

# CREATING THE TALENT PIPELINE OF THE FUTURE:

## *Regional Alliances Yield Education-to-Career Pathways*



*“This two-year initiative is intended to jumpstart collaboration driven by business in both urban and rural regions, piloting strategies designed to improve career advising, employer engagement and work-based learning for all students. The key to success is involving employers upfront, listening to their needs as career pathways are developed.”*

- Robert J. Witchger, Ed.D.  
Director, Career and Technical  
Education  
NC Community College System

### **BACKGROUND**

Recognizing the importance of regional alliances and the inherent challenge in collaborating across key stakeholders and existing systems, the NC Community College System’s Career and Technical Education (CTE) Department leveraged \$700,000 in leadership funding through the Carl D. Perkins Career and Technical Education Act to provide incentives to bring together employers, educators, community leaders, and workforce investment boards at the local and regional level. The goal: Create seamless pathways from education to career with intentional connections between secondary and postsecondary CTE programs, driven by local economic demand.

“This two-year initiative is intended to jumpstart collaboration driven by business in both urban and rural regions, piloting strategies designed to improve career advising, employer engagement, and work-based learning for all students,” said Dr. Bob Witchger, one of the architects of the initiative and state director of CTE at the NC Community College System.

“The key to success is involving employers upfront, listening to their needs as career pathways are developed,” said Witchger.

Twenty grants of \$35,000 each were awarded in October 2014, with a promise of a second year of funding for those successful in creating effective alliances. In December 2014, grantees gathered to discuss the opportunity and design posters depicting the success they envisioned through the initiative. In June 2015, approximately 70 representatives of the local and regional teams as well as state leaders gathered in Winston-Salem to assess the first year’s progress and share lessons learned across the variety of grantee programs. Local and regional teams included representatives from high schools, community colleges, and workforce boards.

**CAREER PATHWAYS: AN ECONOMIC NEED**

An analysis of the North Carolina labor market predicts significant skill shortages in critical career clusters. Already, many employers report difficulty hiring key positions.<sup>1</sup> A key goal of the NC Commission on Workforce Development’s 2014-16 Strategic Plan is to “prepare workers to succeed in the North Carolina economy and continuously improve their skills.” The report cites the speed of change in North Carolina’s economy and employers’ need for people with more education and training than was required in the past.<sup>2</sup>

Seamless career pathways offer a systematic approach to meeting these challenges by intentionally linking high school, community college, and work to build relevance in education and increase the number of students who complete high school and earn postsecondary credentials with labor market value, enabling them to compete in high-demand occupations.

Career pathways are not built overnight; they are developed in stages and evolve to meet the economic needs of local communities and economic regions. In North Carolina, several stages of development occurred through Perkins funding: College Tech Prep’s (CTP) rigorous programs of study, Huskins programs, dual-enrollment programs, and the current Career and College Promise (CCP) programs offering secondary students the opportunity to earn postsecondary credit, beginning their pathway to higher education and ultimately a successful career.

Through this progression has come development of grades 9-14 programs of study within career clusters, the NC High School to Community College Articulation Agreement to assure the awarding of earned college credit for high school students, validation of the importance of work-based learning, and the beginnings of pathways through sequencing core CTE college courses to secondary students.

**Key Elements of Career Pathways**

**Successful career pathways systems exhibit the following key elements:**

- » **Partnership, shared vision, and defined roles.** *Collaboration is key from the beginning, starting with partnerships among industry, educational institutions, workforce development boards, and local associations and organizations, with clear roles, shared vision, and support from local elected leaders.*
- » **Demonstrated workforce need** *in an occupational sector, engaging employers in developing education and training solutions.*
- » **A clear sequence** *of academic and technical courses, work-based learning experiences, intentional career advising, and opportunities to earn credentials that meet the needs of the region’s employers.*
- » **Blending of resources** *from government and private sources to provide needed funding, staffing, and other services.*
- » **Policy and programming** *aligned to support career pathway development and implementation.*
- » **Program evaluation** *and identified program outcomes and measurement to ensure continuous improvement.*

(Excerpted from US Department of Labor’s Career Pathways Toolkit: Six Key Elements for Success, September 2011)

<sup>1</sup> 2014 Employer Needs Survey, NC Commission on Workforce Development, August 2014.  
<sup>2</sup> Preparing North Carolina’s Workforce for Today and Tomorrow, Strategic Plan 2014-16, NC Commission on Workforce Development.



## A CALL TO ACTION FOR REGIONS AND COMMUNITIES

Seeking to create replicable models across North Carolina, the 2014-16 Career Pathway Grant Request for Proposals issued in August 2014 called on local and regional alliances to develop innovative and sustainable workforce development models within the career pathway framework and with the ultimate goal of becoming certified NCWorks Career Pathways.

Successful proposals were required to include:

- Demonstrated employer hiring needs in critical career clusters with supporting labor market information;
- Commitment from and engagement with employers;
- Career development and advising across the curriculum;

- Grades 9-14 academic and technical courses in a program of study culminating in a certificate, diploma or degree;
- Occupationally focused, experiential learning and work-based learning at every level of instruction;
- Stackable credentials that allow for multiple entry and exit points; and
- An intermediary or coordinator to oversee and help implement key components of the pathways.

In addition, proposals must demonstrate a solid, comprehensive partnership among secondary and postsecondary education, local workforce development boards, and employers and include an educational component for parents and families about the benefits of career pathways.

*“Seamless career pathways that are not only developed with initial input from business and industry and supported by all education and workforce development partners, but also include meaningful work-based learning opportunities are key to North Carolina’s future workforce.”*

- Lisa M. Chapman, Ed.D.  
Senior Vice President for Programs and Student Services  
Chief Academic Officer  
NC Community College System

## WINNING PROPOSALS CREATE MODELS, SHARE LESSONS LEARNED

*“This is an opportunity for collective impact across North Carolina as schools, community colleges, workforce boards, and employers work together toward common goals.”*

- Jo Anne Honeycutt  
Director, Career and Technical Education  
NC Department of Public Instruction

Twenty proposals from community colleges in all parts of North Carolina – from the mountains to the coast, rural and urban – received leadership funding from the NC Community College System to create seamless career pathways or to enhance and expand existing pathways. Teams from each winning county or region came together June 2-3, 2015 at the Hawthorne

Conference Center in Winston-Salem to examine efforts across the state and share lessons learned through Year 1 for continuous improvement in Year 2 of the grant cycle.

