMUNITY COLLEGES: A WORKFORCE DEVELOPMENT ENGINE

The North Carolina Community College System is a vital resource for the state's advanced manufacturing sector, developing a skilled workforce at the speed of business expansion while addressing the real-time and future needs of industry partners through education, training, and various specialized partnerships.

Our 58 colleges offer an evolving range of specialized courses and programs that align with workforce demands, ranging from industry-recognized certifications and credentials to associate degrees in pathways like computer-integrated machining, engineering, and mechatronics. Graduates are prepared to meet industry standards, whether they are entering the job market for the first time or learning new skills to stay competitive in the workforce. The System's economic development division also coordinates a portfolio of innovative programs for new, expanding, and existing businesses and industries across the state.

- ApprenticeshipNC, the State Apprenticeship Agency housed under the North Carolina Community College System, supports employers—including many in the advanced manufacturing sector—in leveraging Registered Apprenticeship and Pre-Apprenticeship Programs to meet workforce needs. Employers who use Registered Apprenticeship as a workforce development tool build and retain an adaptable, skilled, and effective workforce through a combination of paid on-the-job training and supplemental education. Registered Apprenticeship is a win-win-win training and development approach because program completers earn an average of $10,000 more per year than non-apprentices, most employers realize a return on investment of 50 percent or higher, and it's proven to provide a return of $23 to $27 for every dollar of public investment. It is also a great way to transfer the knowledge of workers that are aging into retirement.[4]

  In addition to acting as the registrar for Registered Apprenticeship Programs in North Carolina, ApprenticeshipNC connects employers to apprenticeable occupations, federal and state funding, and other organizations that promote and engage in Registered Apprenticeship—including K-12 school systems,

individual colleges, local workforce boards, community-based organizations, industry associations, and Apprenticeship Consortia. ApprenticeshipNC also supports several Apprenticeship Consortia and Group Programs, which connect employers to one another and to nearby K-12 and college partners and provide area employers with a rich talent funnel. Several examples of Registered Apprenticeship and Pre-Apprenticeship Programs, including Consortia and Group Programs, connected to the advanced manufacturing sector are provided on pages 13-14 and 25-26 of this toolkit.

- **NCEdge**, the first statewide customized training program of its kind, connects all 58 of North Carolina's community colleges with companies to develop and provide tailored training solutions, helping employees upskill, reskill, and learn new skills. This top-tier recruitment, screening, and training assistance—provided at no cost to qualifying businesses in sectors like advanced manufacturing—supports employers in meeting specific business needs like training employees for new processes, equipment, or expansions. Several examples of customized training solutions for employers in the advanced manufacturing sector are provided on pages 33-36 of this toolkit.

- **BioNetwork**, the System's comprehensive life science training initiative, provides workforce development, training, and educational resources to prepare students and workers for careers in biotechnology, pharmaceuticals, and related fields. Check out page 32 of this toolkit for more information about how the BioNetwork is helping position North Carolina as a biotech leader and supporting economic growth in this high-demand industry.

- **The Small Business Center Network** supports entrepreneurs looking to start and grow businesses in North Carolina with free access to confidential business counseling, training, and workshops through a network of Small Business Centers co-located with each of the state's 58 community colleges.

Our System also collaborates closely with statewide economic development organizations like the **North Carolina Manufacturing Extension Partnership**, the **Economic Development Partnership of North Carolina**, and the **North Carolina Chamber of Commerce** to ensure the workforce solutions we provide through our 58 community colleges are aligned with industry needs, driven by innovation, and tailored to support the growth and competitiveness of advanced manufacturing across the state.

OPPORTUNITY

RECRUITING THE NEXT GENERATION OF TALENT TO A CHANGING MANUFACTURING LANDSCAPE

Developing a pipeline of highly skilled local and regional talent for the advanced manufacturing sector is essential for sustaining economic growth and securing North Carolina's spot as a leader in an increasingly competitive global economy. The state is expected to add 16,500 jobs in manufacturing by 2032, with significant job gains anticipated in food manufacturing (+4,500), machinery manufacturing (+4,100), chemical manufacturing (+3,600), and transportation equipment manufacturing (+2,600).[5] This growth, coupled with the fact that many experienced manufacturing workers are nearing retirement, means employers are facing a growing skills gap that threatens to leave critical jobs unfilled. A renewed focus on recruiting a new generation of talent to the workforce brings with it the opportunity to expand the advanced manufacturing talent pool via outreach to K-12 students, college students, and engagement with high-potential populations like opportunity youth, members of our state's military community, and neurodiverse students.

To attract new talent, the sector must first raise awareness among students and job seekers about the high-paying, technology-driven careers available in today's modern manufacturing facilities. Colleges and employers are actively working to increase students' awareness of advanced manufacturing career paths while addressing lingering misperceptions that portray manufacturing as low-skill, low-wage work. By showcasing clean and highly automated facilities where technology plays a central role and emphasizing the stability, career growth, and competitive wages available locally and regionally in the sector, they aim to inspire potential students—and those who influence them—to see manufacturing as a dynamic and rewarding career option, driving greater enrollment in related courses and programs.

PARTNERSHIP STRATEGY

Offering special events, camps, demos, tours, and other programs for youth focused on promoting awareness of careers in advanced manufacturing and bridging students into related dual enrollment opportunities

- For more than a decade, **College of The Albemarle** has hosted an annual event and open house for middle and high school students, their families, and adult job-seekers to learn more about careers in advanced manufacturing. Participants from all seven counties in the college's service area take in-person tours of featured programs, meet instructors, and hear from successful program alumni and local employers who hire graduates.
- In November 2024, **Cleveland Community College** partnered with **Cleveland County Schools** and **Albemarle Corporation** to celebrate National STEM/STEAM Day by hosting a youth robotics workshop at the college. Local middle school students had the opportunity to explore the college's Advanced Technology Center (featured on p. 21 of this toolkit) and hear from Albemarle metallurgists about the importance of science in our everyday lives. The college also hosts an annual Making It Work event for high school juniors and seniors from Cleveland and Rutherford counties in collaboration with **Cleveland County Economic Development Partnership** and local business and industry. The event includes a tour of a local manufacturing facility, an industry expo, and an engineering competition hosted by **North Carolina State University**. Recently, the college expanded the event's reach by offering a Junior Making It Work fair, giving area seventh graders a firsthand look at local career opportunities in the advanced manufacturing sector.
- JOCO Works, presented by **Novo Nordisk**, is an industry-led collaborative supported by education, business, civic, and government partners created to meet Johnston County's future workforce needs. The collaborative, which launched in 2019, hosts an annual, in-person career expo at **Johnston Community College** for approximately 3,500 eighth graders from across the county. In addition to the college, partners include **Triangle East Chamber of Commerce**, **Johnston County Public Schools**, **Johnston County Economic Development**, **Benson Chamber of Commerce**, **Clayton Chamber of Commerce**, local governments, and area businesses. At the expo, students experience real-world simulations, interact with local employers, and better understand in-demand careers and the education needed to reach them in industries like biotechnology, renewable energy, and manufacturing, among others.
- Made in Montgomery Day (formerly Manufacturing Day) launched in 2011 as an annual initiative to raise awareness about local career opportunities in modern manufacturing. The event has since expanded to highlight multiple industries. Participating employers set up informational tables in a shared space adjacent to Montgomery Central High School (co-located with **Montgomery Community College** and a new CTE Center that is shared by the college and Montgomery County

Schools), and students stop by to explore employment opportunities, check out product samples, and pick up branded swag.

- **Brunswick Community College** hosts an annual Manufacturing Day for local manufacturers to highlight their work, locations, and career opportunities to local youth. In 2024, the day began with a behind-the-scenes tour at **Precision Swiss Products** before students were treated to lunch with a guest speaker from the local manufacturing sector. The event concluded with interactive tours and hands-on activities at the college's state-of-the-art Integrated Machine Technology Lab. The event is made possible by partnerships between the college and **Brunswick County Schools**, local employers, **NCWorks**, and the **Cape Fear Workforce Development Board**.

- In late 2023, **Edgecombe County Community College** received a three-year **National Science Foundation** grant to modernize its manufacturing programs. Through the grant, the college collaborates with local manufacturing employers and the **Tar River Region Boys and Girls Club** to support youth in developing Industry 4.0 skills. The grant covered the costs of state-of-the-art training equipment, including a Skill Boss Logistics machine and a vibration analysis trainer.

- **Randolph Community College** partners with local employers and area schools (including **Randolph County Schools**, **Asheboro City Schools**, and several charter schools) to host several events promoting careers in advanced manufacturing to local students. An Annual Manufacturing Day for rising high school juniors features hands-on activities and in-person tours of local manufacturing facilities to spark interest in available manufacturing jobs and aligned programs offered by the college and share information about Apprenticeship Randolph and dual enrollment opportunities. The college also hosts an Automotive Day for high schoolers featuring demonstrations, 15-minute hands-on stations led by current college students, and opportunities to connect with college faculty and staff, including career coaches, the director of student recruitment, and success coaches.

- In early 2024, **Rockingham Community College** received a grant from the **Golden LEAF Foundation** for a collaborative workforce development project with **Rockingham County Economic Development** and **Rockingham County Schools** to help students explore careers in three high-demand career fields, including advanced manufacturing. The project, called **LevelUp Rockingham**, involves connecting students to career opportunities starting in middle school, leading to aligned high school courses and further career exploration through the college. Funding will cover faculty positions at the college, equipment and technology in the three pathways, and a new position—a Workforce Development Manager housed in the county's economic development office—that will serve as a liaison between the college, school district, county, and industry.

- Community colleges across the state engage students in hands-on skill-building and leadership development through their **SkillsUSA** chapters, joining a national network that connects more than 400,000 career and technical education students and educators in middle schools, high schools, and postsecondary institutions nationwide. Participants compete in more than 130 in-demand occupational areas, from 3-D animation to welding. In 2024, students from across the state took home 42 medallions at the National SkillsUSA Championship, and North Carolina's delegation was the third largest in attendance, with 113 community college student contestants from 17 community colleges participating.

Colleges and companies often host open special events to coincide with National Manufacturing Day (celebrated annually on the first Friday in October) and/or National STEM/STEAM Day (celebrated annually on November 8th), opening their doors to students, families, educators, and community members.

STRATEGY SPOTLIGHT

LEVERAGING STEM ECOSYSTEMS TO FACILITATE CAREER-ALIGNED LEARNING OPPORTUNITIES

North Carolina is home to several STEM ecosystems—collaborative networks of regional businesses, school districts, higher education institutions, economic development municipalities, funders, government partners, and others working together to promote education, career pathways, and innovation in the fields of science, technology, engineering, and mathematics (STEM). With support from the NC STEM Center and other partners, these networks connect students to real-world STEM learning opportunities that directly align with career opportunities throughout the state. In addition to the two ecosystems profiled below, others working across the state include STEM West and STEM SENC.

