

## NCWorks Career Pathway Application

**Pathway Partnership: Northeastern NC Career Pathways**

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**Pathway Industry Sector: Advanced Manufacturing**

**Workforce Development Boards:**

**Northeastern WDB  
Region Q WDB  
Turning Point WDB**

**Local Education Agencies:**

<b>Beaufort</b>	<b>Edenton-Chowan</b>	<b>Northampton</b>
<b>Bertie</b>	<b>Gates</b>	<b>Perquimans</b>
<b>Camden</b>	<b>Halifax</b>	<b>Pitt</b>
<b>Currituck</b>	<b>Hertford County</b>	<b>Roanoke Rapids</b>
<b>Dare</b>	<b>Hyde</b>	<b>Tyrrell</b>
<b>EC-Pasquotank</b>	<b>Martin</b>	<b>Washington County</b>
<b>Edgecombe</b>	<b>Nash</b>	<b>Weldon</b>
		<b>NE Regional H.S. of Biotechnology and Agriscience</b>

**Community Colleges:**

**Beaufort Community College  
College of The Albemarle  
Edgecombe Community College  
Halifax Community College  
Martin Community College  
Nash Community College  
Pitt Community College  
Roanoke Chowan Community College  
Wilson Community College**

## Overview

### **Background**

The ***Northeastern North Carolina Career Pathways Partnership*** is excited to submit the Northeast regional **Advanced Manufacturing Pathway** application for NCWorks certification consideration. This pathway is a product of a regional consortium of employers, educational/training providers and workforce/economic development agencies dedicated to providing a pipeline of skilled workers to support the economic growth of Northeastern North Carolina. Currently the consortium includes the following institutional partners -- three workforce development boards, nine community colleges, two universities, twenty-one K-12 school systems and one regional high school. **Exhibit A** documents the list of institutional partners.

**Exhibit A**  
**Overview**

## **Northeastern North Carolina Career Pathways**

### **Institutional Partners**

<b>Workforce Development Boards</b>	<b>Turning Point Northeastern Region Q</b>
<b>Community Colleges</b>	<b>Beaufort Community College College of The Albemarle Edgecombe Community College Halifax Community College Martin Community College Nash Community College Pitt Community College Roanoke-Chowan Community College Wilson Community College</b>
<b>Universities</b>	<b>East Carolina University Elizabeth City State University</b>
<b>Local Education Agencies</b>	<b>Beaufort County Schools Bertie County Schools Camden County Schools Currituck County Schools Dare County Schools Elizabeth City-Pasquotank County Schools Edenton-Chowan Schools Edgecombe County Schools</b>

	<b>Gates County Schools</b> <b>Halifax County Schools</b> <b>Hertford County Schools</b> <b>Hyde County Schools</b> <b>Martin County Schools</b> <b>Nash-Rocky Mount Schools</b> <b>Northampton County Schools</b> <b>Perquimans County Schools</b> <b>Pitt County Schools</b> <b>Roanoke Rapids Graded School District</b> <b>Tyrrell County Schools</b> <b>Washington County Schools</b> <b>Weldon County Schools</b>
<b>Regional Schools</b>	<b>NE Regional School of Biotechnology and Agriscience</b>

The partnership functions as a framework for collaboration in developing educational/training pathways around high demand regional business sectors. The two goals of NE NC Pathways are to 1) increase the opportunities for more adolescents and adults to gain the necessary skills to acquire higher wages and meet the qualifications of high demand occupations and 2) provide regional business and industry a highly skilled workforce.

The primary strategy of this effort is to strengthen regional and local partnerships between business and industry, workforce development boards, community colleges/universities, and local school districts through the creation of regional and local career pathways focused on high demand business sectors.

[Exhibit B](#) is a graphic representation of the Northeastern regional pathway development model. The Leadership Council provides oversight for the regional pathway work. This Council includes representatives from the institutional partners as well as employers, economic developers and other workforce development stakeholders.

As of May 31, 2016 three regional pathways – Health Care, Advanced Manufacturing and Agriscience/Biotechnology have been developed. The Advanced Manufacturing Pathway is the second pathway to be submitted by the Northeastern partnership. The Northeastern Health Care Career Pathway was submitted and officially certified by the NCWorks Commission in February of 2016.

## **Advanced Manufacturing Pathway Development**

Labor market data and discussions with employers, workforce development leaders and economic developers identified Advanced Manufacturing as the second priority business sector in the Northeast for pathway development. Once approved by the Leadership Council, strategic planning committee members were recruited to begin the pathway development process. Strategic planning meetings were convened and through the collaborative efforts of employers and stakeholders two advanced manufacturing pathways were developed – 1) [Engineering and Technology](#) and 2) [Production, Maintenance, Installation and Repair](#).

The eight sections of this application packet that address the certification criteria document the pathway development process, detailing the pathway components and the implementation strategies.

### **Criterion 1**

#### **Demand Driven and Data Informed**

##### **A. Economic and workforce development needs within the region**

From the onset, the vision of the Northeast NC Career Pathways was to choose three to four business sector pathways for development that reflect the economic and workforce development needs within the region both now and the future. The strategy the partnership used to select each of the business sectors included reviewing the empirical data for trends, and then tasking the workforce development board directors and staff to flesh out a recommendation by vetting the trends with regional employers and economic developers and gathering anecdotal information. The recommendation of the workforce development boards was then vetted with community college and LEA leaders and taken before the Pathway Leadership Council for final approval.

Using this process three business sectors have been identified with regional pathways developed for -- Health Care, Advanced Manufacturing, and Agriscience/Biotechnology. Recently, a fourth pathway, Business Support Services has been recommended and is in the vetting process.