Summaries of the 20 collaborative initiatives, excerpted from the June 2015 presentations, are included in this report.



## Characteristics of Successful Pathways

- » **Demonstrated economic or workforce need.** Career pathway education and training programs align with the skill needs of industries important to the regional or state economy. Integration of employer identified needs in education and training is critical. Supporting labor market data for critical career clusters from the NC Jobs Plan can help identify initial pathway development needs.
- » **Employer engagement.** Upfront commitment from business and industry in the occupational sector is essential, with employers actively engaged in determining skill requirements for employment and career progression in high-demand occupations. Employers provide work-based learning experiences throughout the pathway and assist faculty with strategies to integrate theory and practice into skill development in the classroom and on the job.
- » **Stackable education and training options.** Programs include the full sequence of secondary and postsecondary education, including a non-duplicative progression of courses clearly articulated from one level of instruction to the next, articulated course credit, intentional work-based learning, opportunities to earn postsecondary credits while in high school, and registered apprenticeships. These educational activities build on each other, allowing the accumulation of knowledge and skills.
- » **Contextualized learning.** Curriculum and instructional strategies make “work” a central context for learning and help students attain work-readiness skills.
- » **Integrated education and training.** Integrated programs provide opportunities for high school students to earn postsecondary credit and consider awarding credit for prior learning and adopting other strategies that accelerate the educational and career advancement of the student. Some pathway programs address the needs of adults and combine occupational skill training with adult education services.
- » **Industry-recognized credentials.** Career pathways lead to earning technical certificates, diplomas, and/or degrees in addition to industry-recognized credentials, all of which have value in the labor market. Credentials facilitate entry into the labor market and support transitions back to education for advanced training opportunities.
- » **Multiple entry and exit points.** Individual needs vary. A well-designed career pathway allows individuals to continue their progression over time without duplication of content and by awarding credit for related experiences. Individuals may begin advanced coursework, earn a specific credential, begin full-time work, and later re-enter education, gaining additional workforce credentials and academic degrees that increase their employability.
- » **Comprehensive career advising and support.** Successful programs incorporate a career advising system with wrap-around support services. Services intentionally support the development of individual education and career plans.
- » **Programs for both students and working learners.** Career pathways are designed to meet the needs of all students, including students with financial need who often combine work and study. Single and working parents may need classes at times that can accommodate their work and child care schedules, with flexible and non-semester-based scheduling, alternative class times and locations, and innovative uses of technology.
- » **Rigorous programs of study (grades 9-14).** Programs of study build in academic and technical competencies, postsecondary certificates and credit, diplomas and degrees. The full range of education strategies are clearly articulated from one level of instruction to the next, including articulated course credit through the NC High School to Community College Articulation Agreement and locally developed agreements. Dual enrollment strategies are included through College and Career Promise, as well as work-based learning strategies leading to industry-recognized credentials.
- » **Work-based learning.** Opportunities for work-based learning are integrated into the 9-14 program of study to support classroom instruction, enhance skills development, and teach foundational workplace skills. Work-based learning provides valuable insights into the workplace environment, including standards, processes, competencies and culture. Work-based learning includes in-depth industry tours and field study, job shadowing, project-based learning, structured volunteer experiences, internships, experiential learning, service learning, school-based enterprise, on-the-job training and pre-apprenticeship, cooperative education, informal learning, and apprenticeship. Key to all work-based learning opportunities is the hands-on experience that enhances classroom instruction and prepares students for work.
- » **Intermediary or coordinator.** An industry-focused intermediary or coordinator serves as a bridge between the employer and education communities. The intermediary has a working knowledge of the industry sector, engages with employers to build understanding and works within education, training, and employment programs to facilitate curriculum development and learning outcomes that reflect the needs of the pathways partners. Typically, the intermediary is an external organization, such as a nonprofit employer-focused organization, chamber of commerce or workforce development board.

# Summary of NC Community College System **CAREER PATHWAY GRANTEEES**

## **ASHEVILLE-BUNCOMBE TECHNICAL COMMUNITY COLLEGE (A-B TECH)**

### **RAMP: Raising Awareness of Manufacturing Possibilities**



The genesis for RAMP came from the employer community, with significant advanced manufacturing expansions in the area (projected 500 jobs over next two years), and employers noting difficulty in finding enough qualified employees in the

area. Baldor Electric came forward early on, expressing this challenge, and became champions for the program.

RAMP, an advanced manufacturing pipeline initiative, is a partnership of A-B Tech, Mountain Area Workforce Development Board, and three public school districts (Madison County, Buncombe County, and Asheville City).

#### **Key features and impact of the initiative thus far:**

- Significant involvement by employers (Baldor Electric, GE Aviation, Linamar, Jacob-Holm, Kearfott, TE Connectivity) and community-based/business organizations such as Goodwill and area Chambers of Commerce.
- Blended funding to support RAMP, including multiple government grants, school system and private funding.
- Program of study 9-14, with defined articulation from secondary to post-secondary, including high school machining, Fundamentals of Automated Machining, A.A.S. degree in Computer-Integrated Machining. Includes pathway specific to Madison High and A-B Tech, with Madison program moving into a

### Grantee Community Colleges

- Asheville-Buncombe Technical Community College
- Brunswick Community College
- Caldwell Community College & Technical Institute
- Carteret Community College
- Catawba Valley Community College
- Central Carolina Community College
- Central Piedmont Community College
- Durham Technical Community College
- Edgecombe Community College
- Fayetteville Technical Community College
- Halifax Community College
- Haywood Community College
- Lenoir Community College
- Nash Community College
- Pamlico Community College
- Piedmont Community College
- Roanoke-Chowan Community College
- Rockingham Community College
- Rowan-Cabarrus Community College
- Vance-Granville Community College

new machining facility as part of the initiative. Pathways include computer-integrated machining technology, computer-aided drafting technology, and welding technology.

