



**Career Pathways Summary Version Title:  
Manufacturing & Welding Career Pathway**

**Career Pathways Title:** Manufacturing & Welding

**Sector/Occupation:** Manufacturing

**Prosperity Zone:** Northwest

**Local point of contact (name/title):** Misty Bishop-Price, NCWorks Operations Manager

**Agency:** High Country Workforce Development Board

**Phone:** 828.265.5434 ext. 119

**Email:** [misty.bishopprice@highcountrywdb.com](mailto:misty.bishopprice@highcountrywdb.com)

**Website:** [www.highcountrywdb.com](http://www.highcountrywdb.com)

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## **Overview**

The High Country Workforce Development Board's service delivery area is located in the Northwest Mountains of North Carolina. This region spans over 2500 square miles including seven mostly rural counties within the Northwest Prosperity Zone. Following national trends, North Carolina and the High Country Workforce Development Board region have both identified manufacturing as a growth industry while currently experiencing a shortage of qualified workers to meet today's demand.

Over the course of four months of pathway planning, a wide range of partners, educators, and employers met, listened to one another's needs, developed relationships, and learned from each other about demands the manufacturing sector is currently facing. While the manufacturing sector is an active and thriving industry that plays a huge role in the economic prosperity of the region, it became apparent that there were unique challenges for the industry. Through engagement and collaboration employers and educators shared opportunities in creating a pipeline of trained workers with the necessary credentials.

The committee established three workgroups in which to address the eight evaluation criteria for Career Pathways Certification. The Workgroups were broken down as follows:

- Data Driven and Evaluation
- Employer Engagement, Collaboration and Career Awareness
- Articulation, Collaboration, Work-Based Learning and Multiple On and Off Ramps.

Each group consisted of employers, educators and key community stakeholders. In addition, each workgroup had a mixture of county representation. Below is a summary of the work that each group contributed to the application.

### **1. Data Driven and Data Informed**

This section provides supporting evidence that the High Country's manufacturing sector is projected to grow at similar rates as is projected for the nation and our state with growth much higher than most other sectors at each of these levels. The Northwest Prosperity Zone's Top 15 Star Jobs by educational level also supports the regional and local prevalence of jobs within the manufacturing sector and above average wage levels. Many of the High Country's largest employers support manufacturing employment. Finally for job seekers that successfully complete training and receive needed credentials, wages tend to be above average for all levels of experience.

Based on feedback from local employers, the majority agree there appears to be a significant skills gap and talent shortage. Employers are having difficulties finding the right workers with the skills (both hard and soft skills) that match their hiring needs.

### **2. Employer Engagement**

Employer engagement prior to and during this process shows strong support of the manufacturing pathway. Employers appear to have close partnerships with education and the community as evidenced by their participation in various roles related to manufacturing such as serving on advisory committees, participating in community events, serving as work based learning sites, serving on the Workforce Development Board and other school related events.

### **3. Collaborative**

The pathway development included input from the region's manufacturing employers, local education agencies, community colleges and universities, Workforce Development Board, other industry leaders, and key community partners. Throughout the process relationships were created, partnerships were developed, and strong dialogue occurred as needs and gaps were identified. We feel that this collaboration will continue as the region continues to develop this sector.

### **4. Career Awareness**

Career awareness activities are a strong component in the High Country region and include involvement with industry, education, partners, and NCWorks Career Centers. To assist in meeting the needs of this growing industry, regular events are held to help promote and educate youth, adults, and dislocated workers on the workforce demands and opportunities within the region. Beginning in middle school, Career and Technical Education (CTE) personnel and school guidance counselors educate students about future career paths. Students throughout middle and high schools are made aware of careers in manufacturing through guided industry tours and on-campus engagement employers.

### **5. Articulation and Coordination**

High Country's seven county-wide educational partnership is supported by a series of articulation agreements between the schools, community colleges and local universities. Unique one-to-one articulations are in place for some of the Local Education Agencies and their respective community colleges. Career & College Promise programs allow high school students to seamlessly take community college classes for credit and complete diploma, certificate and degree programs quicker.

There are three community colleges in the seven county High Country region and they all offer a variety of 'for credit' & degree programs, plus diploma and certificate oriented programs. Non-credit options are available through the continuing education programs at the local community colleges, and adult participants and vocational rehabilitation clients are frequent enrollees. State Universities are rounding out the undergraduate and graduate level offerings via distance education sites and online.

### **6. Work-Based Learning**

Manufacturing employers are enhancing their relationships with the Department of Public Instruction in the High Country's seven counties, as well as with the community colleges and NCWorks Career Centers in coordinating Work-Based Learning opportunities. Feedback from employers shows engagement between educators and manufacturing organizations with traditional career fairs, industry tours, and industry guest speakers. An inventory of affiliations between schools and employers is provided. NCWorks Career Centers located in the High Country support manufacturing professions by promoting various programs offered at the three community colleges in the region. There has been a resurgence in apprenticeships in Wilkes County with their new pre-apprenticeship program beginning this Summer 2018. As a result, there is renewed interest by employers throughout the High Country region in how apprenticeships might work in various counties in the area.