##### **B. Current and future job market predictions that support purpose of pathway**

Manufacturing jobs were prevalent throughout the United States during the industrial age. With the incorporation of technologies, manufacturing jobs have become advanced manufacturing occupations, which continue to increase in number and have greater importance to the workforce as the nation continues to meet the needs of a green economy. This is underscored by more than \$100 million investments to support workforce needs in advanced manufacturing by the US Department of Labor in recent years. The Occupational Information Network (O\*Net) identifies almost 550 occupations in advanced manufacturing. Of the top 20 listed, 14 fall under the advanced manufacturing career focus

for the pathway efforts in the Northeast, half of which are bright outlook<sup>1</sup> jobs. The top 20 O\*Net occupations in Advanced Manufacturing are listed in the table below.

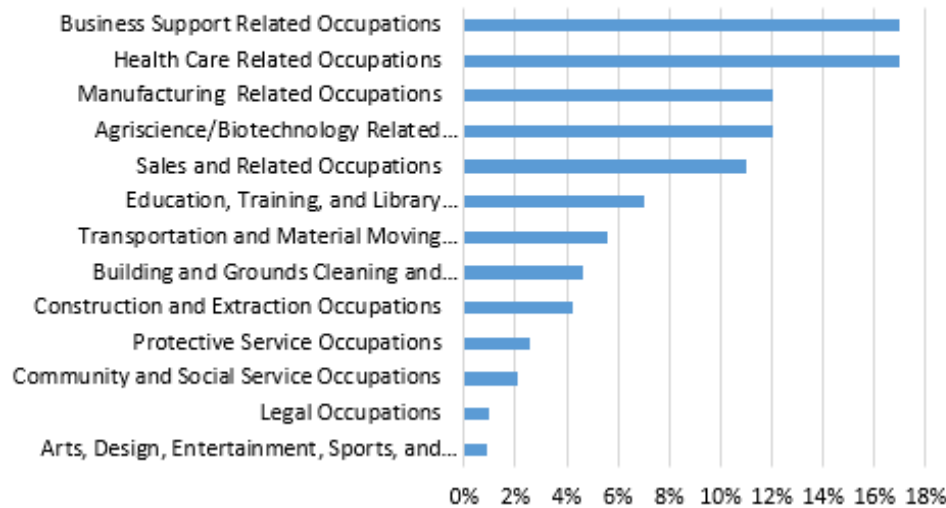
<b>Occupation</b>	<b>Bright Outlook</b>	<b>Green Occupation</b>	<b>NE Pathway Applicable</b>
<b>Manufacturing Production Technicians</b>	X	X	Yes
<b>Manufacturing Engineers</b>	X	X	Yes
<b>Manufacturing Engineering Technologists</b>	X	X	Yes
<b>Commercial and Industrial Designers</b>		X	
<b>Electrical Engineers</b>		X	Yes
<b>Industrial Engineering Technicians</b>		X	Yes
<b>Sales Representatives, Wholesale and Manufacturing, except Technical and Scientific Products</b>	X		
<b>Industrial Engineering Technologists</b>	X	X	Yes
<b>Mechanical Engineers</b>	X	X	Yes
<b>Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products</b>		X	
<b>Industrial Engineers</b>		X	Yes
<b>Industrial Production Managers</b>		X	Yes
<b>Software Developers, Applications</b>	X		
<b>Engine and Other Machine Assemblers</b>		X	Yes
<b>Team Assemblers</b>	X	X	Yes
<b>Cutting, Punching, and Press Machine Setters, Operators and Tenders, Metal and Plastic</b>		X	Yes
<b>Stone Cutters and Carvers, Manufacturing</b>			
<b>Mechanical Engineering Technologists</b>	X	X	Yes
<b>Materials Engineers</b>			
<b>Electronics Engineers, Except Computer</b>		X	

North Carolina’s manufacturing has followed the trend of the country, changing the skills needed from manual to more technological. Advanced manufacturing jobs are prevalent throughout the state and can be found in most industries. The need for specific advanced manufacturing jobs vary from region to region. Data sources provided by LEAD were used in identifying Advanced Manufacturing as an important occupational focus for the Northeast. The charts below provide a good bottom line summary of the business sector data that supports this choice. In both the Northeastern and Northcentral Prosperity Zones (our partnership includes two counties in the Northcentral PZ) advanced manufacturing related occupations were in the top three business sectors with regard to 2022 projected percentage of available jobs. Note that in the near future, with the inclusion of Business Support Services as our fourth

<sup>1</sup> Bright outlook jobs are expected to grow very rapidly within the next few years, with a large number of job openings.

high demand business sector, we will have regional pathways that cover between 58% (Northeast PZ) and 64% (Northcentral PZ) of the 2022 projected available occupations.

### Northeast PZ 2022 Projected Percentage of Available Jobs by Business Sector



### Northcentral PZ 2022 Projected Percentage of Available Jobs by Business Sector



### C. Pathways that lead to high demand, high wage and sustainable careers

Below is a chart generated from LEAD data that provides support for the demand for advanced manufacturing jobs, as well as evidence of good wages that lead to supervisory positions and sustainable careers.