The STEM East Network aligns innovative STEM education programs with the needs of regional employers to support career pathways, build a solid workforce, and add considerable value for relocating and expanding businesses. Launched in 2009 by the NC East Alliance—a regional economic development organization representing several counties in eastern North Carolina—to grow the future workforce in the region, STEM East brings together **30 school districts, 15 community colleges, and dozens of employers** and to develop and deliver programming that provides students with the knowledge and skills required for the regional workforce in sectors like advanced manufacturing. One of the network's signature programs, **Industry in Schools**, is highlighted on p. 12 of this toolkit.

Serving learners in the southern Appalachians of Western North Carolina, the Smoky Mountains STEM Collaborative, led by **Southwestern Community College** in partnership with the **National Aeronautics and Space Administration (NASA)**, works to enrich STEM education in the region's schools and communities. Through the initiative, the college collaborates with several local partners to expand opportunities for STEM education, including **Appalachian State University**, the **Pisgah Astronomical Research Institute**, the **Great Smoky Mountains National Park**, **NASA Marshall Space Flight Center**, **Cherokee Central Schools**, **Jackson County Public Schools**, **Macon County Public Schools**, and **Swain County Public Schools**. A special focus of the initiative is engaging a diverse population of learners, including enrolled members of the **Eastern Band of the Cherokee Indians** and many first-generation college students, who are underrepresented not only in STEM fields but in higher education more generally.

SPARKING INTEREST IN MODERN MANUFACTURING AND STEM CAREERS VIA YOUTH CAMPS

Community colleges across the state offer a variety of engaging, educational, and skill-building camps for youth of all ages. Available during the summer, over school breaks, and in the evenings, these camps cover various interests and topics and give students a sneak peek at college and employer facilities while introducing them to staff and relevant educational programs. Many colleges partner with university outreach programs like **The Engineering Place at North Carolina State University**, the education outreach arm of **NC State's College of Engineering**, to develop and offer these experiences.

- In partnership with the **Eastern Carolina Aviation Heritage Foundation**, **Craven Community College** offers a week-long, non-residential Aviation Camp in the summer for 7th-12th graders featuring exclusive tours of aviation facilities, connections with industry professionals, and opportunities to see the inner workings of airports and aircraft maintenance centers. Local educators lead the camp in partnership with engineers from **Fleet Readiness Center East**.
- **Wayne Community College** offers several summer learning opportunities for students focused on careers in advanced manufacturing. In recent years, these have included a six-week Industrial Systems Summer Academy and Mechanical Engineering Summer Academy, offered as part of the **Career and College Promise** program for area high school students. Each academy consisted of two college-credit courses toward an Industrial Systems Certificate and a Mechanical Engineering Technology/Engineering Technology Certificate, respectively. For more than a decade, the college also hosted Camp Kilowatt, an alternative energy camp for middle and high school students to explore STEM areas like electronics, robotics, rapid prototyping/additive manufacturing, and alternative energy. Camp Kilowatt was made possible by support from the **Duke Energy Foundation**.
- **Piedmont Community College** offers free summer camps to area middle and high school students, including a camp focused on welding and another on robotics and automation in the mechatronics engineering field.
- **Blue Ridge Community College** offers a portfolio of Summer Academy camps connecting elementary, middle, and high school students to fun, affordable, high-quality learning opportunities in advanced manufacturing and other fields. Previous camps have included a one-day introduction to welding called ArcStrong, a Cool Automotive Repair (CAR) Camp exploring automotive maintenance basics, a Metal Makers Academy introducing students to computer-aided drafting and machining, and a Young Engineers Experience (YEE) Camp focused on robotics, electrical circuits, electronic soldering, hydraulics, roller coaster physics, and bridge building.

- **Southeastern Community College** offers summer discovery camps for students ages 12-15 as a precursor to the high school summer camps provided by the college. These include an automotive camp called Gearheads Garage and a Junior Innovators Workshop focused on hydraulics, pneumatics, and electrical engineering. Thanks to partnerships with **Columbus County Schools** and **Whiteville City Schools**, these camps are free, and meals and transportation are also included for participating students.
- **McDowell Technical Community College's** Mad Science STEM Camp is a free, four-day camp for rising 8th graders that introduces participating youth to topics including alternative energy sources, engineering, and laboratory safety through a series of hands-on activities. The camp is offered annually in collaboration with the BioNetwork (see page 32 of this toolkit for more information about the BioNetwork).
- **Tri-County Community College** offers a summer STEM Camp for students ages 7-14 to explore STEM concepts through adventures in fields like electrical engineering and mechatronics, 3D design, and robotics.

PARTNERSHIP STRATEGY

Connecting adults who advise and support youth—including K-12 educators, school counselors, and family members—with opportunities to learn more about modern-day careers in advanced manufacturing

- The **Kenan Fellows Program at North Carolina State University** offers an industry immersion fellowship to K-12 public and charter school educators statewide. The program places selected educators in a three-week summertime immersion experience in a host industry to connect the skills and content they teach with applications in the workplace. Several of North Carolina's rural-serving community colleges have served as host sites focused on the needs of the renewable energy industry, including a fellowship hosted by **Craven Community College's Volt Center** (see p. 19 of this toolkit for more information about the Volt Center) and fellowships hosted in collaboration with **Steps4Growth** programs at **Alamance Community College**, **Carteret Community College**, and **Martin Community College** (see p. 31 of this toolkit for more information about Steps4Growth).

- **BioNetwork**, the life science training initiative of the North Carolina Community College System (see p. 32 of this toolkit for more information about the BioNetwork), offers a variety of resources and professional development opportunities for college instructors, middle and high school educators, and school counselors. Among other resources like classroom visits and instructional materials, customized professional development opportunities are available, as is assistance for colleges interested in hosting middle and high school educators and counselors on their campuses to showcase and promote alignment with specific programs.

- **The Career Accelerator Program** at **Alamance Community College** (now known as **Apprentice Alamance**) partnered with the **Alamance-Burlington School System** in 2019 to develop a middle school externship program connecting school staff with advanced manufacturing employers in the county. Externship participants were placed in two industry partner sites, including **AKG Mebane**, over four days to support administrators, teachers, and counselors—school staff with the most potential to impact a student's decision about which courses to take in high school—in gaining valuable industry experience to help advise students on educational and career opportunities in the advanced manufacturing industry.

- **DavieConnect**, a partner of **Davidson-Davie Community College**, offers multi-day summer externship opportunities to educators from **Davie County Schools** in partnership with **Davie County Economic Development Commission** (DCEDC) and local businesses representing various sectors, including and beyond advanced manufacturing. The initiative began in 2014 with a five-year, $50,000 grant from the **Mebane Charitable Foundation**; seeing its value, DCEDC has continued to support the program after the conclusion of the grant.

STRATEGY SPOTLIGHT

OFFERING IMMERSIVE INDUSTRY EXPERIENCES AND CONTEXTUALIZED CURRICULUM SUPPORT TO EDUCATORS

The **Rivers East Academy**, supported by the **Golden LEAF Foundation**, empowered high school teachers and counselors in six northeastern NC counties to better understand local career pathways in advanced manufacturing. Over two years, four cohorts of educators (more than 100 total) participated in immersive sessions at four community colleges—**Beaufort County Community College, Martin Community College, Pitt Community College, and Roanoke-Chowan Community College**—gaining insights and connecting with local employers to help guide students toward successful careers.

The impact of the Academy's training sessions was extended through a series of externships, which enabled educators to spend a day on-site with regional employers like **Manning Masonry, Domtar, Nutrien, Iconic Marine, Edwards Inc, and the Pharmaceutical Services Network at Pitt Community College.** By observing and interacting with professionals in action, participating educators gained a deeper understanding of the diverse career opportunities in advanced manufacturing available within their communities.

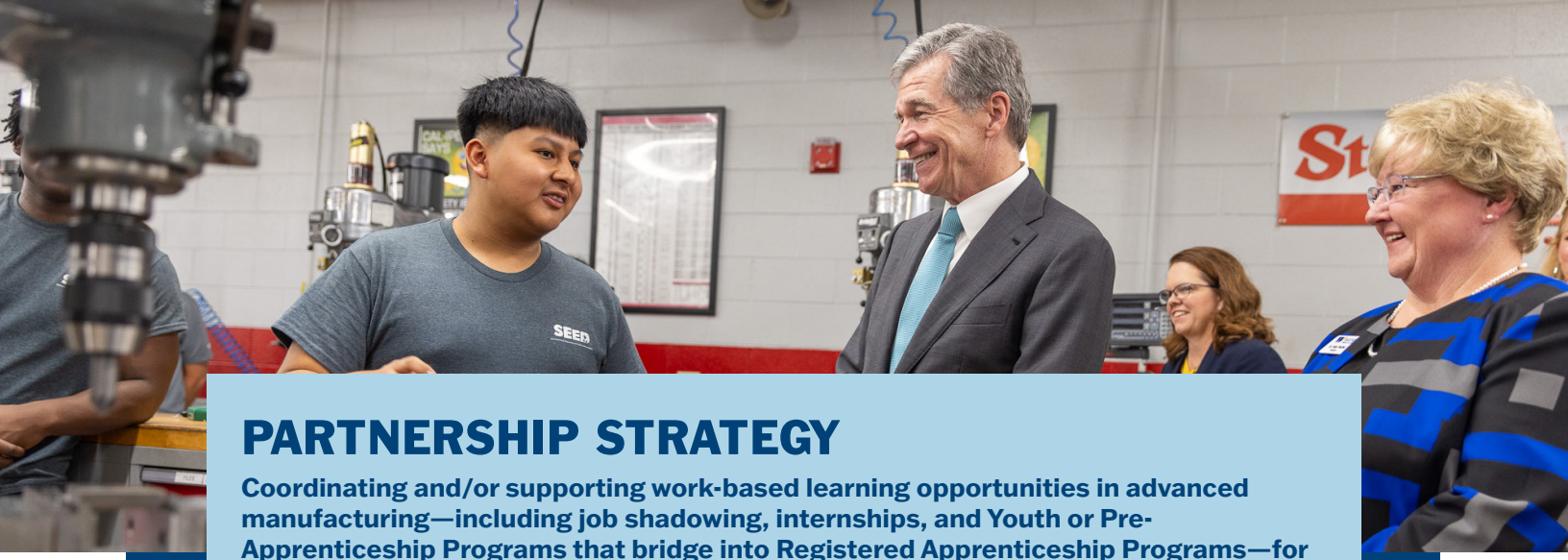
The program was administered by the **Mid-East Commission** and the **Rivers East Workforce Development Board**, with additional support from **Beaufort, Bertie, Hertford, Hyde, Martin and Pitt County School Systems**. Support from **NENC Career Pathways** ensured that the program's goals aligned with broader regional workforce needs, and **SkillsUSA** also contributed significantly by integrating an employability skills framework into the Academy's curriculum, enhancing the educators' ability to impart essential workplace skills.