## **7. Multiple On and Off Ramps**

High Country's manufacturing pathway has entry and exit ramps for a wide variety of the population including everyone from youth to the unemployed, dislocated, as well as active duty or transitioning military service members and former offenders. In addition to employers, educators and community stakeholders, we listened to, and incorporated the ideas of, Veterans Services and Vocational Rehabilitation Services representatives. Career ladders that show educational opportunities, job options as well as salary ranges for the High Country were created, and can be used by the NCWorks Career Center staff when consulting with interested clients. A presentation on pre-apprenticeships was provided to employers and educators to assist them in understanding apprenticeship programs. The community colleges also provide professional development and custom training programs for the manufacturers in the area, along with stackable credentials that help not only prospective employees but incumbent employees as well.

## **8. Evaluation**

High Country has chosen a framework for evaluation of the manufacturing career pathway. We have begun the data collection process to establish the baseline data levels for the 2017-2018 academic year. Data will reflect numbers related to training completers, number of students and employers participating in work based learning, and number of Working Smart completers.

## **Conclusion**

It is through this High Country Certified Manufacturing Pathway that key stakeholders have unified, engaged and collaborated in making this application a living document to be reviewed and modified in the coming years. Through continued dialog and engagement, we feel strongly we will achieve the desired outcome: a regional increase in awareness of occupations, in addition to a quantifiable increase in skilled employees, in manufacturing professions among youth, adults and other non-traditional populations so that the High Country can keep pace with current and projected workforce needs.

## 1. Demand Driven and Data Informed

### National Trends

Nationally, reports and data indicate the skills gap is widening in a growing sector. In a recent study sponsored by the Manufacturing Institute and Deloitte, “The Skills Gap in US Manufacturing 2015 and Beyond,” revealed that the skills gap is widening. Over the next decade, nearly three and a half million manufacturing jobs will likely be available, due to the baby boomer retirements and economic expansion. The study estimated 60% of these positions are likely to be unfilled due to the shortage of qualified workers.

### State Trends

According to the 2018 North Carolina Employer Needs Study conducted by LEAD, the manufacturing sector indicated that finding job candidates was their greatest workforce challenge.

## Employers' Greatest Workforce Challenge

Overall, all industries:

- **Finding Job Candidates – 40%**

Manufacturers:

- **Finding Job Candidates – 60%**

The same employer needs survey also indicated that many employers have difficulties finding qualified workers due to job seekers lack of technical or occupational skills, certifications or education credentials, and relevant work experience.

In addition, among the manufacturers who did attempt to hire at least one position, 45.3% of them experienced difficulties with at least one position.

### Local Trends

The landscape of High Country’s manufacturing industry has transformed in recent years. While some of the empirical data may indicate declines in the traditional manufacturing sector, anecdotal data and what local workforce and economic development experiences have been in the region over the last several years indicates a stable growth and need for a skilled workforce.

Locally in the High Country region workforce professionals continually hear from employers of their need for qualified workers. Manufacturing in the High Country is expected to grow over 4% by 2024 with average weekly wages of \$677. Many of the largest employers in the High Country are from the manufacturing sector and have experienced growth.

Of the overall 14 employers that attended some or all of the strategic pathway meetings, it was clear that the High Country region has some work to do to prepare and train the manufacturing and welding employee pipeline. There is, in fact, a considerable demand for the Manufacturing and Welding Certified Career Pipeline within the seven country region.

## **2. Employer Engagement**

Employer engagement is a critical component in the development of training programs and career pathways. The voices of employers are critical in meeting the demands of a skilled workforce as they provide insight and input as industry professionals.

Employer engagement in the manufacturing pathway can be seen through their participation in a variety of ways to include advisory committees, panel presentations, participation in special events, work-based learning sites, community involvement, as well as serving as members on the High Country Workforce Development Board. **Manufacturing is strongly represented on the Workforce Development Board by Altec Industries, American Emergency Vehicles (AEV), BRP Marine Propulsion Systems, GE Aviation, Hospitality Mints, Meadows Mills, and NAPCO.**

In response to the manufacturing career pathway development, recent workforce development board meetings have had special focus on our local manufacturing employers to bring awareness of the industry. Presentations have included:

- **November 2016: American Emergency Vehicles and NAPCO**
- **January 2017: Altec**
- **March 2017: GE Aviation and Hospitality Mints**

### **Employer Industry Panel**

During the process of developing the manufacturing pathway, employers have been engaged from the beginning. An Industry Panel Discussion facilitated by Patty Thompson and Scott Panagrosso, included a question and answer session to assess the current employment environment and as well as future needs along with employers' engagement with schools and the community. Panel members included:

**Altec Industries, Bryan Peterson**  
**American Emergency Vehicles, Sue Miller**  
**BRP, Richard Gambill**  
**GE Aviation, Travis Ritchie**  
**Hospitality Mints, Hayden Gibson**  
**Napco, Courtney Bennett**

### **Business Advisory Councils**

Each school district has developed local business advisory councils that will provide economic and workforce trends related to the training and educational needs of the local community and advocating for strong, local career and technical education programs, including career pathway development that provides work-based learning opportunities for students and prepares students for post-secondary educational certifications and credentialing for high-demand careers.