- A continuum of work-based experiences, including NCWorks apprenticeships at Atlas Precision, GE Aviation and Derringer-Ney, internships, job shadowing, manufacturing tours.

*(continued)*

**“Receiving the Perkins Pathway Grant has allowed our community group of industry, workforce development, and education stakeholders to begin implementing a vision for improved pathways and pipelines for young adults in the area to discover manufacturing as a viable, well-paying career option and assist them in entering the pathway of training and education to prepare for and enter skilled professions associated with manufacturing.”**

- Vernon Daugherty  
Dean, Engineering & Applied Technology  
A-B Tech Community College

Summary of NC Community College System  
**CAREER PATHWAY GRANTEES**

- Employer engagement, including Manufacturing Day and Week, career fairs.
- Career advising, including support for counselors and online career coach.
- Paid externships in manufacturing companies for up to 40 teachers, funded through school system.
- Industry-recognized credentials, including Career Readiness Certification (CRC), Machining Certificate, Manufacturing Skill Standards Council (MSSC) certification in logistics.
- RAMP \$1,000 scholarship for a senior.
- Video created to change the mindset around advanced manufacturing and to encourage girls to explore opportunities.
- Success measures identified: employer participation, increased student enrollment in pathways, increased number of apprenticeships, job placement and retention in manufacturing jobs, number of students registered in NCWorks, increased certifications earned.

**BRUNSWICK COMMUNITY COLLEGE**

***Horticulture and Turfgrass Management Career Paths***

Horticulture and turfgrass management careers are on the rise in Brunswick County and in the Southeast United States. Hundreds of regional golf courses, a growing number of retirees requiring lawn care services, and a growing movement toward more sustainable practices led Brunswick Community College to focus efforts around regional collaboration to create these pathways.

The initiative is a partnership with Brunswick Community College, Brunswick County Schools, Cape Fear Workforce Development Board, and area employers and professional associations.

***Key features and impact include:***

- Collaboration across college, schools, community leaders, area employers, workforce development board.

- Blended funding through government, employers, community and professional organizations, and individuals.
- Program of study 9-14, with secondary students earning postsecondary credit, multiple entry and exit points, and industry-recognized certificates in Turfgrass Management Technology and Horticulture Technology.
- Work-based learning and career awareness through employer engagement across four counties, including supervised agricultural experiences at 30 businesses, internships, guest speakers, job shadowing, career fairs, and industry-related field trips.
- Internships for three faculty at area businesses.
- Industry-recognized credentials, including Career Readiness Certificate (CRC), Briggs and Stratton Small Engine Repair Certification, NC Pesticide Category L Certifications, NC Certified Plant Professional, Nursery and Landscape Certifications, Landscape Contractors, Carolinas Irrigation licensure, and Arboriculture Certifications.
- Graduate hired as intermediary to coordinate collaboration and bridge education and economy.
- TV commercials, digital ads, website, and social media used to change perceptions of industry.
- Success measures: Increased numbers of students earning postsecondary credit, increased number of students earning certifications, increased professional development for faculty, increased work-based learning experiences, greater employer involvement, and college/school system collaboration.

***“Among other activities, funding from the NCWorks Career Pathways grant has enhanced Brunswick County’s employer partnerships in the Horticulture and Turfgrass Management industries, especially related to students’ and educators’ work-based learning experiences. A greater number of college and high school students, faculty, staff and school administrators are spending time in the real work-world leading to a better understanding of business needs and acceptance of differences between the education and business worlds. This ongoing relationship leads to more opportunities for students and educators and ultimately provides highly trained employees for businesses and agencies.”***

- Jerry W. Smith  
 Center for Advanced Studies Coordinator  
 Brunswick County Schools/Brunswick Community College, NC

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**CAREER PATHWAY GRANTEEES**

**CALDWELL COMMUNITY COLLEGE AND TECHNICAL INSTITUTE**

Capitalizing on collaboration already occurring through early college and career-focused middle college, Caldwell reflects a two-pronged approach: advanced manufacturing and health care, with a focus on STEM skills. Initial efforts target building awareness of area employers and their skills needs. Surveys showed little awareness by either teachers or students, with many believing jobs were not available in their county. Yet the county is home to many employers, especially in advanced manufacturing and health care.

**Key features and impact include:**

- Collaboration across community college, school system, chamber of commerce, economic development commission, Western Piedmont Workforce Development Board, and area employers.
- Program of study 9-14, with pathways in advanced manufacturing in two focus areas: engineering and biomedical.
- Initiative builds on initial pathways work begun with a Pathways to Prosperity CTE grant and includes high school visits to Caldwell Community College's Electronics and Engineering Technologies Program and Automotive Systems Technology Program as well as a career-focused event at the college with faculty and employers in a variety of fields, such as health sciences, arts, STEM, hospitality, and transportation/public service.
- Transition advisors support students in scheduling college coursework and serve as a bridge between high school and the community college.
- Dream scholars target sixth-grade, first generation college-going students.

**CARTERET COMMUNITY COLLEGE**

To ensure collaboration across key stakeholders, a steering committee of employers, educators and employer intermediaries provides leadership for the career pathways initiative. Subcommittees provide specific implementation of employer engagement, career pathway development, and career information and advising, the primary objectives of the approach. Carteret County is not a manufacturing hub; its economy is service- and retirement-oriented, with a major focus on tourism and the military. Seventy percent of Carteret employees work at Cherry Point.

**Key features and impact include:**

- Collaboration across employers (Carteret General Hospital and health care providers; military, FRC East; small businesses), Eastern Carolina Workforce Development Board, Carteret County Chamber of Commerce, county government, school system, and community college.
- Demonstrated workforce need in the areas of IT and health care. IT need is for more "super users" since IT specialization is not feasible in small businesses. With

retiree community, health care needs are escalating.

- Completed an Office Administration (OA) pathway incorporating industry credentials; may be used as a basis for a Healthcare Business Informatics (HBI) pathway. Developing a Health Sciences pathway which may integrate with HBI.
- In development is a broad Computer Information Technology (CIT) pathway incorporating industry credentials leading to academic stackable credentials.
- Career advising is key focus, including health sciences academy, computer camp, law enforcement camp and more. Performed 800 eighth-grade career interest and learning styles inventories to support students' career exploration.
- Embedded community college counselors in the high schools and created a Career Center at the community college.
- Conducted joint professional development for community college and school faculty.
- Identified key challenge of providing information to parents, as well as building "soft" skills in students.