Staff and administrators from the participating community colleges were integral to the planning and execution of the program sessions, and college facilities served as the physical venues for the Academy programming. By opening their doors and sharing their resources, participating colleges not only supported the professional development of local educators but also laid the groundwork for future collaborations that could extend into student internships, job placements, and other opportunities.

STEM East's Industry in Schools initiative connects educators with regional business and industry partners via a series of summer **Teacher Leadership Institutes** for educators centered on career clusters important to eastern North Carolina. Bolstered by the initial success of the institutes, which launched in 2023, and thanks to a $15 million appropriation from the **North Carolina General Assembly** and a $1.6 million grant from the **BelleJAR Foundation**, STEM East worked with education and industry leaders to expand the number of industry clusters served across the region.

In 2024, a total of nine two-day institutes across six industry clusters (smart agriculture, aviation science, green energy, biopharma, health science, and blue economy) were offered at no cost to K-12 educators teaching a core content area in one of STEM East's member districts. The institutes brought together 250+ educators from 25 school districts to explore hands-on learning in partnership with nine community colleges. Teachers engaged in industry tours and workshops to deepen their understanding of local career opportunities for their students, from high-tech agriculture to healthcare and aviation. Institute staff also worked with participating educators to provide regional context to their K-12 standards instruction, making lessons more engaging and relevant for students.

Participating teachers received a $175/day stipend, and hotel accommodations were provided for educators traveling more than 50 miles one-way. Meals—including an industry banquet connecting educators with regional employers—were also provided. Institutes related to the advanced manufacturing sector included an **Aviation Sciences Institute** hosted by **Craven Community College** and **College of The Albemarle**, a **Green Energy Institute** hosted by **Halifax Community College**, and a **BioPharma Manufacturing Institute** hosted by **Pitt Community College**.



PARTNERSHIP STRATEGY

Coordinating and/or supporting work-based learning opportunities in advanced manufacturing—including job shadowing, internships, and Youth or Pre-Apprenticeship Programs that bridge into Registered Apprenticeship Programs—for high school students and recent graduates

- **Southeastern Education and Economic Development (SEED)**, an initiative of the **North Carolina Business Committee for Education** that is sponsored by **Smithfield Foods**, is focused on growing the advanced manufacturing and agriculture workforce in southeastern North Carolina through work-based learning and Youth Apprenticeships. After a successful launch in the summer of 2024, SEED will offer eight-week summer academies in advanced manufacturing and agriculture in the summer of 2025 in partnership with **Wayne Community College**, **Lenoir Community College**, **James Sprunt Community College**, **Sampson Community College**, and **Wilson Community College**. Open to high school students and recent graduates, the academies support students in exploring the worlds of industrial systems and agricultural science through a mix of classroom instruction and hands-on experiences while getting paid $15/hour and earning up to 15 college credits transferable to a Registered Apprenticeship or associate degree program.

- **Fostering Learning through Education, Employment, and Trades (FLEET)** is a new branch of **Surry-Yadkin Works**, coordinated by **Surry Community College**, focused on preparing area high school students for high-wage positions in the manufacturing sector in partnership with Altec. Selected students from **Elkin City Schools**, **Mount Airy City Schools**, **Surry County Schools**, and **Yadkin County Schools** attend high school classes at Altec's Mt. Airy operations facility for half of the school day and learn a trade through a paid Pre-Apprenticeship experience with the company for the other half of the school day. In addition to standard high school courses, students receive employability and durable skills training alongside wraparound support services. FLEET launched in 2024 with a grant from the **Golden LEAF Foundation**.

- **Apprenticeship Randolph** launched in 2016 as a collaborative effort between **Randolph Community College**, the **Randolph County School System**, **Asheboro City Schools**, the **Asheboro/Randolph Chamber of Commerce**, and local manufacturers to bridge interest and skill gaps in modern manufacturing and provide a vehicle for expanding the advanced manufacturing workforce in Randolph County. Today, the program supports high school juniors and seniors in connecting to six-week, Pre-Apprenticeship summer programs consisting of college classes and on-the-job training with an employer partner. For students who continue into a Registered Apprenticeship after this trial period, the program is spread over three years, with students receiving paid, on-the-job training while earning an associate degree through the college and a Journeyworker Certificate.

- **Davidson and Davie Apprenticeship Consortium (DDAC)** is an alliance of manufacturing companies in Davidson and Davie Counties offering Registered Apprenticeships in advanced manufacturing, electrical engineering, and mechanical engineering. The program is open to juniors and seniors in high school, who complete an initial summer Pre-Apprenticeship before transitioning into a Registered Apprenticeship Program with a participating employer. Over the course of the program, students are paid for on-the-job and classroom training and earn an

associate degree from **Davidson-Davie Community College**, with all tuition, books, and fees covered, among other benefits.

- **NCGrads2Work** connects high school seniors from Pitt and surrounding counties with an immersive, two-day training program offered through the **NC Pharmaceutical Services Network at Pitt Community College** (featured on p. 31 of this toolkit). Participants work in a simulated manufacturing environment to learn the history and methods of pharmaceutical tablet making and complete a series of activities to learn about working in a sterile environment where pharmaceutical products are produced. Participants learn about interviewing techniques, resume writing, and team building, and program completers are awarded a Pharma Expedited Training Solutions certification and guaranteed an interview with local life sciences manufacturing employers like **Thermo Fisher Scientific** and **Catalent**. The program, launched in 2019, was developed with Thermo Fisher Scientific and the **North Carolina Biotechnology Center**. Building on its early successes, it received a funding boost in 2022 via a $25 million grant to the **Accelerate NC - Life Sciences Manufacturing initiative** as part of the U.S. Economic Development Administration's Build Back Better Regional Challenge.

STRATEGY SPOTLIGHT

CULTIVATING A PIPELINE OF TALENT FOR MANUFACTURING APPRENTICESHIP OPPORTUNITIES

Rockingham County Apprenticeship and Technical Opportunities Partnership (RockATOP) offers a Pre-Apprenticeship to Registered Apprenticeship pathway for high school juniors and seniors in Rockingham County in several advanced manufacturing industry sectors, among other pathways. RockATOP has designed a comprehensive apprenticeship application process to match interested students with participating employers and maximize their success in the program. This process includes in-school and out-of-school informational sessions and industry open houses for interested students and their families, plus a multi-day invitational event for selected applicants to participate in hands-on activities, problem-solving situations, and team-building scenarios while being observed by and interacting with employer representatives to facilitate strong student-to-employer matches.

PARTNERSHIP STRATEGY

Engaging high-potential populations—including opportunity youth, members of our state's military-affiliated community, neurodiverse students, and justice-involved individuals—to expand the state's advanced manufacturing talent pool

- Work in Nash (WIN) Academy, developed collaboratively by **Nash Community College** and **Nash County Public Schools**, is a three-week program for recently graduated high school students who have not yet decided on a college or career path. Courses are offered to participants ("Academy Cadets") on the college's campus and are taught by college instructors with support from local business and industry partners. These partners, including many in the advanced manufacturing sector, guarantee interviews for WIN Academy completers, and Cadets have the chance to tour the facilities of companies like **Edwards**, **Belt Concepts of America**, **Freedom Industries**, **Rocky Mount Electric Motor**, **Cummins**, **FirstWave Innovations**, **LS Cable & System USA**, **Poppies**, **Pfizer**, and **Sara Lee**.

- Work in Burke, a collaborative project led by **Burke Development, Inc**. and **The Industrial Commons** in partnership with **Burke County Public Schools**, **Western Piedmont Community College**, and **NCWorks**, supports young people in Burke County in continuing their education and finding living-wage employment after high school. Among other work-based learning efforts, Work in Burke's **Jobs, Education, and Training (J.E.T.) program** focuses on opportunity youth ages 18-24 who are currently unemployed and not enrolled in school. Offered year-round with rolling enrollment, J.E.T. connects participants to a community mentor, professional development, wraparound support services, and quality employment opportunities in sectors including and beyond advanced manufacturing.

- **Craven Community College's** Advanced Manufacturing Tools for Veterans course, offered monthly and at no cost to veterans, service members, and their spouses, supports participants in transferring their military skills and experience onto their resume in a language that is recognized by the manufacturing industry and connects them with related career opportunities. Over the course of the three-week, 120-hour course, participants receive skills training and gain several certifications including forklift operator certification, Lean Six Sigma yellow belt certification, and OSHA 30-hour industrial safety certification. The course is part of the college's larger portfolio of programs and services for military families developed with partners like **Marine Corps Air Station Cherry Point**.

- **The North Carolina Biotechnology Center (NCBiotech)'s** Military Outreach and Veterans Engagement (MOVE) Initiative works to connect military talent with North Carolina's growing life sciences industry. With funding from the **Department of Labor's Employment and Training Administration**, the initiative is strengthening its existing agreement with **US Army Fort Bragg**

and strategically expanding to three other military installations across the state to connect more members of the military community to career training pathways supported by partners like **Pfizer** and **CSL Seqirus**. NCBiotech sponsors MOVE participants in attending **BioWork**, a job certification program offered by several community colleges (see p. 32 of this toolkit for more information about BioWork), including four colleges near North Carolina's military bases: **Central Carolina Community College**, **Fayetteville Technical Community College**, **Johnston Community College**, and **Pitt Community College**.

- **Coastal Carolina Community College** partnered with **LIFT's Operation Next Program** to provide free training to transitioning service members, military spouses, and veterans for careers in advanced manufacturing. Through LIFT, a public-private partnership that works across the federal government to advance manufacturing technology and talent for national security and economic development, Operation Next provides an accelerated, hybrid training program that combines online education with hands-on training to earn credentials for in-demand careers in advanced manufacturing. Coastal Carolina supported eligible service members interested in beginning their advanced manufacturing careers, many from nearby **Marine Corps Air Station New River and Marine Corps Base Camp Lejeune**, by helping them earn welding certifications.

- Several community colleges in southeastern North Carolina are partnering with **SkillBridge**, a **U.S. Department of Defense** program that allows military service members to participate in civilian job training during their last six months of service. These include **Cape Fear Community College**, **Coastal Carolina Community College**, **Craven Community College**, and **Fayetteville Technical Community College**. Eligible service members who are within 180 days of leaving the military can select from a variety of programs spanning many sectors and industries, including and beyond advanced manufacturing, and report to participating colleges as their duty stations.

STRATEGY SPOTLIGHT

BLENDING SKILLS AND PROMOTING NEURODIVERSITY TO MEET BIOTECHNOLOGY NEEDS

Recognizing that applied engineering and bioprocess technology students could tap into a wealth of additional career options via cross-training, **Johnston Community College** launched its innovative **Bio Blend Program** in 2020 with industry partners **Grifols** and **Novo Nordisk**. The program, funded by the **National Science Foundation**, offers several certificate and degree options to students, including opportunities to receive BioWork certification (see p. 32 of this toolkit for more information about BioWork) and Bio Blend certification along the path toward obtaining an associate degree.