Members include secondary and postsecondary education, community members including NCWorks, and local employers to include manufacturing. Examples of advisory councils include the Alleghany Business Advisory Council and the Tri-County Business Advisory Council which includes Avery, Mitchell and Yancey Counties.

## **Employer Questionnaires**

In an effort to gain a better understanding of employer needs, many participated in a short questionnaire regarding their workforce and involvement.

## **Employer Support**

Letters of support for the manufacturing career pathway from several High Country employers were submitted in the original application coming from:

- **American Emergency Vehicles**
- **Altec**
- **GE Aviation**
- **Napco**

Employer support can also be seen by employers such as Tyson Foods in their donation and participation in the collaboration of Project ADMIT.

## **Employer Support**

Please see attached letters of support for the manufacturing career pathway from several High Country employers:

- **American Emergency Vehicles**
- **Altec**
- **GE Aviation**
- **Napco**

Employer support can also be seen by employers such as Tyson Foods in their donation and participation in the collaboration of Project ADMIT.



### **3. Collaboration**

Collaboration between key stakeholders is required in order to achieve the goal of helping industry get a pipeline of a trained workforce. As evidenced in this submission, there has been inclusive collaboration from industry, secondary education, post-secondary education, workforce development, apprenticeship, Vocational Rehabilitation, former offenders and Veteran Services. Below are key examples of how partnerships have resulted in outcomes for the High Country.

Collaboration can be seen during the participation of the development of the pathway in the High Country regional meetings. Meetings were supported by employers, education, and community members.

Though not inclusive, below are examples of collaboration that supported the pathway development.

#### **ACT Advanced Manufacturing Event**

Collaboration can be seen during the ACT Advanced Manufacturing Event held each year with Yancey High School. An entire grade of students participates in a daylong event exposing them to post-secondary education, soft skills, financial literacy, and local employers. Partners included in this successful event include:

- Yancey High School/CTE
- Mayland Community College/Advanced Manufacturing Center
- Altec Industry Tour and Career Information
- NCWorks Career Center/NextGen
- Local Credit Union

#### **Pre-apprenticeship Development**

Efforts to build a pipeline of qualified workers is taking place through a very recent and exciting project involving great collaboration and planning. The newly developing Pre-Apprenticeship program taking off in Wilkes County is a collaboration between Wilkes County Schools CTE, Wilkes Community College Business and Industry, and multiple employers is resulting in an upcoming summer pre-apprenticeship program in the areas of manufacturing and information technology.

Local potential participating employers include:

- Meadows Mills
- Gardner Glass
- East Coast Mill Distributors
- Jeld-Wen
- Infusion Points
- Interflex Group
- Wilkes Communications

Qualified selected students will be required to take an Industrial Safety course (which has been identified as a need by employers) and work under supervision for a six-week summer program. Pre-apprentices are paid while in the classroom and while at the worksite. Upon completion of the summer program, students will continue their studies specific to their occupation.

Wayne Shepherd, CTE Director, presented at the February 2018 career pathway meeting to educators and other manufacturing employers on their efforts and how this project could be duplicated in other areas.

### **Northwest Prosperity Zone Community College Day**

Other events such as the Community College Day for the Northwest Prosperity Zone also bring awareness to business and industry in the High Country and surrounding regions. The event was designed to show how community colleges in the area are supporting advanced manufacturing and helping to revitalize and strengthen the economy in our region while providing live demonstrations of some the programs offered at Wilkes Community College in the advanced manufacturing field. Wilkes Community College hosted the event in March 2017 and included the following partners:

Elected Officials	EDC representatives
Business & Industry	College Presidents & Trustees
Caldwell Community College	Catawba Valley Community College
Mayland Community College	McDowell Technical Community College
Western Piedmont Community College	Wilkes Community College

### **Mayland Community College Advanced Manufacturing School**

The reality of the manufacturing training center in Yancey County was the result of collaboration of multiple entities. Partnerships from education, industry, corporate and private donors, including Duke Energy Foundation, and local community members resulted in state of the art training center that opened in 2015.

### **North Carolina Center for Engineering Technologies**

The North Carolina Center for Engineering Technologies provides facilities for applied research in engineering related fields and serves as a conduit to baccalaureate education delivered by the University of North Carolina system schools.