**Lessons Learned**

**Barriers to Employer Engagement/Work-Based Learning**

- *Education jargon, workforce jargon*
- *Lack of employability skills by students*
- *Communications between school and employer*
- *Fear of liability issues*
- *Traditional academic calendar*
- *Time constraints on the part of industry or education*
- *Course credit, timing and internship hours' requirement (e.g. student receives incomplete if summer course allows inadequate time to meet required internship hours)*
- *Employer with bad previous experience*
- *Student availability*
- *Adaptability of different generations in the workforce*
- *Confidentiality / proprietary industry information*

Summary of NC Community College System  
**CAREER PATHWAY GRANTEES**

**CATAWBA VALLEY COMMUNITY COLLEGE**

***Catawba and Alexander Advanced Manufacturing Pathways Project***

This collaborative initiative resulted from area industry coming forward seeking help as baby boomers began retiring, and they recognized the importance of changing the perception of students and parents about manufacturing. The following partners are engaged: Catawba Valley Community College, four public school districts (Alexander County, Catawba County, Hickory and Newton-Conover), industry partners, and the Western Piedmont Workforce Development Board.

***Key goals are:***

- Raise the bar on the skill level of the existing workforce;
- Change the perceptions of students and parents about manufacturing and careers in manufacturing; and
- Ensure there is a trained workforce for the future (Advanced Manufacturing Academy, Catawba Valley Furniture Academy, and Apprenticeship Catawba).

***Key features and impact:***

- Employer engagement through apprenticeships, internships, plant

tours, Extreme STEM tours, National Manufacturing Day with week-long showcase, Education Matters to encourage active involvement between education and business.

- Demonstrated workforce need by business coming forward and working together to solutions. Collaboration across education, government, and industry.
- Key contact card developed to make it easy and clear for business about who to contact in education to get involved.
- Program of study begins in ninth grade and continues through and beyond two years of college. It leverages dual enrollment through Career and College Promise with Computer Integrated Machining and Mechatronic students earning postsecondary credit. It includes articulated courses in Mechatronics.
- Work-based learning integrated at all levels through career exploration (Extreme STEM tours and other activities), summer internships and apprenticeships.
- Industry credentials through the Manufacturing Skills Standards Council (MSSC), OSHA, and National Institute for Metal Working Skills (NIMS).
- Involvement of parents and family encouraged with information specifically directed to parents.

**CENTRAL CAROLINA COMMUNITY COLLEGE**

***Central Carolina Apprenticeship Works (Chatham, Lee and Harnett counties)***

Work-based learning and stackable credentials are the focus of this initiative which leverages industry involvement through apprenticeships. Employers commit to fund the equivalent of \$32,000 in education through the apprenticeship. Sixty students graduate with both high school diploma and industry-recognized certificate from Central Carolina Community College.

***Key features and impact include:***

- Demonstrated workforce need through business involvement in designing needed apprenticeships. Caterpillar provided initial apprenticeships in welding, followed by Computer-Integrated Machining Technology apprenticeships in seven companies.
- Stackable credentials are a key feature with students graduating with a high school diploma and certificate in Computer Integrated Machining with emphasis on Tool and Die. After completing third year of program, students graduate with an Associate degree in Computer Integrated Machining.
- Career advising provided through Central Carolina Works career counselors in the high schools.
- A Business Recruitment Acquisition Team (BRAT), consisting of community college, schools and workforce board representatives, recruits involvement from employers.



Summary of NC Community College System  
**CAREER PATHWAY GRANTEES**

**CENTRAL PIEDMONT COMMUNITY COLLEGE**

Central Piedmont’s initiative is a collaborative approach across the community college, Charlotte Mecklenburg Schools, Charlotte Works (workforce development board), and area employers. The community college has six campuses with a variety of focus areas. A middle college program offers transfer pathway programs and added technical transfer programs for dual enrollment on two campuses. One effort seeks to align CPCC’s Harper campus with industry and community partners.

**Key features and impact include:**

- Departmental advisory board meetings each quarter with over 70 partners.
- Mentoring within the architectural and construction trade professions.
- Career discovery days and career fairs.
- Charlotte Works and Youth Business Connector collaboration.
- Community outreach.
- Exploration summer technology camps in construction technologies, graphics and welding technologies, and future prep educational services.

**DURHAM TECHNICAL COMMUNITY COLLEGE**

**Strengthening the IT Pathway: A Durham Partnership**

A partnership and collaborative called Made in Durham is bringing together Durham Public Schools, Durham Tech, employers, workforce development board, city and county government, and community agencies to create an education-to-career system. This system comprises K-16+ career pathways featuring aligned programs of study connected with work-based learning experiences for students.

In 2014-15 its focus began in health and life sciences using funding from the NC Education and Workforce Innovation Fund. In 2015-16, its focus is on Information Technology leveraging the NC Community College System’s career pathways grant.

**Key features and impact include:**

- Demonstrated economic/workforce need based on projected growth of IT jobs in the Triangle in the next 10 years of 21 percent, compared with only 4.3 percent expected growth nationwide. Average salary of IT-related jobs in the Triangle in 2014 was \$103,136.
- Collaborative approach leveraging education, employers, intermediary (Made in Durham), workforce board, government, and community. Collaboration resulted from recognition that roughly 40 percent of Durham’s youth and young adults are not on track to complete high school, achieve a postsecondary credential and gain employment by the age of 25.
- Employer engagement through an IT Work Group, in addition to Made in Durham. Work group reviews secondary and post-secondary learning outcomes and alignment, determines stackable credentials, reviews existing Career and College Pathways, designs two new pathways, reviews 9-14 programs of study, and assists with marketing efforts.
- Career advising and support services are infused in the effort through a college liaison, stipend support for secondary teachers to create a support structure, youth summit, and marketing effort (posters, videos, student-designed brochure).
- Work-based learning includes internships (Durham YouthWorks), mentoring through US2020 RTP, company tours, STEM conference, and Trailblazer Triangle Start-Up Weekend.
- Success measures include the creation of pathways, number of students enrolled in each pathway, completing pathways,

experiencing work-based learning and mentoring opportunities, completing employability skills course, transitioning to IT program of study, and completing IT program of study.