Northeast Occupational Projections Based on LEAD Report										
SOC	Occupation Title	2012	2022	Net Change	Annualized	Replacement	Growth	Total	Annual Median	
00-0000	Total, All Occupations	207,273	236,875	29,602	1.30%	5,001	3,254	8,255	\$28,567	
35-0000	Food Preparation and Serving Related Occupations	20,228	24,818	4,590	2.10%	760	462	1,222	\$18,275	
43-0000	Office and Administrative Support Occupations	28,798	32,326	3,528	1.20%	643	377	1,020	\$28,176	
41-0000	Sales and Related Occupations	24,232	26,083	1,851	0.70%	755	188	943	\$21,871	
31-0000	Healthcare Support Occupations	9,934	14,040	4,106	3.50%	189	411	600	\$19,317	
29-0000	Healthcare Practitioners and Technical Occupations	13,697	16,667	2,970	2.00%	282	297	579	\$53,482	
25-0000	Education, Training, and Library Occupations	15,271	16,695	1,424	0.90%	317	143	460	\$39,363	
47-0000	Construction and Extraction Occupations	7,477	10,121	2,644	3.10%	124	268	392	\$31,774	
53-0000	Transportation and Material Moving Occupations	12,431	13,331	900	0.70%	285	102	387	\$25,421	
11-0000	Management Occupations	10,806	11,455	649	0.60%	210	159	369	\$78,479	
49-0000	Installation, Maintenance, and Repair Occupations	9,895	11,119	1,224	1.20%	225	125	350	\$38,612	
51-0000	Production Occupations	14,061	13,574	-487	-0.40%	295	48	343	\$29,431	
37-0000	Building and Grounds Cleaning and Maintenance Occupations	9,644	10,922	1,278	1.30%	198	128	326	\$20,218	
39-0000	Personal Care and Service Occupations	6,739	8,538	1,799	2.40%	142	180	322	\$18,567	
33-0000	Protective Service Occupations	5,688	6,087	399	0.70%	174	40	214	\$33,118	
13-0000	Business and Financial Operations Occupations	4,599	5,679	1,080	2.10%	93	108	201	\$52,903	
21-0000	Community and Social Service Occupations	3,942	4,944	1,002	2.30%	89	102	191	\$37,823	
45-0000	Farming, Fishing, and Forestry Occupations	2,309	2,249	-60	-0.30%	58	31	89	\$27,530	
15-0000	Computer and Mathematical Occupations	1,568	1,917	349	2.00%	25	35	60	\$53,702	
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	1,921	2,035	114	0.60%	43	17	60	\$29,987	
19-0000	Life, Physical, and Social Science Occupations	1,482	1,556	74	0.50%	43	8	51	\$49,363	
17-0000	Architecture and Engineering Occupations	1,540	1,610	70	0.50%	35	12	47	\$56,100	
23-0000	Legal Occupations	1,011	1,109	98	0.90%	16	11	27	\$46,350	
	Advanced Manufacturing Pathway Related Occupations									
	Health Care Pathway Related Occupations									
	Agriscience/Biotechnology Pathway Related Occupations									
	Business Support Pathway Related Occupations									

#### D. Aligned with the State's Job Plan and NC Department of Commerce's Hot Jobs and Star Jobs publications

Below is a chart that our partnership created which disaggregates by career pathway the **Northeast Top 15 Jobs by Education Star Jobs** report data. Again, this report supports that advanced manufacturing is aligned with health care, agriscience/biotechnology and business support services as one of the four leading business sectors for projected job availability in the future.

### Northeast STAR JOBS - Top 15 By Education Level\* and Pathway

Pathways / Jobs	Education Requirements/Annual Openings							Total
	High School & Wk. Exp.	Post Secondary Train.	Associate Degree	Bachelor's Degree	Advanced Degree			
<b>Health Care</b>								
Licensed Practical & Licensed Vocational Nurses		49						49
Emergency Medical Technicians & Paramedics		41						41
Medical Records & Health Information Technicians		17						17
Surgical Technologists		8						8
Massage Therapists		3						3

Medical Assistants	22	22
Phlebotomists	8	8
Registered Nurses	234	234
Diagnostic Medical Sonographers	9	9
Cardiovascular Technologists & Technicians	6	6
Medical & Clinical Laboratory Technicians	14	14
Radiologic Technologists	10	10
Physical Therapist Assistants	6	6
Respiratory Therapists	6	6
Dental Hygienists	6	6
Occupational Therapy Assistants	3	3
Medical Equipment Repairers	3	3
Magnetic Resonance Imaging Technologists	2	2
Nuclear Medicine Technologists	2	2
Medical & Health Services Managers	19	19
Health Specialties Teachers, Postsecondary		34
Pharmacists		21
Physical Therapists		9
Nurse Practitioners		9
Physician Assistants		9
Healthcare Social Workers		24
Occupational Therapists		3
Nursing Instructors & Teachers, Postsecondary		3
<b>Total Annual Openings</b>		<b>580</b>

<b>Agriscience/Biotechnology</b>		
First-Line Supervisors of Food Preparation & Serving Workers	104	104
Biological Science Teachers, Postsecondary		4
<b>Total Annual Openings</b>		<b>108</b>

<b>Advanced Manufacturing</b>		
Electricians	36	36
First-Line Supervisors of Mechanics, Installers & Repairers	33	33
Heating, A/C & Refrigeration Mechanics & Installers	27	27
Cost Estimators		17
Industrial Production Managers		8
<b>Total Annual Openings</b>		<b>121</b>



**Business Management and Administration**

First-Line Supervisors of Office & Admin. Support Workers	80	80
Bookkeeping, Accounting & Auditing Clerks	73	73
Property, Real Estate & Community Association Managers	13	13
General & Operations Managers	92	92
Accountants & Auditors	44	44
Management Analysts	10	10
Business Teachers, Postsecondary	5	5
<b>Total Annual Openings</b>		<b>317</b>

**Information Technology**

Computer User Support Specialists	22	22
Web Developers	2	2
Computer & Information Systems Managers	8	8
Computer Systems Analysts	8	8
<b>Total Annual Openings</b>		<b>40</b>

**Marketing , Sales and Services**

Sales Managers	24	24
Market Research Analysts & Marketing Specialists	15	15
Marketing Managers	7	7
<b>Total Annual Openings</b>		<b>46</b>