The center offers the opportunity for students to participate in a variety of labs such as:

- Rapid Product Realization
- Engineering Design
- Metrology & Rapid Prototyping
- Polymers & Composites Lab
- Patternmaking Lab
- Mechatronics Lab (if future funded)

The primary schools involved in the center are Appalachian State University, Western Carolina University, University of North Carolina – Charlotte, Catawba Valley Community College, Caldwell County Community College and Technical Institute, and Western Piedmont Community College. The Center may collaborate with other schools in bringing the best programs to the region to meet the employment needs.

### **Business, Industry, & Education Forum (BIEF)**

BIEF, organized by Wilkes County Schools, is a platform which provides opportunities for meaningful dialogue between the school system, the community college, workforce development and local business and industry partners. The primary goal of BIEF is to produce better qualified employees for local industry; thus providing a means for individuals and/or families in our community to earn fair and competitive wages.

BIEF meetings often consist of panel discussions, program tours, and partnership updates. For example, the Fall 2016 meeting included program updates and a visit to a local high school highlighting a training program, while the Spring 2017 BIEF meeting was focused on a panel discussion themed, "Current & Future Workforce Needs/Trends in Wilkes County" with local employers participating.

Spring 2018 will include educational updates related to career pathways and apprenticeship development.

### **Employer Training**

Customized training is a valuable resource for manufacturing employers to ensure future growth and stability. Their collaboration with local community colleges provides a much needed resource to train their incumbent workforce and to increase skill levels and to improve job retention. During 2017 the following employers participated in customized training in Alleghany, Ashe, and Wilkes Counties:

- Tyson Foods Inc.
- Herbal Ingenuity
- Worldwide Protective Products
- Plycem USA
- Leviton
- Pioneer Eclipse

Plans for training have been taking place by additional employers such as Interflex, United Chemi-Con, and GE Aviation.

#### 4. Career Awareness

There are various opportunities throughout the region that offer the opportunity for exposure to and awareness of the manufacturing career pathway. Local schools, colleges, universities, and partners participate in a number of career awareness initiatives that engage youth and adults. While the following list is not inclusive of all activities and partnerships, it is representative of the vast amount of time and emphasis dedicated to these types of services.

##### **Mayland Community College Anspach Advanced Manufacturing Center**

To meet the local need of a trained workforce and support of the growing industry Mayland Community College opened their Advanced Manufacturing Center in Yancey County in 2015. The center provides state of art opportunities for students to train in skills required in today's manufacturing sector.

The Anspach Advanced Manufacturing School, a 13,000 square-foot addition at Mayland Community College, consists of classrooms and offices where students are offered a degree program in Applied Engineering with skill tracks in CNC programming, machining, robotics, mechatronics, and design. The facility also houses Direct Metal Laser Sintering (DMLS) technology, allowing students, industries, and entrepreneurs to create metal 3D prototypes of their designs.

While attending the opening ceremony, Governor Pat McCrory was quoted as saying,

**“Manufacturing is back in North Carolina and it’s the future of North Carolina.”**

Local secondary school students also visit the center annually as part of career exploration opportunities.

##### **Educational Partnerships**

**Project ADMIT** (Advanced Development in Manufacturing & Integrated Technology) is a local initiative in Wilkes County with the following objectives for addressing the workforce needs:

- **Will Create Advanced Learning Environment** by adding/improving classrooms and lab space and purchasing equipment for all 4 high schools
- **Offers Concentrated Programming** for Advanced Engineering and Computer Technology training to prepare the next generation workforce
- **Expands Learning Opportunities** in Welding, Transportation, and Building Construction
- **Builds on Partnerships** between Wilkes County Schools & Wilkes Community College
- **Provides Options** for students to choose and redirect career paths and allows a seamless transition from high school to college
- **Addresses the Real World Skill Area Needs** expressed by employers leading to certificates, diplomas, and industry certifications
- **Provides Opportunities** for local youth to live, work and create personal wealth in Wilkes County after graduation

**BIEF**, the Business, Industry and Education Forum is a local initiative developed to assist business and industry with employment needs and develop strategies to strengthen the

workforce. BIEF programs raise awareness of training programs and partner with employers and the community.

### **Career Fairs and Awareness Activities**

Two hundred and twenty-one freshman spent time at the Manufacturing Career Fair learning from different businesses and careers associated with manufacturing on Monday, December 5th, 2016 at the first Wilkes Central Career Fair. Nine manufacturers from Alexander, Wilkes, and Surry were represented which included Allura, Craftmaster Furniture, Gardner Glass Products, Meadows Mills, LuRay Textiles, Weyerhaeuser, Schneider Mills, Tyson, and Anchor Coffee Company. Representatives from Wilkes Community College were also in attendance to talk to the students. Upperclassmen were also given the opportunity to visit and talk with the representatives during their Smart Lunch.