**EDGECOMBE COMMUNITY COLLEGE**

Career advising and exploration are key areas of focus for the Edgecombe collaboration with public schools, community college, employers, and workforce board.

**Key features and impact include:**

- Four career coaches hired and based in the high schools, averaging 25 to 30 hours a week meeting all students. To ensure contact with all students, coaches go into every high school English class and then are present when students meet with school counselors. Coaches are retired educators and understand the career pathways. They are seeing an increase in the number of students coming to the community college as a result of the face-to-face contact.
- Additional career exploration activities include:
  - Career Clusters showcase in October for middle and high school students and community college students to demonstrate the seamless transition from high school curriculum to community college and then to four-year college or career.
  - Advanced Manufacturing and STEM Career Awareness Week in April, including BIONetwork STEM bus tours, STEM Bowl and STEM Fair, Manufacturing Lab Open House, demonstrations in robotic technology, 3D printing, computer controlled machining, computer-aided design, electronics lab in motor controls and commercial wiring, and alternative energy technology.

(continued)

Summary of NC Community College System  
**CAREER PATHWAY GRANTEES**

- Industry-recognized credentials include Electrical/Electronics Technology Certificate and Manufacturing Technology Certificate.
- Work-based learning experiences include internships at Keihin Carolina System Technology, with one intern already hired by the company to work full-time. Experiences also include state and national competitions through SkillsUSA, with exposure to employers.

**FAYETTEVILLE TECHNICAL COMMUNITY COLLEGE**

**Collision Repair & Refinishing Technology**

Fayetteville Tech partnered with industry and NC Business Committee for Education (NCBCE) to create a state-of-the-art collision industry associate degree program and career pathway to provide employers with the resources they need to close the current skills gap in the collision industry. Its mission is to create an industry-specific educational culture owned by industry and facilitated by the community college.

**Key features and impact include:**

- Collaboration and partnership across

public school system, community college, industry and state leadership. Industry partners include Gerber Collision, Nationwide Insurance, PPG Coatings, and Inter-Industry Conference for Automotive Collision Repair (I-CAR).

- Industry need is driven by rapidly increasing National Highway Traffic Safety Administration standards to increase fuel efficiency and reduce gas emissions, Federal Motor Vehicle Safety Standards and Regulations, technological advancements, the aging of the workforce, and a lack of young people coming into the industry. Only 10 percent of technicians have any certification, and only two percent are certified to weld. Yet salaries range from \$45,000 to over \$100,000.
- Employer engagement high in the effort through curriculum development; donations of time, equipment and funds; guest instructors; and internships/apprenticeships.
- Industry-approved curriculum with I-CAR certifications, ASE certifications, manufacturer certifications, curriculum and facility easily reconfigured to keep pace with technology, and qualified and compensated instructors. Program

was built and is led by a program director who came from the automotive industry.

- Career pathway begins at middle school (exploration), through high school, community college and four-year university (Western Carolina University).
- 9-14 Program of Study moves from Westover High School where the existing collision program is being updated and through Fayetteville Tech with articulated credit and earning of Associate in Post Collision Remanufacturing.
- Work-based learning experiences include career and trade days, multiple levels of mentoring, internships, apprenticeships, and pre-graduation hiring.

***“It is critical that employers drive the creation of career pathways. Collaboration is key as well as ensuring that pathways address economic needs of the region.”***

- Dion Clark, Ed.D.  
 Director, NCWorks Career Pathways

**Lessons Learned**

**Ways to Increase Employer Engagement/Work-Based Learning**

- *Develop key relationship with CEO or other company leadership.*
- *Build database of employers, opportunities available by employer, goals & objectives.*
- *Maintain constant contact with student, employer engaged in work-based learning.*
- *Develop work plan with employer to alleviate any trepidation in working with student.*
- *Make it easy for employer to reduce documentation or time.*
- *Give employers advance notice of when you need their involvement.*
- *Help employers see long-term benefit to them in terms of future talent pool.*
- *Encourage employers and schools to be flexible in scheduling.*
- *Give employers specifics about what is expected to build mutual understanding (Who, what, when, where, why).*
- *Encourage meaningful experiences. For example, instead of field trip or tour, add a hands-on learning experience to make it a field study. Instead of guest speaker, facilitate a class project.*
- *Be flexible with industry and take what they offer.*
- *Be persistent; do not give up.*
- *Success breeds success. Use willing partners. Publicize and spotlight their effort.*

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**HALIFAX  
 COMMUNITY COLLEGE**

**Advanced Manufacturing Career Cluster**

Halifax Community College's career pathways initiative includes a broad range of partners, including the Roanoke Valley Business Education Partnership, Turning Point Workforce Development Board, the community college, and four public school systems (Halifax County, Northampton County, Roanoke Rapids Graded School District and Weldon City Schools).

**Outcomes the initiative seeks to achieve include:**

- A clear system (pathway) for students from school to career;
- Closely aligned high school, community college, and business/industry; and
- Deepened ties between public schools, community college, and business/industry.

**Key features and impact include:**

- Demonstrated economic need reflects a forecast of 1,063 new employees needed through 2017 according to the 2012 Halifax Community College (HCC) industrial survey. Younger students will benefit from increased career development activities to fuel the "pipeline journey" within this rural area.
- Through employer engagement, business partners provide leadership, feedback and support for pathways, offer work-based learning opportunities for students and teachers, as well as define the skill sets for career clusters. Business partners include Lowe's Distribution Center, Safelite Glass Corporation, PCB Piezotronics, Enviva, and Klausner.
- Work-based learning includes job shadowing with Lowe's Distribution Center and continuous training for Career Readiness Certification and Human Resource Development.
- Career advising infused throughout pathway, including advanced manufacturing

and career pathways coordinators, and HCC Career Pathways Expo.

- Grades 9-14 Pathways development includes systematic and ongoing review of each pathway, close alignment with workforce development board and employers in developing innovative ways to deliver instruction and determine skills mastery, and educating students, parents and teachers on the role of career pathways that incorporate stackable credentials leading to a successful career. Programs of study include industrial systems and welding.