Bio Blend 2.0 is also focused on increasing the variety of students in applied engineering and bioprocess technology programs by recruiting.

more students on the autism spectrum. The college partners with the **University of North Carolina TEACCH Autism Program** to provide Autism 101 training for community college faculty as well as industry employees. Local biotech employers promote an inclusive work environment by encouraging staff to attend this college-sponsored training. The college also partners with **CAST** to provide Universal Design for Learning training for middle/high school and community college instructors. Through these means, the college is working to provide students, faculty, and industry the skills and knowledge they need to reduce stigma and support a variety of learners while optimizing employment success in biotech.

ADAPTING EXISTING PROGRAMS TO SERVE JUSTICE-INVOLVED INDIVIDUALS

Catawba Valley Community College (CVCC) is partnering with the **North Carolina Department of Adult Correction (NCDAC)** to engage students from **Catawba Correctional Center** in the **Catawba Valley Furniture Academy**, an industry-driven training program designed by regional furniture manufacturers to prepare students for high-demand, skilled positions. This new workforce development partnership offers eligible individuals in work-release programs the opportunity to gain up to 1,500 hours of comprehensive furniture industry training. Students learn furniture manufacturing and related skills, preparing them for meaningful employment post-release. The program also emphasizes reducing recidivism by providing participants with a clear path to stability through employment.

This partnership emerged after college leaders met correctional center leaders at an education conference. Together, they recognized that the Furniture Academy facility, which usually opens to students in the evenings, was available during the day and that the space could be utilized by Catawba Correctional students during that time. The curriculum for Catawba Correctional students consists of eight units, from basic workplace expectations and background in the furniture industry to later units in woodworking, upholstery, and 21st-century technology. By the end of the program, students will have gained experience with several tools and machines, from bandsaws and fabric cutters to AutoCAD computer drawing software. The first cohort of seven Catawba Correctional students was recognized in November 2024 for completing Furniture Fundamentals, the first course in the training program, and a second cohort is in development.

OPPORTUNITY

KEEPING PACE WITH EVOLVING INDUSTRY DEMANDS VIA UPDATES TO SPACE, EQUIPMENT/TECHNOLOGY, AND CURRICULUM

The rapid pace of technological change has redefined what is possible in advanced manufacturing, opening the door to enhanced productivity and growth. It also means that colleges find themselves continuously adapting their programs and course offerings to reflect the latest industry trends. This innovation can be time- and resource-intensive, requiring ongoing investments in space, equipment, training, and curriculum development.

Employers seek workers proficient in operating state-of-the-art machinery like CNC tools, 3D printers, and robotics systems; when housed in upgraded buildings, labs, and learning spaces, these technologies can attract the interest of students and, by extension, businesses looking for sites that are prepared to provide their future workforce with hands-on experience using the same tools and technologies they will encounter in the workplace.

Curriculum updates are equally important in ensuring that community colleges meet the evolving needs of their industry partners. Collaborating closely with employers allows colleges to develop programs that address specific local and regional workforce needs, ensuring graduates possess the exact skills needed to be successful in the positions these employers seek to fill. Creating fast, flexible pathways to skill development and reducing the time it takes for prospective employees to fill jobs is also crucial to students, colleges, and employers alike. Colleges also seek opportunities to collaborate more intentionally with area K-12 partners and employers to strengthen alignment and ensure students are prepared for academic and career success.

PARTNERSHIP STRATEGY

Creating flexible, innovative spaces dedicated to workforce development in advanced manufacturing and other trades; these often boost economic development by offering prototyping, incubation, and customized training spaces for businesses in the region

- When fully completed, **Central Carolina Community College's E. Eugene Moore Manufacturing and Biotech Solutions Center** will be one of the largest facilities in the state focused on addressing the workforce needs of advanced manufacturing and biotechnology. The 220,000-square-foot, 22-acre campus will include state-of-the-art facilities for training in biotechnology, computer-integrated machining, industrial automation, welding, robotics, 3D printing/additive manufacturing, and short-term, on-demand customized skills training. There will also be soft landing and incubation spaces for new and expanding industries, along with a space operated collaboratively with the **North Carolina Manufacturing Extension Partnership** for community college students to work alongside students from universities on project-based learning experiences involving real-world industry processes and problem-solving. When auto parts manufacturer **Magneti Marelli** announced that it would be vacating its existing facility adjacent to the college, college leadership and local government and economic officials began to discuss the possibility of utilizing the site as a centralized hub for high-tech skills development that could grow and evolve along with area workforce needs. As a result of those conversations, **Lee County** acquired the facility, and the college is leasing it for $1 per year. Additional funding from college alumnus and local manufacturer Eugene Moore, coupled with pending grant applications, will provide the project's initial investment.

- **Craven Community College's Volt Center**, a workforce development training center located in a former power plant near downtown New Bern, offers hands-on learning in various trades with a special focus on serving nontraditional students. The building was converted through a partnership between the college, the **City of New Bern**, **Craven County**, **Craven 100 Alliance**, **Golden LEAF Foundation**, **Harold H. Bate Foundation**, **U.S. Economic Development Administration**, and local businesses. Now approaching 50 programs onsite, the center is a community-driven, community-based solution to meeting local workforce needs and is located in a high-traffic area within walking or biking distance for many of the prospective students the center aims to serve. The center, which opened in 2019, identifies emerging industry needs and forges partnerships with local manufacturers, ensuring its training programs remain relevant and responsive. Area businesses like **Bosch** and **Moen** have partnered with the center to provide job training to potential employees. More than 4,500 students have trained at the Volt Center to date, with many offered jobs before completing their coursework. The center also opens its doors to area K-12 educators for tours, and the facility also houses the college's Small Business Center Generator for startups based in Craven County that are focused on construction or light manufacturing, connecting them with support including onsite mentorship, educational resources, conference room access, and use of office equipment.

- In June 2024, **Lenoir Community College** broke ground on its new **Aviation Center for Excellence**, housed in the **North Carolina Global TransPark** in Kinston. The $25 million facility will support the college's efforts to prepare highly skilled workers for careers in aviation, aircraft maintenance, and advanced manufacturing. The facility will include multiple lab spaces, a flight school and flight simulator room, and an aircraft hangar, and will have direct access to the Global TransPark runway to simulate real-world conditions associated with the aerospace industry. In addition to programs for area high school students, the space will provide short-term training and traditional degree programs delivered in partnership with **East Carolina University** and **Elizabeth City State University**. The facility will include multiple lab spaces, a flight school and flight simulator room, and an aircraft hangar, and will have direct access to the Global TransPark runway to simulate real-world conditions associated with the aerospace industry.

- **The Manufacturing Solutions Center at Catawba Valley Community College** is a unique economic development asset created by the college in 1990 with local support from the **City of Conover** and **Catawba County** governments. The facility supports manufacturers, especially early-stage companies, by offering services like product testing, prototyping, and business development support. The Center has an ISO/IEC accredited testing lab, provides product development services for textile and non-textile products, provides domestic sourcing assistance, and hosts an on-site incubator for manufacturing start-ups and product extensions. It also offers various customized and standard training programs on knitting and textile development.

- **Gaston College's Textile Technology Center** has served as a centralized source of technical support for textile and fiber companies for more than 70 years. With input from an advisory board of textile professionals from across the state, the Center focuses on providing testing services, product prototyping, and sample production. The college is also developing a new **Fiber Innovation Center**, a 39,000-square-foot facility with an extrusion lab, spun yarn and filament processing areas, and incubation space for entrepreneurs. When completed, it will be the only facility in the world where scientists, entrepreneurs, and industry leaders can take a fiber idea and convert it to a textile product under one roof.

- **Vance-Granville Community College** received an $11.5 million allocation in the 2023-2024 North Carolina State Budget to construct the **Applied Technical Center for Advanced Manufacturing** in eastern Granville County. **Granville County Economic Development**, the **Triangle North Board**, and **Kerr-Tar Council of Governments** collaborated to set aside 15 acres in the **Triangle North Granville** business park for the project, and the college's **Board of Trustees** and **Granville County** officials allocated additional construction funding for the project. The facility will work to meet industry

training needs and support ongoing career and technical education partnerships between the college and area high schools.

- **Wilson Community College's Lee Technology Center** began to take shape in 2014, when the college's foundation was gifted property once home to local car dealerships owned by the Lee family. The college renovated two existing buildings and completed a new building on the site in 2023, enabling the expansion of its automotive and advanced manufacturing programs. In addition to the gift from the Lee family, the site's transformation was made possible by state funding and a contribution (via American Rescue Plan Act dollars) from the county. The property is also home to the new **Wilson Academy of Applied Technology**, an early college high school operated by **Wilson County Schools** in collaboration with the college and local industry partners. The school offers several programs of study, including applied engineering technology and biotechnology.

- **Rockingham Community College's** new **Center for Workforce Development** is a 42,000-square-foot, $25 million facility that houses the college's computer-integrated machining, mechatronics, and electrical systems technology programs, as well as the Small Business Center and Office of Corporate Education and Training, home to the college's customized training and experiential learning programs. The facility is the primary investment of a quarter-cent sales tax passed by voters in May 2018 and received more than $1 million in federal funding.

- In October 2024, **Wilson Community College** received a $13 million grant from the **Golden LEAF Foundation** to fund state-of-the-art training equipment for the college's new Biologics Training Center, slated to open in 2026. Golden LEAF's investment complements a $30 million state appropriation for the center. The facility, housed at the college, will provide customized training and education for life sciences manufacturing across the region, with a special focus on biologics.

- **Blue Ridge Community College** recently completed the renovation and expansion of the **Patton Building**, a state-of-the-art facility in **Henderson County** that houses 6,200 square feet of flexible industrial space called **Flex Labs**. Two adaptable labs are equipped with gas, water, air, and electrical connections, and large bay doors can accommodate tractor trailers during loading and unloading. Together with Henderson County and the **Henderson County Partnership for Economic Development**, the college sought to create an economic development space to serve the training and staging needs of new and established employers, with a special focus on the manufacturing industry. The space can be utilized by business and industry partners for customized training of employees on new equipment or machinery, operational support during capital projects, and as a startup incubator. Organizations can sign short- and longer-term leases, and other arrangements may be possible based on the availability of labs and operational needs. Adjacent workforce development classrooms and offices are also available to faculty and industry partner staff.