**Finance**

Financial Managers	24	24
Loan Officers	11	11
Securities, Commodities & Financial Services Sales Agents	11	11
<b>Total Annual Openings</b>		<b>46</b>

**Construction**

First-Line Supervisors of Constr. Trades & Extraction	51	51
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Workers			
Carpenters	48		48
Plumbers, Pipefitters & Steamfitters	17		17
Operating Engineers & Other Constr. Equipment Operators	18		18
Painters, Construction & Maintenance	17		17
Structural Iron & Steel Workers	15		15
Construction Managers		14	14
Total			<b>180</b>

<b><i>Law, Public Safety, Corrections and Security</i></b>			
First-Line Supervisors of Fire Fighting & Prevention Workers	5		5
Firefighters	12		12
Paralegals & Legal Assistants		15	15
Lawyers		9	9
Total			<b>41</b>

<b><i>Education and Training</i></b>			
Substance Abuse & Behavioral Disorder Counselors	11		11
Mental Health Counselors		20	20
Education Administrators, Postsecondary		11	11
Speech-Language Pathologists		7	7
Art, Drama & Music Teachers, Postsecondary		6	6
<b>Total Annual Openings</b>			<b>55</b>

<b><i>Transportation/Logistics</i></b>			
Transportation, Storage & Distribution Managers	4		4
Aircraft Mechanics & Service Technicians	23		23
Heavy & Tractor-Trailer Truck Drivers	75		75
Avionics Technicians		4	4
<b>Total Annual Openings</b>			<b>106</b>

<b><i>Other</i></b>			
Electrical Power-Line Installers & Repairers	17		17
Telecom. Equipment Installers & Repairers, Except	9		9

Line Installers		
Hairdressers, Hairstylists & Cosmetologists	20	20

\*Job information is from *Northeast STAR JOBS*, NC Commerce Labor and Economic Analysis, lead@nccommerce.com

## Criterion 2

### Employer Engagement

#### Employers engaged in the process

The twenty employers participated in the development of the manufacturing pathways either on one of the original strategic planning committees in the spring of 2015 and/or on one of the committees that reviewed and revised the pathways in April of 2016.

**Process Structure** – In the spring of 2015 employers along with secondary and postsecondary educators, and workforce development board staff were recruited to serve on the Advanced Manufacturing Pathways Strategic Planning Committee (SPC). The committee held formal meetings on April 21, 2015, April 30, 2015 and May 14, 2015. Informal communication and committee tasks continued between meeting dates. Subcommittee sessions were followed by consensus building discussions among the entire group. By the end of the May 14 meeting final consensus had been reached on the content of the pathway templates as well as implementation strategies. A final report documenting the work of the Advanced Manufacturing Strategic Planning Committee was published and submitted to the Northeastern NC Career Pathways Leadership Council for review. The Leadership Council approved the Advanced Manufacturing Pathway Report on September 2, 2015.

**Pathway Review** – An important component of the Northeast pathway development process is periodic reviews. The reviews are designed to: (1) gain employer perspective and input on the current status of the business sector pathway; (2) share pathway implementation best practices; and (3) receive employer feedback/input on needed pathway revisions. The first Advanced Manufacturing Review was held at Nash Community College on April 18, 2016.

Of the 67 stakeholders who attended the review, 9 were employers. As noted on the agenda time was allotted for three breakout discussion sessions with the employers around a series of questions. The current pathway templates reflect revisions made based on the dialogue and recommendations from this meeting.

**Employers have identified knowledge, skills and abilities needed to work in the industry sector**

In addition to vetting the knowledge and skills included in the curriculum of the secondary and post-secondary sequence of courses, the employers also engaged in a dialogue related to the manufacturing skills that cut across several manufacturing occupations and the importance of each of these skills in being successful in an entry level manufacturing job.

### **Employers have identified which occupations within the cluster are included in the pathway**

As documented on the pathway templates, employers through the strategic planning committee work, identified within the manufacturing and STEM clusters two pathways for development – 1) Production, Maintenance, Installation and Repair, and 2) Engineering and Technology (see Overview section for links). In addition, the occupations within these pathways were identified by employers as a part of the strategic planning employer engagement subcommittee tasks.

### **Evidence of employer engagement in the development of education and training components of the pathway**

Employers, both in their subcommittee work and in the group consensus activities, were actively engaged in the development of the education and training components of the pathways. The resulting pathway templates were approved only after they had been thoroughly vetted by the participating employers.

### **Employers' commitments to: 1) provide work-based learning opportunities; 2) hire individuals who successfully exit the pathway; and long-term participation in the pathway system.**

In July 2016, as a result of the collaborative effort to develop a regional advanced manufacturing pathway, the Northeast NC career pathway partners made the decision to apply for a \$3 million dollar Department of Labor America's Promise Job-Driven Grant. The major purpose of this grant program is to provide tuition-free education/job training to unemployed, underemployed and incumbent workers in four business sectors, one of which is advanced manufacturing. Establishing regional business sector pathways is a major criterion for receiving funds from this grant.

Manufacturing and manufacturing related employers in our region have been very supportive of the pathway process and the alignment of the process with the possibilities of grant funding. An indication of this support is their commitment to provide work-based learning opportunities, continued participation in the pathway review/revision process, and most importantly the commitment to hire individuals who successfully exit the pathway.

## **Criterion 3**

### **Collaborative**

- 1. The pathway includes input from the following entities: Local education agencies, community colleges and workforce development boards, and**
- 2. The pathway includes input and commitment from industry and business leaders, and**
- 3. The pathway includes input from four year universities, community leaders, chambers of commerce, etc.**

The streamlined documentation for the three performance indicators listed above for *Criterion 3 - Collaborative* is documented in the chart at the end of this narrative which breaks down the contributors to the Northeast Advanced Manufacturing Career Pathway by partner group. As the chart illustrates the pathway development process was enhanced by the collaborative input from a team that was well represented by each of the stakeholder groups.