**HAYWOOD  
 COMMUNITY COLLEGE**

**Changing Gears and Accelerating Transportation Student Success**

This automotive systems technology initiative includes Haywood Community College, Haywood Public Schools, Southwestern Workforce Development Board, and local automotive employers. A career pathways coordinator serves as the focal point for communications, regularly attending workforce development board meetings to update progress and forging partnerships with local employers to create internships and gather feedback for continuous improvement.

**Key features and impact:**

- Demonstrated economic need is reflected in NC ranking 11th in the nation for total automotive cluster employment; 39 percent of automotive technicians are age 45 and older. Local industry is seeing significant turnover and wants renewed ties to college and training opportunities.
- Employer engagement evident through funding and providing internships, validating curriculum development and program design, and developing specific learning outcomes for students who participate in internships.
- Work-based learning courses are provided through the community college

in 10 programs of study. Eight internships were set up with local automotive employers, with one student already hired by the employer at the end of the internship. The partnership faces a challenge in attracting students to the internships.

- Haywood Community College leverages an online portal to facilitate enrollment and information about the pathways in Automotive Systems Technology and Metals Manufacturing Technology.
- Grades 9-14 Pathways include secondary and postsecondary courses, infused with career advising and work-based learning experiences. High school students have the opportunity to earn college credit, and by the end of year 13 will have earned both high school and community college diplomas.
- Industry-recognized certificates available in Automotive Systems Technology and Automotive Systems Technology – Intermediate.

**LENOIR  
 COMMUNITY COLLEGE**

**Manufacturing Pathway**



The overarching goal of this partnership is to increase work-based learning opportunities for Computer-Integrated Machining and Welding CTE Pathway students in grades 9-14, providing graduates with competitive skills credentials and employment opportunities in high-demand jobs. Partners in this collaborative initiative have clearly defined roles, with partners including Lenoir Community College, Lenoir County Public Schools, the Eastern Carolina Workforce

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Summary of NC Community College System  
**CAREER PATHWAY GRANTEEES**

Development Board, NCWorks Career Center, and major employers in machining and welding.

**Key features and impact:**

- Demonstrated economic need evident from local employers in machining and welding, so initial pathway development began in these areas. Fourteen pathways now available.
- Employer engagement involving the following employers: Precision Hydraulics, Pactiv, West Company, Moen, Crown Forklifts, Waters Industrial Crane.
- Significant student interest; efforts made to “take the show on the road” and educate parents and communities. When parents understand the savings in tuition and salaries available for their children, they are interested. When they understand employers are in the area, they realize their students will not have to leave the county.
- Pathways include opportunity to earn college credit while in high school and complete certificate, diploma and degree. Certificates include Computer-Integrated Machining Skills, Computer-Integrated Machining Workforce Readiness Certificate, National Institute of Metalworking Skills (NIMS). College degree includes A.A.S. in Computer-Integrated Machining Technology.

**NASH COMMUNITY COLLEGE**

**Advanced Manufacturing**

Nash Community College’s pathways program seeks to educate parents and students about living-wage career options; create a seamless, integrated pipeline from high school to community college to the workforce; prepare future, existing and displaced workers for manufacturing careers; and build a foundation for lifelong learning through stackable credentials required in advanced manufacturing.

**Key features and impact:**

- Employer engagement through Cummins-Rocky Mount Engine Plant, Edwards Corporation, Hospira, and local hospital.
- Areas of focus include helping ensure school counselors understand pathway and scheduling at the community college level, as well as providing joint professional development among community college and high school faculty to create new synergy and improved instruction and collaboration.
- Career awareness infused in the pathways through Career and College Promise night for students and parents, job fairs, CTE showcase, engineering week at Cummins-Rocky Mount Engine Plant, and career exploration visits to middle schools.

**PAMLICO COMMUNITY COLLEGE**

**Human Services Pathways**

Through the career pathways program, Pamlico Community College (PCC) has brought together a wide variety of partners including the Pamlico County Schools, Pamlico County Health Department, Pamlico Health Alliance, Eastern Carolina Workforce Development Board, Pamlico employers, four-year colleges (Barton College and UNC-G), and human service and career departments at PCC.

**Key features and impact:**

- Demonstrated economic need in this small county includes human services and substance abuse treatment and prevention. With the size of the county, most residents leave the county for work. Needs of the county led the partnership to focus on Human Services Technology pathway, and significant interest among students exists in both a job and a degree in this field.
- Recruitment of students to the pathways includes beginning with students in the county’s early college, as well as through Gear Up and Allied Health classes.

- Employer relationships are cultivated through face-to-face visits, phone calls, surveys, and consultation with the local chamber of commerce and economic developer.
- Work-based learning is primarily through job shadowing, as employers do not have funds for internships. Plan to explore funding options for internships.
- 2+2 programs in place with both Barton College and UNC-G.
- Pathways designed with both entry and exit points, with the opportunity to earn industry-recognized certificates, A.A.S. degree in Human Services Technology, B.A. or B.S. degree.
- Four students enrolled in first year of Human Services Technology program, and all four will graduate at the end of the fall 2015 semester.

**Lessons Learned**

**How to Improve Engagement between Community College and High School**

- *Open channels of communication between leadership*
- *Transition coaches meeting with students, advising them on requirements, and helping them through admissions process*
- *Monthly meetings of CTE faculty, counselors, career development coordinators – building relationships*
- *Joint summer professional development*
- *Joint partnerships in community*
- *Joint grant preparation*
- *Site visits – community college faculty to high school; high school faculty to community college*
- *Collaboration in pathway development*

Summary of NC Community College System  
**CAREER PATHWAY GRANTEES**

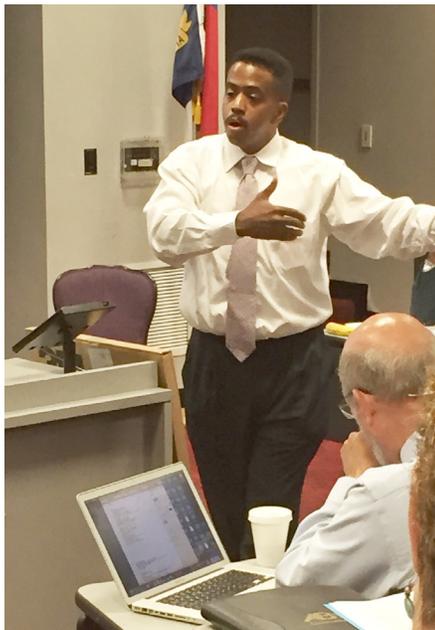
**PIEDMONT COMMUNITY COLLEGE**

***Nurse Aide Pathway***

Partners in this pathway initiative include Piedmont Community College, Caswell and Person County Schools, Kerr-Tar Workforce Development Board, Person Memorial Hospital, Duke Hospital, and Roxboro Healthcare and Rehabilitation.