- **McDowell Technical Community College's Universal Advanced Manufacturing Center** opened its doors in 2014 after a property adjacent to the college's main campus, previously home to a furniture plant, came up for sale. The facility, which expanded the classroom and lab space available for the college's manufacturing, trades, and customized training programs, was made possible by the contributions of several partners, including the **Golden LEAF Foundation**, **McDowell County Government**, **McDowell County Commissioners**, and the **City of Marion**, among others. Industry leaders provided input throughout the development process and continue to serve on advisory committees for the facility. The college's Small Business Center recently relocated to the facility, where it joins the **McDowell Economic Development Association** in a coordinated effort to serve new and existing businesses and industries in the area. Local companies use the facility for job fairs, training events, workshops, and industry meetings, and **McDowell County Schools** also utilizes the site for various training and fairs for students of all ages.

- **Cleveland Community College's** Speaker Tim Moore Advanced Technology Center, a 44,000-square-foot building that opened in 2022, provides training in electronics, Equipment/Technology, and Curriculum automation engineering, industrial systems, maintenance, machining, and CAD.

In addition to classroom space, the building includes a 3D printing computer lab, space for customized training, robots, a machining lab, and office space for **Cleveland County Economic Development Partnership**. The Center includes a space for manufacturing companies to set up and provide training before the equipment is installed in the company. College leaders toured manufacturing centers across the state and nation and solicited input from industry leaders to develop plans for the facility, which was made possible by a $9 million contribution from the **North Carolina General Assembly**, $2 million from the Connect NC Bond, and $1.5 million in grant funding from the **Golden LEAF Foundation**.

- **Asheville-Buncombe Technical Community College's Advanced Manufacturing Center** is a 30,000-square-foot facility that houses instructional labs, shop spaces, classrooms, an advanced manufacturing career coaching lab, forklift operator training space, conference and student collaborative areas, staff offices, and areas for customized training for the employees of local manufacturing companies. It is also home to the **Composites Training Center of Excellence**, which launched in 2014 to help **GE Aerospace (then GE Aviation)** train employees for the company's Asheville expansion. The company's facility in Asheville was the first in the world to mass produce ceramic matrix composites, and A-B Tech's Composites Center has been critical to ensuring that prospective and existing employees have access to equipment and processes that are as similar as possible to what GE Aerospace uses in its facility.

- **South Piedmont Community College's Aseptic Training Facility**, expected to be completed in 2026, will provide 21,000 square feet of experiential learning, lab, and simulated manufacturing space to support students in learning about working in a clean space. Additionally, it will provide training space, including laboratory and manufacturing classrooms, to support regional partners in the pharmaceutical and biotechnology industry, enabling students and workers to practice sterile processes and procedures in pharmaceutical and manufacturing settings. **Glenmark Pharmaceuticals** worked with the college's local legislative delegation to secure funds to build the facility in 2019 and, in 2024, donated approximately $1.7 million in equipment and supplies for the facility.

- **Edgecombe Community College's Barnill-Jenkins Center for Innovation**, which opened in early 2020, connects high school and adult students with cutting-edge technology and practices used by local manufacturers. The center also works with an advisory board featuring local industry leaders to align programs with industry needs. The facility houses several programs related to manufacturing, including manufacturing technology, industrial systems technology, electrical systems technology, global logistics and supply chain management, agribusiness technology, and applied engineering technology, and has several lab spaces dedicated to computer-integrated manufacturing, instrumentation, electronics, motor control, and innovation.

- **Bladen Community College's STEM and Advanced Technology Training Facility** is a 9,500-square-foot space that houses the college's allied health, mechatronics, industrial systems, and information technology programs. In addition to an industrial chemistry lab, the facility also features an advanced manufacturing technology simulation bay and other lab, classroom, and office spaces. The project was made possible by a **U.S. Economic Development Administration grant**, along with funding from the **Golden LEAF Foundation**, the **Cannon Foundation**, **Bladen County**, and other community supporters.

- **Halifax Community College's Advanced Manufacturing and Corporate Training Center** houses the college's customized training programs and Small Business Center, along with its curriculum and short-term training programs for industrial systems technology, welding technology, and automotive technology programs. The facility was made possible by the regional planning efforts led by the **Upper Coastal Plain Council of Governments** and a **U.S. Economic Development Administration** grant. The new space allowed the college to nearly double the size of its manufacturing-focused programs, offering training to more residents of Halifax and Northampton counties.

STRATEGY SPOTLIGHT

ENGAGING INDUSTRY PARTNERS TO DEVELOP TRAINING FACILITIES

Johnston County's Workforce Development Center (WDC), a 30,000-square-foot, state-of-the-art educational and technical skills training center in Clayton, NC, is focused on life sciences programming, customized business training, and workforce development in biotechnology and other sciences. A collaborative effort between **Johnston Community College** and **Johnston County**, **Johnston County Public Schools**, **Johnston County Economic Development Corporation**, and local industry partners like **Novo Nordisk** and **Grifols**, the WDC supports local industries by offering learning opportunities across the education continuum in science, biotechnology, and other areas of economic influence in the county.

In 2003, Novo Nordisk donated the land on which the center was constructed. The center is operated by the college, owned by Johnston County Economic Development Corporation (a county-controlled nonprofit organization), and funded through a special assessment by a state-created **Research and Training Zone** comprising the Grifols and Novo Nordisk facilities, which now raises around $1.1 million annually to support the facility. The construction of the building was initially funded with a federal loan, investments from local industry partners, and a grant from the **Golden LEAF Foundation**.

Bolstered by the success of the WDC, the college is now building a new **Advanced Manufacturing Training Center** in Four Oaks that will house its welding, machining, and applied engineering programs. The **North Carolina General Assembly, Johnston County**, and the **Town of Four Oaks** have committed over $35 million for the project, which is scheduled to be completed in 2025.

PUTTING STUDENTS TO WORK MEETING LOCAL MANUFACTURING NEEDS

Mayland Community College's Anspach Advanced Manufacturing School, a 13,000-square-foot space that opened in 2015 at the college's Yancey Learning Center, offers short-term certifications, skill tracks in CNC programming, machining, robotics, mechatronics, and design, and and a two-year degree in applied engineering technology. The facility also serves as a hub for the rapid prototyping of metal parts for area companies thanks to its 3D metal printer, made possible by investments from the **Duke Energy Foundation** and **BRP**, a global manufacturer with a facility in nearby Spruce Pine. Companies design parts and share those designs with the college to be printed in metal. Instead of waiting three to four months (and spending tens of thousands of dollars) to cast a part, companies receive 3D-printed prototypes from the college in as little as two days and at significantly less cost. The facility also collaborates with area K-12 schools, taking technology into classrooms throughout the school year and offering summer camps on-site.

In 2018, the college established a 501(c)(3) nonprofit arm, the **Mayland Community College Enterprise Corporation (MEC),** paving the way for the development of a new business model for the college. The organization, which is separate from the college and the college's foundation, oversees a portfolio of economic development projects that generate revenue for the college, serve the community, and provide hands-on work opportunities for students; these include the aforementioned rapid prototyping center in the Anspach Advanced Manufacturing School, along with the Blue Ridge Boutique Hotel, Mayland Earth to Sky Park, and Three Peaks Enrichment Center. The college's foundation offers a work scholarship that allows selected students to receive free tuition and fees while working up to 16 hours per week and earning $15/hour at one of the MEC-run businesses. While working in the rapid prototyping center, students gain real-world problem-solving and job experience—from developing quotes to setting up projects and meeting deadlines—while providing a critical service to local manufacturers.

PARTNERSHIP STRATEGY

Developing fast and flexible pathways, including stackable and micro-credentials and Pre- and Registered Apprenticeship Programs, for learners to acquire the specific skills and competencies needed for their current or desired roles in advanced manufacturing

- The Manufacturing Academy at **Catawba Valley Community College** is an industry-driven program developed by partner companies across Catawba County designed to prepare students for manufacturing positions currently in high demand by many of the region's largest employers. The course introduces students to the basic concepts of manufacturing and discusses local career opportunities, and completers are fast-tracked for open positions with approximately 30 sponsoring companies.

- **The Central Carolina Manufacturing Institute**, a manufacturing collaborative convened by **Central Carolina Community College** comprising local employers and economic and workforce development organizations in the region, was established to draw talented workers into manufacturing and help fill the need for more manufacturing employees across Chatham, Harnett, and Lee counties. The institute's **Industrial Technician Pre-Apprenticeship** is a paid, eight-week immersion experience with local manufacturers designed by industry leaders to fill their specific needs and provide entry-level workers with the essential skills they need to succeed in the workplace. Participants are guaranteed job interviews, scholarships are available, and when students pass a national certification exam, they leave the institute with a recognized credential they can take anywhere in the country. The institute was inspired by a similar effort, the **North Carolina Manufacturing Institute**, a three-county initiative—working in Cabarrus, Iredell, and Rowan counties—developed in partnership with **Rowan-Cabarrus Community College** and **Mitchell Community College**, local chambers of commerce, economic development authorities, and other area workforce development organizations.

- **Craven Community College** and **Fleet Readiness Center East (FRCE)** partnered to create a **Naval Air Systems Command National Apprenticeship Program** that offers selected participants the opportunity to work as full-time federal employees while pursuing a combination of education and on-the-job training at the FRCE depot. Apprentices complete an industrial systems technology certificate at the college, and FRCE pays the full tuition. Once their coursework is complete, apprentices spend the next three years alternating between on-the-job and classroom training to learn specific trades. When they complete the program, participants can be hired as permanent journey-level mechanics in trades such as sheet metal mechanics, machinists, pneudraulics system mechanics, and aircraft mechanical parts repairers. FRCE also recently expanded its **Pathways Internship Program** to offer a fast track toward employment as a journey-level mechanic to students pursuing technical degrees at nearby community colleges.

- **Craven Community College** also offers several Manufacturing Fast Track programs at the Volt Center (highlighted on p. 19 of this toolkit), providing fast and flexible learning opportunities for students interested in career opportunities in manufacturing and assembly. The programs,

developed collaboratively with local industry partners across Craven County, also include support from **NCWorks**, which registers and pre-qualifies students for job interviews. Specific programs include free two- and three-day courses in assembly, inventory management, tugger truck operating, and composites manufacturing for industry partners like **BSH Home Appliance Corporation**, **Dradura**, **Moen**, and **Wirthwein**.

- The Industrial Manufacturing Pre-Apprenticeship Customized Training (IMPACT) Institute at **Caldwell Community College & Technical Institute** was developed in partnership with local employers to address the shortage of qualified advanced manufacturing workers. The four-week program provided free training, including tuition, books, and supplies, for students pursuing careers in industrial maintenance, machining, mechatronics, mechanical engineering, and welding. Completers gained the skills and certifications needed for an entry-level advanced manufacturing job and qualified for additional scholarships covering the cost of tuition, books, and supplies for several programs at the college, including industrial maintenance, machining, mechatronics, mechanical engineering, and welding. Grants from **Duke Energy** and **Piedmont Natural Gas** funded the institute.