### *Advanced Manufacturing & STEM Awareness Week Activities (Fall 2016) A Partnership with Wilkes Community College and Local Industry Representatives*

Advanced Manufacturing 1 and Technology, Engineering & Design students from all four high schools visited Wilkes Community College on October 5th to discover training and career opportunities in the fields of advanced manufacturing and applied engineering. Students were involved in hands-on activities as they learned about related programs at Wilkes Community College and spoke with local industry representatives about career opportunities and workforce needs. Students learned about how manufacturing has evolved over the last several years to include more advanced technologies.

### **Other examples of career fairs and awareness activities through secondary education :**

- Ashe activities include: in May of each year, Ashe holds a Career Fair that has over 70 “vendors” presenting information about their business/industry. 6<sup>th</sup> grade students come from the elementary schools to visit the career fair. All students have questionnaires that have to be filled out by 2 of the presenters. All ACHS teachers will be spending one day each semester at ACMS to promote their class at the high school and to inform students of the career associated with their pathway. A high school teacher is going to the elementary schools this year to do career awareness activities, working with 5<sup>th</sup> and 6<sup>th</sup> graders and with science teachers by incorporating STEM activities with their Standard Course of Study.
- Avery activities include: industry visits; teacher externships STEM tours to ZF Manufacturing Solutions, Century Furniture, and NC Center for Engineering Technologies; Extreme STEM tour field trips; guest speakers; technology competition; community college visits and speakers; field trips to NC State College of Design and Design Lab, and Extreme STEM field trip to Cabarrus County
- Watauga County holds an annual Career Explorations Day where all career pathways are showcased for the 7th grade students of the county. This event allows Watauga County Schools to show the 7th grade students the skills and equipment related to the Manufacturing & Welding industry. The 8th grade students of Watauga County participate in a financial literacy program called “Reality Store” where they research chosen careers and then live off or pay bills with one month’s pay for their chosen career.

- Wilkes activities include: middle and high school students participate in career interest inventories; Gear Up is a grant funded program that works with a cohort of students, those who are currently in grades 7-10, they provide a variety of career development lessons to students; CTE Director & Career Development Coordinator meet with all 8th graders at our 4 middle schools yearly to discuss career clusters/pathways, related high school CTE courses, Career & College Promise offerings as a way for student to understand the importance of academic planning through a meaningful career development plan; Elementary, Middle, and High School Counselors/Staff organize Career Fairs. Some showcase a variety of careers, while others showcase careers in a particular pathway. For example, Wilkes Central High School organized a Manufacturing Career Fair. High School Advanced Manufacturing students have toured Gardner Glass & Jeld Wen, both manufacturing companies in Wilkes. They also participate in Advanced Manufacturing Week (@ WCC) to learn about educational opportunities and careers. Middle School Counselors, High School Counselors, Gear Up Coordinators and Career Development Coordinator offer classroom guidance lesson on soft skills, interviewing skills, resume writing, career awareness, etc. For example, I even did a lesson on Advanced Manufacturing Careers. "Demo Days" where advanced manufacturing classes were showcased in each high school to increase awareness of our Advanced Manufacturing Program. Annual Skills USA Competitions.
- Yancey plant tours of Altec and BRP.
- April 2018 Career Fair Wilkes Central High School
- February 2018 ACT Sophomore Project in Advanced Manufacturing -Tour of local manufacturing businesses and Center for Advanced Manufacturing Training facility at MCC. Soft skills and career awareness workshop provided by NCWorks staff.
- October 2017 Advanced Manufacturing Day at Yancey MCC - area public schools tour manufacturing training programs and learn about local job opportunities
- May 2017 Ashe Middle School Career Day
- April 2017 East Wilkes High School Advanced Manufacturing class took a business tour of Gardner Glass
- April 2017 ACT Sophomore Project in Advanced Manufacturing- Tour of local manufacturing businesses and Center for Advanced Manufacturing Training facility at MCC. Soft skills and career awareness workshop provided by NCWorks staff
- March 2017 Alleghany Manufacturing Day with student rotations with employers such as Tyson and GE Aviation
- November 2016 Alleghany Career Fair
- October 2016 Wilkes Central High School Advanced Manufacturing students toured Gardner Glass where they learned about manufacturing process, workforce needs, and importance of soft skills
- October 2016 Wilkes County Schools Advanced Manufacturing & STEM Awareness Week
- October 2016 Advanced Manufacturing Day at Yancey MCC - area public schools tour Center for Advanced Manufacturing and learn about local job opportunities
- October 2016 Mountain Heritage High School Career Fair-includes all local manufacturing employers
- March 2016 Yancey ACT Sophomore Project in Advanced Manufacturing- Tour of local manufacturing businesses and Center for Advanced Manufacturing Training facility at MCC. Soft skills and career awareness workshop provided by NCWorks staff

The opportunity for students to take advantage of Career and College Promise courses provide students a jump start on their training to a career.