The following examples illustrate the critical role collaboration plays in the work of the Northeastern Career Pathways partnership --

**A. Regional strategic plan** - Collaboration is at the heart of pathway development in the Northeast. As indicated in the graphic linked to **“Exhibit B”** in the Overview section, oversight of the pathway work is led by the NE Pathways Leadership Council that includes business representatives, educators, economic developers, workforce development board members and staff, as well as community leaders and other workforce development stakeholders.

**B. The lead intermediaries** for the pathway work are the three workforce development board directors and business service representatives (BSRs) that serve the Northeast Region –

Jennie Bowen, Director, Region Q WDB	Wayne Rollins, BSR, Region Q
Michael Williams, Director, Turning Point WDB	Carisa Rudd, BSR, Turning Point
Dave Whitmer, Director, Northeastern WDB	Emily Nicholson, BSR Northeastern

These intermediaries have contributed greatly in recruiting business participation in the process, establishing a spirit of collaboration and cooperation, and sharing resources. An important example of establishing a system of collaboration was the influence of the intermediaries in organizing a Regional Community College Pathway Partnership that brings together the community college and the two universities in the region on a regular basis to share best practices, resources and activity planning that focuses on college pathway issues and activities. This organization structure for higher education mirrors the secondary school regional NC DPI CTE organization that has existed for decades. Christina Harris is the DPI coordinator for CTE programs in the Northeast. Christy’s advocacy for pathway development has been instrumental in encouraging collaboration between secondary CTE programs and the community colleges in the region.

**C. Committee assignments** – The strategic planning committee, populated according to interest and expertise, is organized into three subcommittees which focus on the following:

**Employer Engagement** – goals are to increase employer engagement to insure that the pathways align with the concepts and skills needed for employee success and to improve and increase the quality and quantity of work-based learning opportunities for students.

**Career Development** – goal is to develop a comprehensive and seamless career guidance and counseling system that features employer engagement and best practices.

**Skill Development** – goal is to produce grade 9-14 pathway maps that feature high quality skill focused sequenced courses, college promise opportunities, stackable credentials and work-based learning opportunities.

**D. Additional examples of ways in which LEAs, community colleges, workforce boards, business and industry representatives and other stakeholders provide input into the advanced manufacturing pathway**

**1. LEAs** – Representatives from LEAs serve on the Pathway Leadership Council and Executive Committee; serve and take leadership roles on the pathway strategic planning committee; LEA CTE directors complete pathway metrics data packets; LEA directors meet regularly with regional CTE director on pathway implementation issues; LEAs provide pathway implementation best practices at the pathway review sessions as well as chair review subcommittees.

**2. Community College** -- Representatives from the community colleges in our region are members of the Pathway Leadership Council and the Executive Committee; serve on the advanced manufacturing pathway strategic planning committee; serve as pathway contacts for their community college; serve on the Regional Community College Pathway Committee; prepare and submit advanced manufacturing metric data; prepare and submit grants that support the implementation of the advanced manufacturing pathways; host pathway reviews; present community college pathway implementation best practices and provide input on the review/revision of pathways.

**3. Workforce Development Boards** -- WDB Directors and Business Service Representatives serve as intermediaries and provide input in the pathways by participating as members of the pathway strategic planning committees; serve on the Pathway Leadership Council and the Executive Committee; serve on the advanced manufacturing pathway strategic planning committee; prepare and

submit advanced manufacturing metric data; in the process of preparing and submitting a regional America’s Promise DOL grant to support the implementation of the advanced manufacturing pathways; and serve on pathway presentation panels at various conferences throughout the region and state.

**4. Industry and business leaders** – Industry and business leaders serve on the Leadership Council; provide curriculum and needed skills input in the pathways as strategic planning committee members; provide work-based learning activities for students and teachers; and provide important input and feedback at the periodic pathway reviews.

**5. Four-yr. college, chamber of commerce, economic dev. etc.** – Four-year colleges provide seamless transitions from community college to four-year degrees. Representatives from these pathway stakeholders serve on the leadership council and strategic pathway planning committees offering their unique perspective, insight, input and feedback. Locally, they offer needed supports for students as identified by the local team. For example, a local chamber might provide a list of employers in a particular field from which an LEA is seeking work-based learning opportunities.

**Advanced Manufacturing Career Pathway Development Team**

The following are the representatives from 1) LEAs, community colleges, workforce development boards; 2) industry and business leaders; and 3) four-year universities, community leaders, chambers of commerce, etc. that participated in providing input on the Northeastern Advanced Manufacturing Pathways either through participating on a strategic planning subcommittee or providing input during the review/revision process. Sign-in sheets for meeting attendance are available upon request.