- Partnership for Apprenticeship and Career Exploration (PACE), coordinated by **Western Piedmont Community College**, is a work-based learning program developed by area manufacturers in 2021 to provide an opportunity for individuals who wish to pursue a career in advanced manufacturing while obtaining a college degree and a nationally recognized industry credential. Apprentices receive job-specific training and tuition-free education while employed and paid by local manufacturers like **Leviton, Meritor, Airlite Nonwovens, Valdese Weavers, Toner Machining Technologies**, and **Meridian Specialty Yarn**. Each apprenticeship is unique and takes from three to five years to complete. In addition to the college, partners include **Burke County Public Schools**, the **NCWorks Career Center**, and the **Burke Manufacturers Executive Council**. There is also an eight-week Pre-Apprenticeship Program for juniors and seniors in high school, which affords completing students the opportunity to bridge into a Registered Apprenticeship Program offered through PACE. A recent grant from **Dogwood Health Trust** enabled the college to hire an Apprenticeship Coordinator in response to the success and rapid growth of PACE, who will support the continued growth of the program.

- Apprenticeship Cleveland, coordinated by **Cleveland Community College**, was formed in 2017 to meet the needs of local businesses and industries in Cleveland County. The program's 25+ employer partners work with the college to support apprentices pursuing careers in and beyond manufacturing, including fields like healthcare, education, electrical, maintenance, welding, HVAC/refrigeration, machining, and millwright.

- Apprenticeship Wayne, coordinated by **Wayne Community College's Business and Industry Center**, was created in 2020 after a wave of community interest in Registered Apprenticeships followed the launch of the college's first Registered Apprenticeship Program in 2019. Combining on-the-job learning with classroom instruction for several local businesses in multiple sectors, including and beyond manufacturing, Apprenticeship Wayne supports nearly 100 apprentices in collaboration with K-12 district leaders, the local workforce development board, community nonprofits, and the **North Carolina Business Committee for Education**. Participating manufacturing employer partners include **AP Emissions, Linmar Forgings Carolina, Inc., Caterpillar, Smithfield Foods, Inc., Mt. Olive Pickle Company, Inc., North Carolina Manufacturing, Inc., Goshen Engineering, Prolec-GE Waukesha, Inc., and U.S. Foam & Etch.**

- Colleges participating in the **AdvanceNC** consortium (featured on p. 32 of this toolkit) are collaborating with **Education Design Lab**, a national nonprofit that helps colleges co-design education-to-workforce pathways, to develop micro-credentials that meet critical workforce needs in the advanced manufacturing sector.

STRATEGY SPOTLIGHT

COORDINATING AN ALIGNED APPROACH TO SHORT-TERM TRAINING WITH REGIONAL MANUFACTURING EMPLOYERS

Regional Advanced Manufacturing Pipeline of Eastern North Carolina (RAMP East) is a collaborative partnership focused on addressing the advanced manufacturing workforce shortage by ensuring industries receive the necessary resources to access a talent pipeline and grow their business in eastern North Carolina. The initiative brings together eight community colleges serving 10 counties and dozens of industry partners in an innovative college-to-career pipeline. Partner colleges include **Nash Community College, Edgecombe Community College, Halifax Community College, Roanoke-Chowan Community College, Martin Community College, Beaufort County Community College, Pitt Community College, and Wilson Community College.**

Colleges collaborated with local employers to develop a curriculum for an **Advanced Manufacturing Institute,** designed to be a rapid point of entry for prospective employees to receive the basic skills training—including interpersonal, problem-solving, and safety skills—and related certifications needed to qualify for an entry-level position with local manufacturers. Participating students, who can complete the 96-hour curriculum in approximately three weeks, receive OSHA 10 safety training and certification, Yellow Belt training and certification, basic math, problem-solving, and Working Smart training and certification. As part of the Institute, students also tour several area manufacturing facilities. Upon completion, they are offered interviews with industry partners and guidance about continuing their education via a customized training program or curriculum program.

As the governing organization, **Carolinas Gateway Partnership** developed RAMP East in 2018 in partnership with the **North Carolina Community College System,** the **North Carolina Department of Commerce**, the **Turning Point and Rivers East Workforce Development Boards, NCWorks**, local K-12 institutions, economic developers, and the **Golden LEAF Foundation**.

PARTNERSHIP STRATEGY

Creating regular opportunities for meaningful dialogue and knowledge sharing with colleagues in the advanced manufacturing industry and across the education continuum, with a special focus on identifying mutual workforce development goals and priorities and collaborative approaches to achieving them

- Wilkes County's **Business Industrial and Educational Forum (BIEF)** launched in 2012 to provide opportunities for meaningful dialogue between **Wilkes County Schools, Wilkes Community College**, workforce development organizations, and local business and industry partners. Its primary goal is to produce better-qualified employees for local industry, providing a means for individuals in the community to earn fair and competitive wages. BIEF's efforts have led to innovative programs, including a teaching externship that enables teachers from the county's five high schools to be paid a stipend to spend a day with a local employer to learn about what the company does and what technical and workplace skills are necessary for the industry.

- The **Strategic Twin-Counties Education Partnership (STEP)** is improving educational opportunities for students in Edgecombe and Nash counties by facilitating collaboration between area K-12 school districts **(Edgecombe County Public Schools and Nash County Public Schools)**, community colleges **(Edgecombe Community College and Nash Community College)**, community-based organizations, and employers. STEP was established in 2012 to unite participants in sharing resources focused on capacity-building, joint planning, and process improvement. In addition to other initiatives, STEP hosts an annual **Education and Business Leaders Summit** to surface insights to help bridge the gap between education and industry and inspire new ideas for fostering a skilled and adaptable workforce.

- **Aligning the Workforce Education System for Manufacturing**, a project involving a consortium of eight community colleges led by **Forsyth Technical Community College**, will leverage a $5 million grant from the **U.S. Department of Labor** to support participating colleges in advancing career pathways in manufacturing to meet employers' demand for skilled workers. Joining Forsyth Tech are **Alamance Community College, Davidson-Davie Community College, Guilford Technical Community College, Montgomery Community College, Randolph Community College, Rockingham Community College, and Surry Community College**. Their foundational activity involved creating a Business & Industry Leadership Team (BILT), giving regional employers a co-leadership role in developing and offering technical programs in machining and mechatronics. Through the BILT, the consortium will define the skills and competencies that students need to meet the requirements of manufacturing employers and ultimately introduce competency-based digital badges that students can earn. The badges will identify for employers those applicants who have demonstrated the skills required for a particular manufacturing-related job.

- **Vance-Granville Community College** hosts an annual **Business and Industry Connect** event for regional employers to discuss timely topics and workforce issues. The day-long event is free for participating employers and includes keynote remarks from featured speakers, lunch, industry

roundtable discussions, and Q&A sessions with industry leaders and economic developers. The 2024 event was focused on supporting businesses in creating innovative programs for attracting talent in today's workforce landscape and developing a company culture that energizes coworkers, unlocks their potential, and leads to higher retention rates.

STRATEGY SPOTLIGHT

FACILITATING INTERNATIONAL BENCHMARKING THROUGH STUDENT EXCHANGE PROGRAMS

In May 2023, a group of students and instructors from **Isothermal Community College** traveled to Spain to get a firsthand look at the world of international manufacturing. The trip was developed with funding from the **Appalachian Regional Commission** and in partnership with the Rutherford County location of **Befesa Zinc Metal**, formerly **American Zinc Products**, a local manufacturer that reclaims zinc and other metals from a waste product of steel production. Befesa is part of a larger company called **Glencore** that operates a similar facility in Avilés, Spain, called **Asturias de Zinc**.

Students spent a semester studying manufacturing processes at the Rutherford County plant before traveling to the company's facility in Spain to do a benchmarking exercise. During the trip, students also toured other manufacturing facilities, including those of industrial plant designer **Cosermo** and heavy equipment manufacturer **Mefasa,** In addition to visiting several research and development centers, the engineering department of a Spanish university, and the Port of Avilés. Along the way, the group learned about 3D printing and additive manufacturing, robotics, mechatronics, the development of metallic materials, welding tests, and metallic characterizations. Upon their return to Rutherford County, students compiled the information they gathered in Spain and developed recommendations for Befesa leadership.

This trip was part of the same program that brought Isothermal students to Malmo, Sweden in 2022 to collaborate with a sister facility of the **Trelleborg Engineered Coated Fabrics** facility in

Rutherfordton. Students spent a week at Trelleborg's headquarters in Sweden, attending workshops, meeting with employees, and engaging with other local companies in the advanced manufacturing sector, including **SANDVIK SRP AB, ENERCON Energy Converter AB, Nordic Plastics,** and **Tre-Mek AB.**

OPPORTUNITY

RESPONDING NIMBLY AND COLLABORATIVELY TO MEET THE REAL-TIME AND FUTURE NEEDS OF ADVANCED MANUFACTURING EMPLOYERS ACROSS THE STATE

In today's increasingly competitive global market, North Carolina's community colleges play an essential role in retaining and attracting advanced manufacturing companies to the state by offering employers timely, relevant support through a range of customized services. North Carolina was the first state in the nation to deliver company-specific training as a component of its economic development efforts, and the North Carolina Community College System's **NCEdge Customized Training Program** helps companies develop and execute recruitment, screening, training, and professional development plans specifically designed to address the unique skill requirements of their businesses.

Through NCEdge, colleges provide strategic support to employers of all sizes and across many industries, assessing their workforce needs and identifying the training and resources required to meet them. Next, they develop tailored plans that may include pre-employment training and assessment, post-hire technical training, and ongoing leadership and professional development. These customized solutions can be delivered onsite at a particular company, at the college, or through hybrid learning models and are available at no cost to eligible businesses.

As manufacturers make increasingly significant investments in the state—sometimes seeking hundreds of highly skilled employees on very tight timelines and presenting needs beyond what can be fulfilled by a single college or community—colleges mobilize regional collaborations, pooling resources and expertise to develop shared approaches to recruitment and training to meet the needs of high-growth industries. This collaborative approach extends to colleges' engagement with four-year colleges and universities, which also play a key role in developing a pipeline of highly qualified talent for North Carolina's growing and evolving advanced manufacturing sector.