***Key features and impact:***

- Demonstrated economic need revealed health care as high-growth industry, with a projected growth rate of 15 to 21 percent by 2022. Nursing assistants and home health aides expected to grow by 21 and 48 percent respectively. A special identified need was to develop a pathway that allowed qualified high school graduates to matriculate directly into an Associate’s Degree in Nursing (ADN) program.
- Employer engagement includes Person Memorial Hospital and Roxboro Healthcare and Rehabilitation providing clinical sites for the new pathway. All three hospitals agreed to provide tours and industry representatives to talk with students about nursing assistant and nursing careers.



- Industry credentials that can be earned include Nurse Aide I (NAI), Nurse Aide II (NAII), and RN credentials.
- Grades 9-14 Program of Study includes high school courses as well as Career and College Promise courses available while in high school. Articulated credit for Caswell County Schools Nursing Fundamentals (to NAS 101), and secondary students earn postsecondary credit for NAS 101 and 102 and BIO 168.
- Multiple entry and exit points for the pathway are in place. Students may stop after earning any credential and return.
- Career advising is infused throughout pathway, including a summer Camp MED boot camp to help students fill developmental English and math requirements. During boot camp, students interact with nursing faculty who help them develop plans of study, discuss career options, and demonstrate nursing skills in Simulation lab to stimulate enthusiasm. Soft skills seminars and access to industry representatives occur throughout pathway. Postsecondary transition coaches in the high schools link students with appropriate faculty at the college.
- Work-based learning includes clinical experiences in NAS 101 and 102. All nursing courses contain a clinical component (over 800 hours of clinical including a capstone preceptorship experience). Experiences also include industry tours and healthcare industry speakers.
- Success measures include completion rates of pathway, monitoring impact of boot camp in assisting students to place out of developmental course work, matriculation rates into ADN program, and graduation rates of ADN students who began in pathway.

**ROANOKE-CHOWAN COMMUNITY COLLEGE**

***Career Pathways in Advanced Manufacturing***

Consortium members include Roanoke-Chowan Community College, Region Q Workforce Development Board, Hertford County Public Schools, NC NE Pathways to Prosperity, Ahoskie Chamber of Commerce, Hertford County NCWorks, Hertford County Business and Industries Council, and local employers. The consortium began as a result of strong relationships between the community college and local government, employers, community organizations, and public schools in the area. These relationships led to the development of the Hertford County Business and Industries Council. Through this effort, the pathways project was identified, with the group pooling its resources with other colleges in collaborating on best practices.

Project goals are to develop and implement career pathways, provide industries a skilled workforce, lead young people and adults to attain industry-recognized postsecondary credentials, and lead young people and adults to family-sustaining careers in high-demand industries and occupations.

***Key features and impact:***

- Employer engagement involves Alfiniti Aluminum, Berry Plastics, Nucor Steel, Perdue Farms, Roanoke Electric Cooperative, Enviva Biomass, and Schueck Steel. Fourteen employers participated in three Advanced Manufacturing Strategic Planning Committee meetings to help develop pathway. Employers continue to assist in curriculum development and career advising. Local businesses have requested college students to participate in paid entry-level positions working part-time, with full-time employment upon completion of their program of study.

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Summary of NC Community College System  
**CAREER PATHWAY GRANTEEES**

- Grades 9-14 Program of Study provides intentional alignment and integration allowing for multiple entry and exit points. It infuses career advising, work-based learning, as well as rigorous academics and technical training. It enables high school students to earn college credit.
- A variety of linkages between secondary and postsecondary education occur, including community college faculty and staff participating on CTE advisory council at high school, community college recruiting Elizabeth City State University to participate in regional planning, community college student services staff and career coach continuously visiting local schools, college staff attending parent-teacher organization meetings, and high school students taking college courses through Career and College Promise.
- Industry credentials available: Career Readiness Certificate, OSHA, Certified Production Technician Certificate, 2013 Microsoft Office Specialist Certification, American Welding Society Certified Welder (AWS), Schools Excelling through National Skills Education (SENSE). Future certificates will include: Certified Logistics Technician, Environmental Protection Agency Chlorofluorocarbon (EPA CFC), and Shielded Metal Arc Welding (SMAW).
- Career advising includes use of a career guidance tool to support school districts in developing an advising plan, as well as career fairs at the community college and Advanced Manufacturing Day with students visiting the community college campus for presentations, a campus tour, and interactions with employers.
- Work-based learning: The consortium aims to increase these opportunities through continued relationship building and including requirements in the pathway for on-the-job training, projects, job shadowing, pre-apprenticeships, internships, and mentoring.

**ROCKINGHAM  
 COMMUNITY COLLEGE**

**Aviation in Rockingham**

This partnership began as a result of teachers, employers, county commissioners, and other local leaders trying to understand why students and graduates were not taking advantage of opportunities close to home. Over 30 aviation companies are located in the Triad, with over 6,000 employees. At Piedmont Aviation, four years ago they had 100 employees. Today there are 400. One company indicated to the community college that if they trained 50 machinists, they would hire all of them.

After continuing to meet, the group realized that a pathway in aviation machining was the answer.

**Key features and impact:**

- Original partnership includes Rockingham Community College, Rockingham County Schools, HAECO Americas, PEMMCO Manufacturing, MSI, TriadWorks, Junior Achievement, and ECU. New partners

include North State Aviation, Piedmont Aviation, HondaJet, Purolator, Bridgestone, and Rockingham County – Shiloh Airport.