LEAs	Community College	Workforce Dev. Board	Manufacturing Industry Employers	Four-yr. College, Chamber, Economic
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				Dev. etc.
<p>Dr. Don Phipps, <i>Beaufort County</i>  Ben O’Kelley, <i>Edenton-Chowan</i>  Wanda Cofield, <i>Bertie</i>  Casey Atstupenas, <i>E-Chowan</i>  Gwen Stevens, <i>E-C Pasquotank</i>  Beth Ann Trueblood, <i>Pitt County</i>  Beverly Harrison, <i>E-Chowan</i>  Daniel Meads, <i>Currituck County</i>  Katrina Williams, <i>Hertford Cnty</i>  Justin Savoy, <i>Hertford County</i>  Adrea Lilley, <i>Beaufort County</i>  Sheila Porcher, <i>Edgecombe Cnty</i>  Christy Harris, <i>NCDPI</i>  Karen Molloy, <i>Edenton-Chowan</i>  Pam Lewis, <i>Nash-Rocky Mount</i>  Sherita Cobb, <i>Edgecombe Cnty</i>  Wendi Petteway, <i>Beaufort Cnty</i>  Dr. Todd Blumenreich, <i>Hyde</i>  Dr. Stacy Leggett, <i>Martin CC</i>  Beshelya Smith, <i>Hertford County</i>  Ashley Padgett, <i>Beaufort Cnty</i>  Linda Wiggins, <i>Weldon City</i>  Dr. Pamela Chamblee, <i>Halifax Cnty</i>  Felicia Booker, <i>Halifax Cnty</i>  Jimmy Lucas, <i>Wilson County</i>  David Wynn, <i>Beaufort County</i>  Jill Cohen, <i>Perquimans County</i>  Krystal Cox, <i>Wilson County</i></p>	<p>Dr. Brian Busch, <i>Martin CC</i>  David Chambers, <i>COA</i>  Dr. Ivan Mosley, <i>HCC</i>  Joan Deloatch, <i>RCCC</i>  Jaime Heckstall, <i>RCCC</i>  Lewis Hoggard, <i>RCCC</i>  Andrew Walker, <i>Pitt CC</i>  Lori Ann Priest, <i>Pitt CC</i>  Mark Faithful, <i>Pitt CC</i>  Lisa Richmond, <i>NC CC System</i>  Michaele Meisheid, <i>RCCC</i>  Nancy Hobbs, <i>ECC</i>  Billy Barber, <i>Martin CC</i>  Michelle Waters, <i>COA</i>  Sheila Hoskins, <i>ECC</i>  James Lynch, <i>HCC</i>  Amy Stevenson, <i>Pitt CC</i>  Ruby Ward, <i>HCC</i>  Wendy Marlowe, <i>Nash CC</i>  John Stolarczyk, <i>COA</i>  Melissa Cahoon, <i>Nash CC</i>  Barbara Boyette, <i>Wilson CC</i>  Dr. Deryl Fulmer, <i>HCC</i>  Lou Stout, <i>Beaufort CC</i>  George Anderson, <i>ECC</i>  Vic Marrow, <i>HCC</i>  Rachel Bridgers, <i>Pitt CC</i>  Ivana Stevens, <i>Nash CC</i>  Larry Crisafulli, <i>Halifax CC</i>  Wil Van Der Meulen, <i>Nash CC</i>  Gary Blackburn, <i>Nash CC</i>  Dr. Jennifer Burriss, <i>Martin CC</i>  Mike Starling, <i>ECC</i>  Andrea Glaze, <i>RCCC</i>  Dan Joyner, <i>RCCC</i></p>	<p>Walter Dorsey, <i>Region Q</i>  Jennie Bowen, <i>Region Q</i>  Andre Rowe, <i>NCWorks</i>  Krista Jernigan, <i>NCWorks</i>  Wayne Rollins, <i>Region Q</i>  Emily Nicholson, <i>Northeastern</i>  Carisa Rudd, <i>Turning Point</i>  Dave Whitmer, <i>Northeastern</i>  Michael Williams, <i>Turning Point</i>  Neal Anderson, <i>NCWorks</i>  Thomas Eastman, <i>NCWorks</i>  Taylor Hawkins, <i>NCWorks</i>  John Maiolo, <i>NCWorks</i>  Annette Barnes, <i>NCWorks</i></p>	<p>Ralph Emmerson, <i>Cummins</i>  David Byerly, <i>Bridgestone Tires</i>  Greg Britt, <i>Ann’s House of Nuts</i>  Gerry Baker, <i>Berry Plastics</i>  Charles Gilmore, <i>Tyson Foods</i>  Lee Corbin, <i>World Cat</i>  Willie Smith, <i>Lowe’s</i>  Vito Kepka, <i>Hoffer Flow Controls</i>  Donna Veale, <i>Berry Plastics</i>  Terry Hairston, <i>Nucor Steel</i>  Sandra Hardy, <i>Purdue Farms</i>  Gail Barbosa, <i>PCB Piezotronics</i>  Rex Anderson, <i>Regulator Marine</i>  Leora Murchison, <i>World Cat</i>  Nick Bucci, <i>Nucor Steel</i>  Gay Styons, <i>Domtar</i>  Sheri Norwood, <i>Hoffer Flow Controls</i>  Betty Toole, <i>DRS Technologies</i>  Jack Benner, <i>Nucor Steel</i>  Tracie Thomas, <i>Berry Plastics</i></p>	<p>Dr. Ranjeet Agarwala, <i>ECU</i>  Rex Raiford, <i>NCSU</i>  Dr. Akbar Eslami, <i>ECSU</i>  LuAnn Riddick, <i>ECSU</i>  Steve Biggs, <i>Bertie Ec. Dev.</i>  Steve Snow, <i>Hertford Cnty Coun.</i>  Steve Hill, <i>STEM East</i>  Amy Braswell, <i>Ahoskie Chamber</i>  Rob Boyce, <i>Pathway Facilitator</i>  John Chaffee, <i>NCEast</i>  Alliance Michelle Muir, <i>Dept. of Com.</i>  Duna Dickenson, <i>R.V. Chamber</i>  Larry Donley, <i>Dept. of Com.</i></p>

## Criterion 4

### Career Awareness

#### Background

The Northeast NC Careers Pathways Partnership is committed to two levels of career awareness–

- 1) Creating and implementing a seamless comprehensive career development program from middle school through adults based on best practice strategies, and



2) Implementing a varied and collaborative program of advising strategies for secondary school students, postsecondary students, adults and dislocated workers focused on our priority business sector pathways including advanced manufacturing.