### **Other examples of awareness activities through post-secondary education:**

North Carolina Center for Engineering Technology Innovation Camps for 2018 include:

- Future Engineers Camp (Elementary & Middle School aged children);
- Robotics Camp (Middle School aged children) and
- Builders Boot Camp (Middle School aged children - a new camp focused on construction sciences).

### **NC Manufacturing Week/Day**

Validating the economic importance of the manufacturing industry, North Carolina declared October 2-6, 2017 as “North Carolina Manufacturing Week”. Manufacturing week brings attention to the career paths and employers in the manufacturing sector. Locally, secondary and postsecondary schools usually host career awareness activities to include special events, recognizing employers, and bringing attention to training opportunities.

### **Staff Training/Engagement**

NCWorks Career Center staff have participated in Career Pathway training to increase their knowledge in order to assist youth and adults in identifying and developing career pathways in the region.

Staff are also engaging in employer meetings and tours to increase their awareness of employer needs and demands. In January 2017 staff toured Advanced Superabrasives and in May 2017 staff engaged in regional partners meeting with Duke Energy and CB&I Construction to discuss expansion project needs; and in 2018 are participating on advisory committees.

### **NCWorks Career Centers**

Staff frequently plan and host job fairs each year in an effort to assist employers with their hiring needs. Staff also participate in special events in partnerships with local schools and assist in mock interviews and other career advising strategies. Employers utilize a variety of outreach efforts to include postings in NCWorks Online.

## 5. Articulation & Coordination

The High Country LEA's are supported by the standard statewide articulation agreement between North Carolina's high schools and community colleges. This permits high school students to begin taking a variety of manufacturing classes and have their course work transfer seamlessly to local community colleges.

While there are presently no unique, one-on-one articulation agreements between individual LEA's and colleges, it is anticipated this will change within the next year or so. During the Articulation and Coordination focus group meetings, employers mentioned wanting to work closer with high schools so that youth could be more work-ready. High School CTE Directors in the meetings reached out to their partner community college colleagues to figure out the best industry recognized credentials that can be offered at the high school level. As a result of this healthy collaboration between all parties, it is anticipated that several unique one-on-one articulations between the LEAs and Community Colleges should be in the works.

Examples of Manufacturing and Welding program of studies as well as related courses by the seven LEAs in the High Country are provided. Despite the vast distances between the seven counties in the High Country, high school students have options of courses they can take either at their high school or with the nearby partnering community college. Not only are industry credentials earned in some cases, course work is articulated with local community colleges once they earn their high school degree.

The three High Country community colleges offer degree as well as non-degree course options. A complete list of 'for credit', continuing education programs as well as credential classes for all three colleges is provided in the original application. Some of the non-degree classes lead to diplomas, certificates and/or valuable credentials. Incumbent workers, unemployed adults, and the dislocated, in addition to youth populations, have the opportunity to enroll and complete credit or non-credit courses. A list of courses that lead to skilled proficiency and to industry recognized credentials are provided.

Bryan Peterson, Human Resource manager of Altec industries, discussed with the group at our February 21<sup>st</sup> meeting about a new training facility in Yancey County. The Yancey County based Anspach Advanced Manufacturing School, is a 13,000 square-foot addition at Mayland Community College, consisting of classrooms and offices where students are offered a degree program in Applied Engineering with skill tracks in CNC programming, machining, robotics, mechatronics, and design. The facility also houses Direct Metal Laser Sintering (DMLS) technology, allowing students, industries, and entrepreneurs to create metal 3D prototypes of their designs. The addition of the Anspach Advanced Manufacturing School has been a tremendous help to local manufacturers as not only a way to train students, but also for its customized training for incumbent workers.

Finally, the option for a person, whether high school age or older, to combine their training experience for college credit and continue on for a bachelor's is very possible due to a new program coming on board in the Fall 2018 at Appalachian State University. ASU will begin offering an online undergraduate degree completion program next fall that targets working adults in business and manufacturing. It's called Workforce Development, and its purpose is to provide access to a bachelor's degree in leadership/management. ASU's current expectation is that the ideal non-traditional adult candidate for this program will have some community college credentials in addition to many years of experience when they enter the program.



An "At a Glance" list of undergraduate and graduate program offerings for High Country & Distance Education Universities is provided. This would include Appalachian State University as well as the distance education programs offered by Western Carolina University and North Carolina State University. Western Carolina has a distance education program option where a student could complete their Bachelors of Science in Engineering Technology / Technical Operations within five semesters. The closest distance education campus is located in nearby Hickory. North Carolina offers a series of manufacturing programs online for the convenience of those that wish to further their education up to the graduate level.