- Grades 9-14 Program of Study includes a clear sequence of academic and technical courses and work-based learning. High school students take college course work through Career and College Promise. Years 15-16 are available through East Carolina University degree completion program, with a B.S. in Industrial Technology.
- Industry-recognized credentials include NC Career Readiness Certificate, National Institute of Metalworking Skills (NIMS) certification, and SolidWorks certification.
- Multiple entry and exit points exist in pathway.
- Work-based learning includes company/ airport visits, job shadowing, and internship/cooperative opportunities.
- A marketing video was created called “Why Not Now?” (YouTube)
- Success measures include number of new partners, increased enrollment, and number of new pathways.

**Lessons Learned**

**How to Engage Workforce Development Boards**

- *Pull them into the career pathway planning from the beginning; include them as part of the pathways leadership team.*
- *Involve their business services team.*
- *Ask that they serve as a convener of key stakeholders.*
- *Enlist their help in connecting with employers.*
- *Offer representatives to serve on their board (Mountain area board includes superintendents).*
- *Invite workforce board representation on CTE advisory boards.*
- *Collaborate to create regionally certified pathways.*
- *Invite them to tour community college / high school campuses.*
- *Suggest that they include pathways progress on their meeting agendas; offer to speak at board meeting.*
- *Explore fully the new federal Workforce Investment and Opportunity Act; encourage their help in building understanding of how that law supports pathway development.*
- *Set aside past perceptions of the board; build new relationships with an open mind; board members change.*

Summary of NC Community College System  
**CAREER PATHWAY GRANTEEES**

**ROWAN-CABARRUS  
COMMUNITY COLLEGE**

**Health Science Career Pathways**



Through this initiative, Rowan-Cabarrus Community College partnered with Cabarrus County, Rowan-Salisbury and Kannapolis City Schools to develop Health Science Career Pathways, including a Nurse Aide Certificate Pathway. Collaborative partnerships developed with Allied Health Regional Skills Partnership - Competitive Workforce Alliance, Carolinas Healthcare Systems, Novant Health, and local long-term care facilities.

**Key features and impact:**

- Economic and workforce need showed growing importance for employees in health care fields. Employers noted that additional programs are needed because of Affordable Health Care Act and aging population. Soft skills, office and technology skills cited, as well as the need for health and fitness coaches to promote wellness.
- Employer engagement included Rowan-Cabarrus Health Summit to determine need for additional programs at the community college. Employers are also engaged through World of Work Seminar (WBL 110 – soft skills, resume writing, etc.) and through nurse aide

clinical component providing practice experience.

- Grades 9-14 Program of Study includes a clear sequence of academic and technical training, as well as work-based learning and the opportunity to earn industry-recognized credentials.
- Industry-recognized credentials: radiography, practical nursing, dental assisting, health care business informatics, medical data management. Degrees include A.A.S. Nursing, B.S. Public Health, B.S. Nursing, B.S. Social Work, B.S. Healthcare Business Informatics.
- Career awareness and advising are infused throughout pathway, including STEM open house, field trips to NC Research Campus, and the Rowan Cabarrus Health Pathways Symposium.
- Success measures include receiving state approval for new Nurse Aide Certificate Program, 15 students applying for the pathway beginning January 2016, and holding a symposium to build awareness of the pathway among counselors, career development coordinators, faculty, and employers.

**VANCE-GRANVILLE  
COMMUNITY COLLEGE**

**Manufacturing Career Pathways Project**

Vance-Granville Community College (VGCC) and the Franklin County CTE Program are designing Manufacturing Careers Pathways, including Electronics Engineering, Welding, and Electrical Systems. The Manufacturing Careers Pathways were selected based on local and regional needs for employees with these skills.

**Key features and impact:**

- Partnerships across education, Kerr-Tar Workforce Development Board, and local employers are utilized. The Advanced Manufacturing Skills Center (AMSC) and the Advanced Manufacturing Training Alliance Initiative (AMSTA) reflect a partnership approach enabling the region to undertake significant numbers and scope of projects through the alliance. AMSC trains workers who can operate, troubleshoot and maintain today's industrial equipment. It focuses

*(continued)*

***“Over the past year, we have experienced first-hand that implementing a new career pathway requires in-depth communication and collaboration between K-14 educational partners and industry, along with an overall vision that provides funding to effectively implement a successful program. Educators must understand the workforce need that is driving the pathway, but also that industry moves quickly. If educators take too long planning and implementing a pathway, it could be obsolete before it produces graduates. Ideally, everyone has the same vision: a thoughtfully planned, but adaptable, career pathway involving both education and industry with the end result being successful careers for students who choose that pathway.”***

- Stephanie H. Ayers  
AMSTA Project Manager  
Vance-Granville Community College

Summary of NC Community College System  
**CAREER PATHWAY GRANTEEES**

- on aligning curriculum with industry needs, recruiting students and hands-on labs using state-of-the-art equipment. AMSTA, encompassing VGCC curriculum/ continuing education programs and local high school CTE programs, prepares students and area residents for careers in manufacturing and related industries.
- Employer engagement: Employers provide work-based learning opportunities and career awareness activities. Employers confirm skills needed by prospective employees and that pathways goals align with employer needs.
- Industry credentials: Certified Production Technician (CPT), Career Readiness Credential (CRC), OSHA.
- Postsecondary credit: Initial classes are in welding at VGCC's Franklin County campus. Electronics Engineering Technology and Electrical Systems Technology are in process of SACS accreditation and will be offered in Spring 2016 or sooner.
- Multiple entry and exit points in the pathways are in development.
- Career awareness activities include lunch-and-learns with employers, multiple career fairs, Advanced Manufacturing Career Day, and job expos in Applied Technologies and Construction and Logistics.
- Career advising and support services are infused in the pathway, including career guidance and articulation of credit to VGCC's applied technology programs.
- Success measures include 35 students receiving a Certified Production Technician (CPT) credential per year in high school and VGCC programs (17 to date); 600 students successfully completing two or more manufacturing skills CTE classes per year (375 to date as of December 2014), and 40-50 high school students and 2-3 faculty participate in internships and industry work experiences per year (early stage development).



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