PARTNERSHIP STRATEGY

Leveraging regional and statewide networks—including industry-specific hubs—to offer training, recruitment support, and other services to employers at scale

- **STEPs4GROWTH (S4G)** is a comprehensive clean energy workforce development project that works with employers and educators to train recent high school graduates and adults to fill well-paying jobs in energy efficiency, renewable energy, clean vehicles, and grid resiliency. Funded by a grant from the **U.S. Department of Commerce** and led by **North Carolina A&T State University** with support from the **North Carolina Business Committee for Education**, STEPs4GROWTH has engaged twelve community colleges to provide clean energy training locally through Pre-Apprenticeship Programs and other continuing education or curriculum classes. Examples of S4G partnerships involving rural-serving community colleges include workforce development efforts concentrated on:
  - The renewable energy sector (including solar, wind, and biomass energy), led by the **North Carolina Clean Energy Technology Center (NCCETC)** in partnership w**ith Martin Community College, Roanoke-Chowan Community College, Craven Community College,** and **Carteret Community College**; and
  - Clean vehicles and its related supply chain (including advanced manufacturing), led by **Appalachian State University** in partnership with **Nash Community College, Edgecombe Community College, Wilson Community College, and Blue Ridge Community College.**
- **The North Carolina Pharmaceutical Services Network (PSN)** is a unique collaboration, made possible by funding from the **Golden LEAF Foundation**, that provides a continuum of pharmaceutical education and training to new and existing companies in North Carolina and beyond. Services were developed with significant industry input and can be customized to accommodate specific company needs. They are offered through two educational partners: **Pitt Community College (PSN@PCC)** and **East Carolina University (PSN@ECU)**. PSN@PCC offers an Oral Solid Dose Training Program for the pharmaceutical industry, which resides in Greenville's **Technology Enterprise Center** and features state-of-the-art lab space and manufacturing equipment that aligns closely with industry practices. In addition to training space in a simulated manufacturing environment, the facility can be utilized by industry and vendor partners for formulation development, production, process optimization, equipment performance, team training, and vendor demonstrations. PSN@ECU is a laboratory-based education and training network offering good manufacturing and laboratory practices (GMP/GLP) courses, short courses on topics relevant to the pharmaceutical industry, and analytical services.
- **The North Carolina Textile Innovation and Sustainability Engine**, which aims to disrupt and revolutionize the textile industry, is being funded by an initial two-year, $15 million award through the National Science Foundation's Regional Innovation Engines Development Award, with the potential to unlock up to $160 million in total funding over the next ten years. Led by The Industrial

Commons, the Engine's service region encompasses the textile supply chain covering central and western North Carolina and stretches into the Appalachian regions of upstate South Carolina, eastern Tennessee, and southern Virginia. North Carolina-based education partners include **NC State University's Wilson College of Textiles, the Manufacturing Solutions Center at Catawba Valley Community College, Gaston College's Textile Technology Center, and Western Piedmont Community College.**

- In September 2023, a coalition of educational institutions and workforce development organizations throughout central North Carolina launched **AdvanceNC**, an innovative workforce development ecosystem developing a robust talent pipeline to support unprecedented economic growth in advanced manufacturing in the region. The initiative brings together the resources of 11 community colleges, three state universities, and seven local workforce development boards across 19 counties—along with partners like **NCWorks** and **myFutureNC**—to create a streamlined, employer-ready network that can respond collaboratively to meet the talent needs of manufacturers in the area like **Toyota** and **Wolfspeed**.

STRATEGY SPOTLIGHT

DEPLOYING A STATEWIDE NETWORK TO MEET THE NEEDS OF THE BIOTECHNOLOGY AND LIFE SCIENCES INDUSTRIES

BioNetwork, the life sciences training initiative of the North Carolina Community College System, provides economic and workforce development for the biotechnology and life sciences industries across North Carolina via education, training, and laboratory resources. The network delivers courses, certificates, workshops, and company-specific skill development in biomanufacturing, pharmaceuticals, food, beverage, and natural products. These offerings can be delivered at company sites, at one of the BioNetwork's training facilities, online, or locally at any of the state's 58 community colleges. A learning solutions team provides instructional design and other related support to colleges to enhance the industry training and engagement programs offered through the BioNetwork, and the initiative also coordinates a STEM outreach program that includes classroom visits, faculty training workshops, and career fairs that help connect bioscience industry skills with K-12 and community college STEM education. BioNetwork was established in 2004 through funding from the **Golden LEAF Foundation**, and its ongoing work is made possible by a recurring appropriation from the **North Carolina General Assembly.**

The **BioWork certificate program**, offered through the BioNetwork, was developed in collaboration with industry partners to prepare students for entry-level process technician jobs and is currently offered by 13 community colleges. The time to complete the BioWork training ranges from six weeks to three and a half months, and in-person, hybrid, and online learning options are available. In 2023-2024, BioWork was offered for free at several community colleges across the state thanks to federal funding for the **Accelerate NC - Life Sciences Manufacturing initiative** from the **U.S. Economic Development Agency's Build Back Better Regional Challenge**, awarded to a coalition of public and private organizations and institutions led by the **North Carolina Biotechnology Center.** Participating colleges and biopharmaceutical manufacturing companies are collaborating to provide full financial support for 220 students pursuing the BioWork program as a Pre-Apprenticeship. After completing BioWork, these students can apply for an apprenticeship with one of the participating companies in the **North Carolina Life Sciences Apprenticeship Consortium**.

PARTNERSHIP STRATEGY

Providing tailored training solutions to employers through programs like NCEdge, an innovative customized training program coordinated by the North Carolina Community College System to help employees upskill, reskill, and learn new skills

- The prospect of partnering with **Brunswick Community College** drew **Precision Swiss Products** to Leland, NC, now home to its east coast headquarters. After traveling to the company's west coast headquarters in California to learn about the occupational skills required for its workforce, college leaders wrote and received a grant from the **Golden LEAF Foundation** to purchase an eight-axis CNC machine—the same type of equipment used on the company's warehouse floor—to support the training of students. The college also developed a Registered Apprenticeship Program for the company and provides customized training to support on-site upskilling for the company's existing workforce.

- In 2019, **Nash Community College** partnered with area manufacturer **Cummins** to provide customized training to employees, including specialized online instruction leading to Business Leadership and Practical Supply Chain Management certificates for employees of the company's **Rocky Mount Engine Plant**. Through the college's Computer Information Technology department, Cummins employees also had the opportunity to earn a certificate in Data Management and Analysis.

- **Edgecombe Community College** is working closely with **Natron Energy, Inc.**, which plans to open the first sodium-ion battery gigafactory in the country at the Kingsboro megasite between Rocky Mount and Tarboro, creating more than 1,000 jobs in Edgecombe County. Natron is looking for battery assembly techs, manufacturing engineers and associates, quality control technicians, material handlers, and pack assemblers. In response, the college rolled out a new applied engineering technology program in late 2024 and is working with Natron—and plans to work with other colleges and universities throughout the region—to launch additional training programs at the college to proactively prepare the local workforce for the clean energy industry.

- **Pratt & Whitney** recently opened a 1.2 million-square-foot plant on 100 acres in the Biltmore Park development in South Asheville, where it manufactures high-tech jet engine airfoils for a wide array of civilian and military aircraft. The $650 million plant is considered the largest economic development project in Western North Carolina's history. As of March 2024, 585 employees worked onsite, and 80+ percent of new hires were local. To meet the company's hiring and training needs—and do so on an expedited timeline—the North Carolina Community College System mobilized nearby community colleges, including **Asheville-Buncombe Technical Community College (A-B Tech)** and several colleges that border Buncombe County, including **Haywood Community College, Blue Ridge Community College, McDowell Technical Community College, and Mayland Community College**. Colleges worked with Pratt & Whitney to endorse selected courses that, when completed, would provide students with a waiver for the 32-hour pre-employment assessment

required by the company and lead to a guaranteed interview. In addition to helping recruit qualified candidates via hiring events and providing free, fast-track pre-hire training, A-B Tech also offers post-hire training for employees and will build and operate a workforce training center close to Pratt & Whitney's facility.

- **Wilson Community College** is partnering with **Merck**, a global pharmaceutical manufacturer, to promote continuing education opportunities available through the college for their existing workforce via pop-up recruitment events on Merck's campus during all three shifts for employees to learn about course and degree offerings and related tuition benefits offered by Merck. Program leads from the college participated in the events, ensuring that students could connect with knowledgeable team members about the specifics of the programs and gain insight into next steps for enrollment, aligned career paths, and other areas of interest for prospective students.

- In response to the needs of **Bharat Forge**, which operates an aluminum forging plant in Sanford that manufactures automobile components, **Central Carolina Community College** developed a 40-hour customized training Industrial Robotics Technician course. The class, which allows company personnel to train on a robot similar to those used at its plant without interrupting critical production demands, also covers the principles of industrial robotics, their uses and applications, and proper operation and maintenance through lectures, discussions, and hands-on lab exercises.

- When **Roseburg Forest Products**, an innovative forest products manufacturer, announced that it was planning to invest $200 million to develop a sustainable high-tech sawmill operation in Weldon, NC, **Halifax Community College** partnered with the company to create a curriculum to meet the needs of new employees. In addition to manufacturing, customized training coursework covers accounting principles and the advanced technical skills necessary to operate the company's modern equipment.

- In early 2024, **Richmond Community College** announced a customized training project with **Global Packaging**, a leading North American printing and converting company that produces high-quality flexography, polybags, roll stock, laminated film, and extruded film. The company is installing two new extrusion lines, which involve highly complex new technology requiring additional training for operators and maintenance personnel. The college will provide technical skills training on the latest equipment and further training in leadership, continuous improvement, and safety. This is the fourth customized training project the company has undertaken in partnership with the college.

- **Randolph Community College** is playing a lead role in developing and delivering customized training and other workforce development support to **Toyota**, which announced in late 2021 that it had selected the Greensboro-Randolph Megasite as the location for a new $13.9 billion automotive battery manufacturing plant that is expected to employ as many as 5,100 people when fully operational. Randolph teamed up with nearby **Alamance Community College** and **Guilford Technical Community College** to set up training centers across the region and recently renovated a space on campus where full-time Toyota employees will undergo initial training before they work at the plant. The college is also offering "refresher" training to Toyota pre-hires, most of whom will be hired full-time. The college's Industrial Maintenance Technician Apprenticeship program, which launched in 2023, supports students in earning an associate degree in industrial systems technology while gaining hands-on, paid experience with local employers like Toyota.

- **Beaufort County Community College** recently purchased 3.89 acres in the new Aurora Industrial Park to develop a satellite location that will expand the college's presence in southeastern Beaufort County and Richland Township and support the college's ongoing relationship with **Nutrien**, the second-largest phosphate producer in North America. The college provides customized training to more than 400 students annually who are employees of Nutrien and hundreds of additional students employed by Nutrien's affiliated contractors. The new satellite location will make it possible for these employees to train in a facility that is virtually across the street from the entrance to the Nutrien plant.

STRATEGY SPOTLIGHT

FACILITATING STATEWIDE RECRUITMENT AND TRAINING SUPPORT FOR A LEADING AEROSPACE MANUFACTURER

GE Aerospace currently employs more than 1,700 people in North Carolina and operates four facilities across the state. The company's Asheville and West Jefferson facilities are part of its Global Supply Chain, and GE also operates a component manufacturing facility in Wilmington and an engine assembly plant in Durham. Through customized training partnerships, the company has developed strong working relationships with community colleges across North Carolina, including the two rural-serving colleges—**Asheville-Buncombe Technical Community College** and **Wilkes Community College**—featured here. Notably, more than 30 alumni from **Wayne Community College**, which offers an associate degree pathway in Aviation Systems Technology in addition to diplomas in Airframe and Power Plant technology, have pursued careers with GE Aerospace through a longstanding recruiting relationship between the college and the company's engine assembly facility in Durham.