## **6. Work Based Learning**

Work based learning is both an educational as well as training strategy that provides pathway enrollees with real-life work experiences where they can apply academic theory with on-the-job training. It's a concept that has been in practice for many years and is an integral part of workforce development and creating a healthy employee pipeline. Industry works very closely with DPI, the community colleges, as well as with the NCWorks Career Centers in coordinating work based learning opportunities. The High Country Workforce Development Board consistently utilizes the On-the-Job Training Program (training subsidy) and paid work experience as a work based learning training strategy for WIOA eligible adults, dislocated workers, and youth.

Traditional career fairs, onsite industry tours and in-class guest speakers have been a staple of successful partnering between the High Country's manufacturing industry and the school systems for the purpose of career awareness. CTE Student field trips, in addition to teacher exclusive field trips and even time limited internships, have enhanced the experience beyond awareness to actual work based exposure and learning. CTE directors have provided a list of industry partners that provide Work Based Learning opportunities. (Exhibit 6A). Survey responses from the High Country Employers & Community Partners provide additional work based learning opportunities within the High Country. (Exhibit 6B)

The NCWorks Career Centers located in the High Country help promote the manufacturing training programs of the three community colleges. Career Center WIOA staff disseminate information and enroll interested Adult, Dislocated and Youth clients in the colleges' respective manufacturing diploma or certificate programs. OJT funding has been limited due to funding stream challenges. Finding employers to participate is not an issue. Finding clients and funding the positions are. It was noted by the NCWorks Career Center manager that there are simply more positions opened in manufacturing than there are interested and engaged prospective workers. This presents a unique 'career awareness' opportunity for the High Country.... to make manufacturing and welding positions fashionable again.

NCWorks Career Centers in the High Country are committed to having their staff visit employer sites as well. Some Career Centers in the High Country either have senior management participate on site tours or have site tours as a part of their strategic plan. The Wilkes NCWorks Career Center, which includes Ashe and Allegheny, had 4 staff members tour United Chemi-Con and 3 tour LP.

## 7. Multiple points of Entry and Exit

The High Country regional partnership has developed a pathway which allows entrance from many points: whether a high school student, a high school graduate, some experience, from zero to several credentials, with a diploma, certificate, associates or bachelor's degree and/or with many years of experience. As highlighted in Exhibit 7A, the pathway has entry and exit ramps for a wide variety of the population including everyone from youth to the unemployed, dislocated, as well as active duty or transitioning military service members and special populations (vocational rehabilitation clients).

Based on education and training offerings in the High Country region, here are a few occupations that potential manufacturing and welding completers could prepare for:

<ul style="list-style-type: none"><li>• Machine Operators</li><li>• Welders</li><li>• Production Workers</li><li>• CNC Machinists</li><li>• Tool &amp; Die Maker</li><li>• Quality Control Techs</li></ul>	<ul style="list-style-type: none"><li>• Engineers</li><li>• Engineering Techs</li><li>• Product Developers</li><li>• Machine Techs</li><li>• CNC Programmers</li><li>• Plus many more....</li></ul>
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By taking a series of non-degree classes and certification coursework, an enrollee could be qualified to start as a semi-skilled employee in manufacturing. Industry recognized stackable credentials are offered by all three community colleges. (Exhibit 7B) Should the enrollee at a later time decide to return to school, their successfully completed classes and credential programs can seamlessly be accepted by the Community College system, thus allowing the enrollee to quickly complete their degree programs. Once a pathway participant has an associate's degree, the participant could complete a bachelor's degree with Western Carolina University or NC State using their online Engineering Degree programs. In addition, Appalachian State University will begin offering an online undergraduate degree completion program (Fall 2018) that targets working adults in business and industry. It's called "Workforce Development", and its purpose is to provide access to a bachelor's degree in leadership/management. The expectation is that students will have community college credentials and many years of experience when entering the program. This new approach to an applied degree will enable long-term employees lacking undergraduate degrees the upward mobility if a Bachelor's degree is required by the employer.

Andrew Holland, the Veterans Representative for the High Country, has attended the manufacturing pathway meetings. He spoke to the group about Veterans skill levels and great soft skills, and forwarded a Recruiting Practice pass out for employers that expressed interest in hiring veterans. (Exhibit 7C) The three community colleges are open to accepting the prior learning and training of active duty military and veterans as transfer credits. It is offered on a case-by-case basis as long as they submit their military training and course work transcript for review. (Exhibit 7D).

Local NC Vocational Rehabilitation staff have participated in the High Country manufacturing pathway meetings as well. Jim Stout, a VR Business Relations Representative, addressed meeting attendees at the January 24th meeting and highlighted how local VR offices can add more enrollees in the pipeline. He provided a pass out for meeting attendees so there can be a continued conversation about how the VR Employer Services can help. (Exhibit 7E)

Regional Former Offender Specialist Vanessa James also attended a meeting and reminded our employers to think about the Former Offender community. She explained the benefits and safety guards put in place for employers as well as that we need to give a chance to this often untapped non-traditional employee pipeline. Not only do many of them deserve a second chance, but they end up being loyal and diligent workers. Exhibit 7F presents incentives for employers that Ms. James shared with our manufacturing and welding employers.