The Northeast partnering schools, colleges and agencies are at various stages of development and implementation of these two career development programs. While many best practices are being utilized across the region, one of the goals of our future work is to expand these best practices across the region to ensure that all our students and adults have the benefit of a well-designed comprehensive career guidance plan.

Following is a description of the development and implementation of our comprehensive career guidance planning tools as well as a description of the advanced manufacturing pathway advising strategies for secondary school students, postsecondary students, adults and dislocated workers.

### **Comprehensive Career Guidance and Counseling System**

The packet, "[Comprehensive Career Guidance and Counseling Planning Tools](#)" has been created as a part of the Northeastern NC Pathways development process. Over 60 counselors representing middle schools, high schools, community colleges and workforce development career counselors have participated in the development, review and revision of this planning tool. In addition 60+ other employers, counselors and partner agency/education administrators have been a part of reviewing, vetting and participating in professional development related to this planning document.

The steps involved in creating the tool included –

1. A group of school counselors in the Northeast was convened to study the National Career Counseling Standards developed by the American School Counselor Association (ASCA), and the North Carolina Department of Public Instruction Essential Standards for Career Counseling to develop a Career Counseling Essential Standards Crosswalk and determine the major elements essential to building a comprehensive career counseling system. The group identified four major areas of emphasis for an effective career counseling system –

- a. Self-Awareness
- b. Career Awareness/Exploration/Goal Setting
- c. High School Course Selection/Post-Secondary Planning
- d. Personal/Employability Skills Development

2. The **Advanced Manufacturing Pathway Career Development Subcommittee** reviewed and expanded the career awareness/development work completed by previous pathway development committees. This work included developing a process for planning a comprehensive career guidance plan with special emphasis on the coordination of middle school

and high school career counseling activities. A part of this planning activity was identifying best practices by grade level and developing tools to draft comprehensive career counseling plans for grades 6 through 12 that address the four areas of emphasis.

3. In addition, the community college and workforce development counselors serving on the Career Development Subcommittee considered the career guidance best practices for community college students, adults and youth served through WIOA programs and later formalized their additions to the list of best practices at the joint career guidance professional development retreat.

4. Accountability for developing and implementing the career guidance plans at the local level is included in the local pathway implementation certification program that is scheduled to be implemented during the 2016-17 school year.

### **Career Awareness Strategies for Advanced Manufacturing Pathway**

#### **A. Description of advising strategies for secondary school students, postsecondary students, adults and dislocated workers**

**Secondary School Students** – the general career awareness strategies being used with middle school and high school students. Data from the LEAs documents that over 30,000 (duplicate count) students in grades 7-12 in the Northeast region participated in career guidance activities during the 2014-15 school year.

We are proud of the fact that many of the specific advanced manufacturing career development activities for students are joint projects with the community colleges. The following artifacts document a sampling of these activities –

-- Robotic Programming Camps sponsored by Roanoke-Chowan Community College for middle school and high school students

-- [Advanced Manufacturing and STEM Careers Awareness Day](#) sponsored by Halifax Community College with planning support from the Roanoke Valley Chamber of Commerce and the CTE Directors from Halifax and Northampton County Schools, and Weldon and Roanoke Rapids City Schools

**Postsecondary Students** – the general career awareness strategies being used with postsecondary students at the community college are listed in the guide referenced above. In addition to career center counselors, many of the community colleges are utilizing career coaches/recruiters to work in the high schools and/or the NCWorks Career Centers to provide information and career counseling to high school students and adults.

The following artifacts document postsecondary student focused advanced manufacturing career development materials and activities.

The link to advanced manufacturing program information at each community college is listed on the regional pathways.

-- College of The Albemarle and other community colleges have tailored the regional pathway to meet local needs. One example is the [HVAC Technologies Diploma at COA](#).

-- Edgecombe Community College sponsored an [Advanced Manufacturing and STEM Careers Awareness Week](#) that included career awareness activities for community college students as well as high school and middle school students

**Adults, Out of School Youth and Dislocated Workers** – the general career awareness strategies being used with adults, out of school youth and dislocated workers are listed in the Workforce Development Board section of the guide.

All individuals who enter the NCWorks center for career guidance create accounts in NCWorks Online which is a portal for employment information and career awareness activities. Through NCWorks Online and career interest conversations with NCWorks staff clients are exposed to labor market information (wages, growth projections, skill requirements, etc.) for advanced manufacturing careers. Those who have an interest in an advanced manufacturing career and need to pursue training/education are referred to a community college liaison, known in some NCWorks Centers as the college Director of Recruiting and Community Outreach. This staff person guides the client(s) through the process of academic/career exploration using print and non-print materials for specific manufacturing positions such as welding, HVAC and industrial maintenance. College registration procedures and the eligibility for support like tuition, child care and transportation assistance are also covered. The NCWorks staff and the college liaison continue to support the client during enrollment, the education/training experience, and obtaining employment after successfully completing the training.

Other advanced manufacturing career awareness activities offered through the NCWorks Centers include touring manufacturing facilities like MSI Machinery in Elizabeth City to learn about the types of jobs available, the training required, the work environment etc.

**Three additional career awareness opportunities for this client group include –**

-- An example of an Advanced Manufacturing and STEM Career Awareness Open House coordinated by the Community College/WDB Director of Recruiting and Community Outreach.

-- A short-term advanced manufacturing career awareness course – ***Pathway to Manufacturing*** for adults and dislocated workers offered by Nash Community College.

--A career awareness flyer developed by one of our pathway employer partners, PCB - Piezotronics

## **B. Description of joint career awareness professional development by all partners**

The primary strategy for joint career awareness professional development in the Northeast region is an annual full day counseling retreat open to all of the counselors of our partnering schools and agencies. To date we have had two retreats with 90+ participants.