In 2014, GE opened a new 170,000-square-foot, $126 million facility focused on producing Ceramic Matrix Composite (CMC) components, the first high-volume production facility of CMC materials in the world. GE's Asheville campus also includes a plant for producing rotating parts engineered for commercial and military aircraft engines, which has been in the area for more than 75 years. In 2018 and 2024, GE announced plans to invest an additional $105 million and $11 million, respectively, in its Asheville operations. Today, the company's Asheville facilities employ more than 450 people, an employee base that has grown by more than 200 people over the last decade.

GE's growth in Asheville has been driven by its close partnership with Asheville-Buncombe Technical Community College (A-B Tech). Within a month of GE opening its new CMC facility, A-B Tech opened the Composites Training Center of Excellence, at the time the only composites training facility of its kind in the southeast. The center enables workers to train in a hands-on environment with state-of-the-art machinery and has 5,000 square feet of training floor and lab spaces.

As GE began hiring for the new CMC facility in 2015, A-B Tech assisted in pre-hire activities by offering computerized assessments at its new training center. When hired, candidates returned to A-B Tech for post-hire training before going to GE for additional training. Upon the completion of this first customized training project in 2017, A-B Tech provided pre- and post-hire training to some 370 people. As the company's Asheville-based operations continued to grow—and as new highly-skilled roles were added and equipment and processes continued to evolve—a second customized training project was developed to assist the company's growth efforts through 2020.

GE opened its nearby West Jefferson facility in 2007 and underwent a $56 million expansion from 2015 through 2017. The current 200,000-square-foot facility manufactures rotating parts for commercial aircraft engines and employs more than 270 people. During the rapid growth in West Jefferson from 2015 to 2017, GE sought an additional 100+ employees and ~100,000 square feet of manufacturing space, effectively doubling the size of its existing rotating parts facility. Given the plant's location in rural Ashe County—in far northwestern North Carolina with a population of only ~27,000—GE and local officials recognized the importance of a partnerships-based approach to recruiting additional qualified workers to meet the company's growth goals.

GE began working with Wilkes Community College and other partners to develop a strategic recruitment plan, with the goal of initiating contact with 10,000 people across the region to let them know of job possibilities with GE and making the process of recruiting, screening, and educating new employees as seamless as possible for both applicants and the company. Recruitment efforts included a regional marketing campaign highlighting jobs with GE (billboards, direct mail, and a dedicated website), engagement with local community leaders to inform them about available jobs and associated requirements, support provided to potential applicants by the college (including assistance in completing the online application process and interview preparation), and a hiring event hosted at the college's Ashe campus that boasted nearly 300 attendees. GE selected candidates to attend a 40-hour pre-hire course that culminated in an interview with the company. Applicants hired by GE then completed a 100-hour post-hire course offered through the college.

During this same time, the college partnered with the company to develop and facilitate training for 105 new employees and 100 incumbent workers who were transitioning to the latest, more advanced production processes at the plant. The college offered courses on all shifts to accommodate GE's production schedule, and GE offered technical training to college instructors, providing them access to the rotating parts facility to observe operations and align curriculum and instruction accordingly. The project was followed by a second customized training project that resulted in 75 additional new jobs at the West Jefferson facility, and the college continues to manage and schedule all pre-hire training courses for GE's West Jefferson site, including coordinating their pre-hire assessment through a third-party agency.

PARTNERSHIP STRATEGY

Collaborating with other two- and four-year institutions to align educational offerings with local and regional industry needs and expand career opportunities for students

In 2022, **Gaston College** and **Catawba Valley Community College**—in partnership with North Carolina State University and with support from the **U.S. Department of State**—signed a memorandum of understanding with Honduran-based **Central American Technological University** to educate and train students for the next-generation textile workforce to meet a rising tide of nearshoring and onshoring in Honduras, Central America, and the United States. The partnership assists U.S. textile manufacturers operating in both the U.S. and Central America as they build more resilient and economically and environmentally sustainable supply chains.

- **East Carolina University's Bachelor of Science in Industrial Technology (BSIT) Transfer Program**, designed for students who have been awarded a qualified Associate in Applied Science (AAS) degree in an industrial or technical-related field, offers qualifying students flexibility to tailor a curriculum to their specific career goals. With in-person and online offerings, the BSIT program is ideal for students and adult learners looking to boost their careers with a four-year degree. The program is aligned with more than 70 AAS degrees offered by the North Carolina Community College System's 58 colleges and also draws students from outside of North Carolina.
- **East Carolina University's Eastern Region Pharma Center (ERPC)**, supported by funding from the **Golden LEAF Foundation** and the university, works in partnership with pharmaceutical companies and several community colleges to develop and enhance opportunities for students and incumbent workers—particularly those in the state's rural eastern counties—to learn in place so they may enter into, and advance within, high-skill, high-pay careers. ERPC collaborates with **Pitt Community College, Johnston Community College, Wilson Community College, Nash Community College, Craven Community College,** and **Edgecombe Community College** to provide students with the education and training they need to land competitive positions in the pharmaceutical industry.
- **Pitt Community College** formalized instructional service agreements for its Associate in Applied Science in Biotechnology program with **Nash Community College, Edgecombe Community College, Craven Community College, Martin Community College, James Sprunt Community College, Pamlico Community College, and Roanoke-Chowan Community College** to meet the increasing regional demand for skilled laboratory technicians in various fields of biological and chemical technology. Under the agreements, students take most of their courses at their home campus and specialized courses at Pitt, which ultimately awards degrees to program completers.

STRATEGY SPOTLIGHT

LINKING LEADING TEXTILE PROGRAMS TO TRAIN TOP TALENT FOR INDUSTRY PARTNERS

Gaston College and **Catawba Valley Community College (CVCC)** are partnering with the **Wilson College of Textiles at North Carolina State University**—a globally recognized leader in textile education, research, and innovation—to offer bilateral 2+2 articulation agreements for students. Students who complete Gaston's Associate in Applied Science in Textile Technology degree and meet eligibility requirements can seamlessly transfer into the Bachelor of Science in Textile Technology-Undesignated program at NC State. CVCC students who graduate with an Associate in Applied Science degree and meet eligibility requirements can transfer into the Bachelor of Science in Fashion and Textile Management program. The first class of students eligible for the program enrolled in Gaston College and CVCC in the fall of 2022.

Many transfer students may be eligible for a Textile Pioneer Scholarship, a $14,000 scholarship given each year to prospective Wilson College students from Tier 1 and Tier 2 counties in North Carolina. Scholarship recipients also receive $4,000 in enrichment funds and benefit from dedicated mentoring and support and access to internships during their time at NC State. NC State also offers a flexible master's degree program in textiles comprising 30 hours of coursework that can be completed online or in person, and students have the option to complete the program within a period ranging from two to six years.

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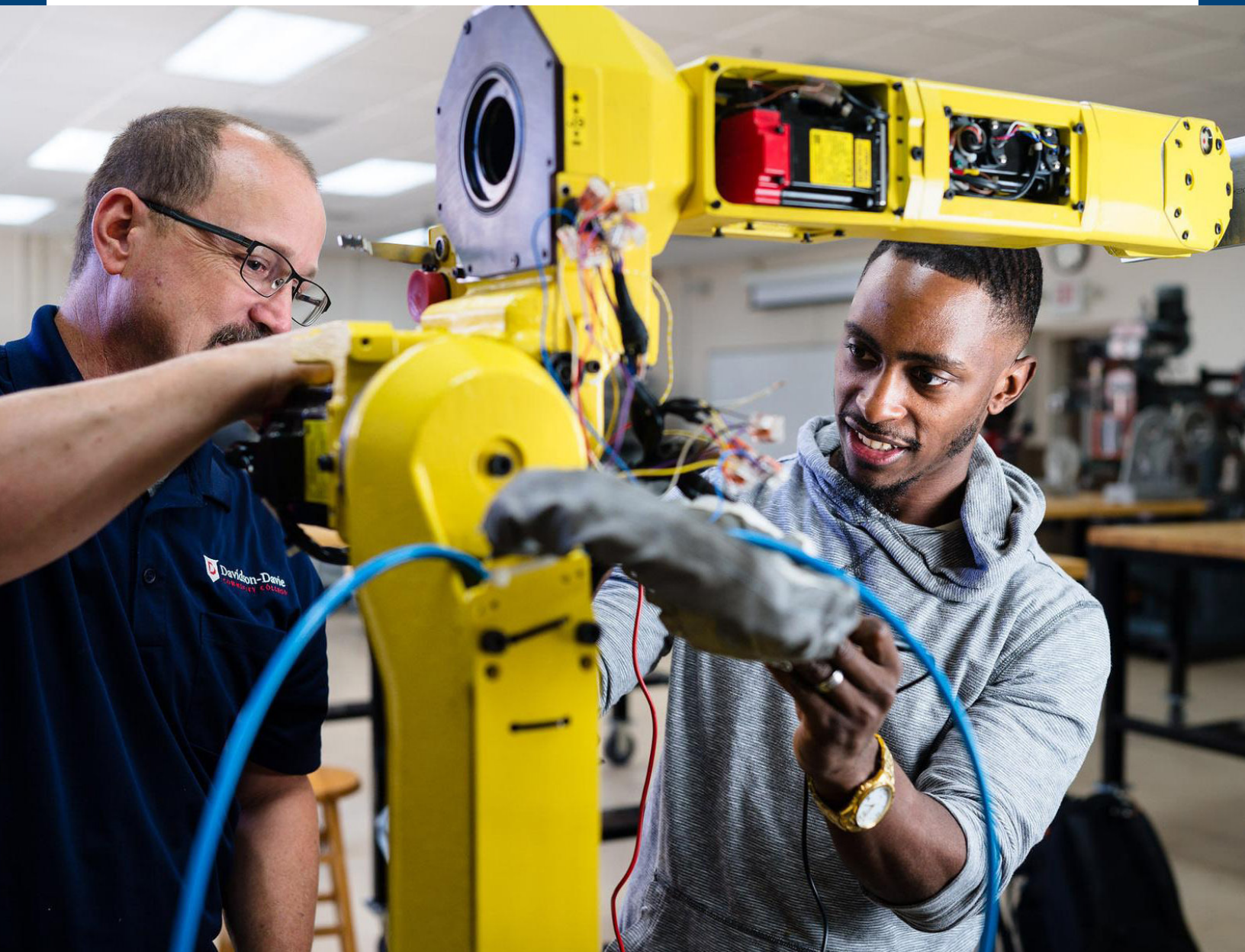

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NC COMMUNITY COLLEGES

CREATING SUCCESS

myFUTURENC
2 million by 2030

NC STATE UNIVERSITY
College of Education
Belk Center for Community College
Leadership and Research

EdNC