NCWorks Apprenticeship programs were also discussed. Wayne Shepherd, CTE Director for Wilkes School System, gave a detailed presentation at the February 21st meeting on how he got involved with various employers and the Wilkes Community College to create a formalized Youth Apprenticeship. Employers include manufacturers in addition to other employment sectors. While they are still in the planning phase, they are currently interviewing last semester juniors and anticipate starting their first Youth Pre-Apprenticeship cohort this Summer 2018. (Exhibit 7G). That said, it was discovered while there are many internship opportunities, there are few Registered Apprenticeships in the High Country and yet a few manufacturers have expressed an interest in learning more. A workshop will be set up in the early summer with Youth Apprenticeship lead, Elizabeth Standafer.

## 8. Evaluation

The High Country manufacturing partnership is committed to ensuring that the Career Pathway for manufacturing continues to grow and strengthen through an established career pathway and that it remains relevant with changing needs. If successful it should result in the following:

- Manufacturing employers are able to obtain skilled employees to meet their needs
- Students, job seekers, and workers have adequate training opportunities to obtain the training at a multitude of points along the career pathway to obtain unsubsidized self-sufficient employment within the manufacturing field
- Training institutions are able to attract talented potential students to training programs to meet employer needs

To be successful, the pathway must facilitate industry's ability to recruit and hire qualified workers for the ever- evolving workplace that contributes to the region's economic strength and long-term prosperity while meeting the needs of region.

The evaluation plan will measure progress and identify components and activities that need to be addressed through a continuous improvement process through the initial collection of baseline data and annual evaluation and measurement of improvement or increasing participation in training and career development activities.

### Definition of Success

- Meeting the need of the manufacturing industry in the High Country by providing/increasing the pipeline of a highly, qualified skilled workforce;
- Meeting the needs of students, jobseekers and workers by providing relevant training and employment as they progress along the pathways on and off-ramps; and
- Implement an evaluation process that will collect additional data for an on-going annual review. Three-year goals will be established for each data element collected using the baseline data.

### Baseline Data

The data elements identified in the following charts have been collected as baseline data. The initial baseline data will be utilized to develop the basis of a plan for long-term evaluation. We expect that since the manufacturing sector is expected to grow approximately 4% from 2016 to 2024 that our annual goal will reflect an annual growth of at least 2% for each subsequent year.

In the High Country region the majority of WIOA participants have entered training related to the health care sector, with very few enrolled in other training programs. We expect the trend of health care related training will continue, however with new awareness of the manufacturing pathway anticipate that there may be a growth in this area.

### Secondary Schools:

- # of students who achieved industry recognized manufacturing & welding credentials
- # of students participating in manufacturing related work based learning
- # of employers providing work based learning opportunities

### **Community Colleges:**

- # of students participating in manufacturing related work based learning
- # of employers providing work based learning opportunities
- # of students enrolled in manufacturing related training programs
- # of students who earned certificates, diplomas, and/or degrees relating to Manufacturing

### **WDB/WIOA Programs:**

- # of participants enrolled in manufacturing related training programs
- # of participants who earned certificates, diplomas, and/or degrees relating to manufacturing
- # of participants that completed training and entered employment related to the pathway
- # of participants participating in manufacturing related work based learning
- # of employers providing work based learning opportunities

### **Soft Skills:**

In response to employer needs related to applicants lacking soft skills, the High Country plans to address this concern through the use of the Working Smart: Soft Skills for Workplace Success curriculum. Plans are underway to host a local training for staff in order to be certified to teach the soft skills curriculum and increase the number of completers in Working Smart across the High Country. In 2017, 47 individuals completed all modules of Working Smart and earned a certificate. With a goal to increase this by 15%, we hope to have an additional 54 individuals for 2018, and an additional 62 individuals for 2019.

### **Mechanism for updating the pathway and associated strategies**

Data collection will be conducted annually. Analysis of the data will be the responsibility of the career pathway evaluation work group and shared with the larger advisory group including industry representatives, educators, and regional NCWorks/WDB staff. Additional industries will be included in order to craft modifications necessary to achieve the success and goals of the pathway. Goals may be modified, up or down, as the process progresses through the annual evaluation periods. New sets of goals will be established at the end each three-year period.

Additionally, as the system for tracking employment for community college programs rates is developed, a random sampling of industries that have been identified as hiring graduates will be selected to evaluate the quality of the training received through the pathway. A survey will be conducted to collect specific details of the quality and skills of graduates received through the programs that are included in the project. Information regarding new registered apprenticeships and/or pre-apprenticeship programs will also be collected and recorded. Specific industries interest in developing apprenticeships will be evaluated and the appropriate connections made to facilitate the process.