In addition to receiving an update on the regional business sector pathways, a major activity of the November 18, 2015 retreat was the formalization of the community college and workforce development best practice sections of the

### **C. Academic support and advising beginning in middle school and continuing throughout high school and community college**

The importance of career development support is highlighted on each pathway template in a row titled **“Career Counseling”**. The comprehensive and seamless approach across grade levels and institutions is stressed in the **“Comprehensive Career Guidance and Counseling Planning Tools”** document and in the joint professional development that occurs at the **Regional Counselors Retreat**.

### **D. Pathway inclusion of short term or time limited work-based learning activities (job shadowing, mentorships, field trips, etc.)**

A continuum of work-based learning activities that included short-term/time limited career awareness activities was developed as a part of the advanced manufacturing pathway strategic planning work.

The importance of work-based learning as a career development activity is documented on the pathway templates in the column labeled **“Work-based learning experiences.”** These short-term, time limited activities are also stressed in the Regional Counselors Retreat and are included in the best practices activities listed in the **“Comprehensive Career Guidance and Counseling Planning Tools”** document.

While metrics for these activities are not currently collected for community college students and clients being served by the WDBs, the LEAs reported that 459 students participated in advanced manufacturing work-based learning activities in 2014-15. Using this metric as a benchmark our goal will be to expand this number as we expand the implementation of our advanced manufacturing pathway.

### **E. The career awareness/guidance portion of the pathway includes activities focused on career exploration, awareness, skills abilities and interests**

As evidenced in the **“Comprehensive Career Guidance and Counseling Planning Tools”** document great emphasis is placed on planning and delivering a balanced, comprehensive and seamless career guidance program around four major areas – 1)Self-Awareness, 2)Career Awareness/Exploration/Goal Setting, 3) High School Course Selection/Post-Secondary Planning, and 4)Personal/Employability Skills Development.

## Criterion 5

### Articulation and Coordination

#### A. Opportunities for stackable credentials

As referenced in “[Advanced Manufacturing Pathway Template](#)”, the pathway promotes credentials offered through multiple entry points. While not listed on the pathway due to size constraints, the pathway supports all high school courses in manufacturing that produce credentials. The complete list is copied below.

IM41	Metals Manufacturing I	NIMS Measurement, Materials and Safety, NIMS Job Planning, Benchmark, and Layout
IM42	Metals Manufacturing II (two credit course)	NC Manufacturing Certificate, NIMS Manual Milling Skills, NIMS Job Planning, Benchmark, and Layout, NIMS Measurement, Materials, and Safety
IM61	Welding Technology I	OSHA 10-Hour Industry Certification
IM62	Welding Technology II	SMAW and/or GMAW & OSHA 10-Hour Industry Certification
IM63	Welding Technology III	SMAW and/or GMAW and/or GTAW & OSHA 10-Hour Industry Certification

#### B. Opportunities for secondary students to earn postsecondary credit through programs such as Career and College Promise

Also referenced in “Advanced Manufacturing Pathway Template: Revised by Committee April 2016”, the pathway promotes Career and College Promise articulated college credit opportunities.

#### C. Pathway provides individuals opportunities to earn academic and technical certificates, diplomas and degrees

On page 2 of the pathway template are links to each of the community colleges in the partnership where specific information can be found regarding the academic and technical certificates, diplomas and degrees awarded at each institution. The partnership collects summary credential completion data for the region. The summary manufacturing pathway credential completer data for the Northeast for 2014-15 can be found in [on our website](#). The 2015-16 data was collected in October 2016.

**D. Pathway includes coordinated, non-duplicative progression of courses that allow for articulated credit, prior learning and is in accordance with existing articulation between institutions**

The pathway supports the state articulation agreement which is adequate for existing courses. The state articulation agreement for courses in this pathway are listed below. Local articulation is promoted but no need currently exists to warrant investigation.

**Manufacturing courses that are included in the state articulation agreement**

Trade and Industrial Education	<a href="#">IM41 (7641) Metals Manufacturing Technology I</a> AND <a href="#">IM42 (7642) Metals Manufacturing Technology II</a>	=	<a href="#">BPR-111 Blueprint Reading</a> AND <a href="#">MAC-111 Machining Technology I</a> AND <a href="#">MAC-151 Machining Calculations</a>
Trade and Industrial Education	<a href="#">IM61 (7661) Welding Technology I</a>	=	<a href="#">WLD-110 Cutting Processes</a>
Trade and Industrial Education	<a href="#">IM62 (7662) Welding Technology II</a>	=	<a href="#">WLD-121 GMAW (MIG) FCAW/Plate</a>
Trade and Industrial Education	<a href="#">IM63 (7663) Welding Technology III</a>	=	<a href="#">WLD-122 GMAW (MIG) Plate/Pip</a>

**Criterion 6**

**Work-Based Learning**

**A. Pathway provides enrollees opportunities to incorporate work based learning into their programs of study**

Work-based learning (WBL) is an integral component of the Northeastern Advanced Manufacturing pathways. The pathways templates include a section titled **“Work-based Learning Experiences”** that define the types of work-based learning activities that are emphasized along the pathway from high school through adult.

The advanced manufacturing pathway strategic planning committees developed two tools to support the work-based learning component –

**Exhibit A** - A continuum of work-based learning components with suggested specified grade levels to begin the work-based experience

Exhibit A  
Criterion 6 WBL

Northeast NC Career Pathways  
**Continuum of Key Work-Based Learning Components**  
 X denotes the suggested specified grade level to begin the work-based experience

Grade Levels	→ Middle School	9 <sup>th</sup>	10 <sup>th</sup>	11 <sup>th</sup>	12 <sup>th</sup> - Adult
Focus	→ Explore	Expose	Enhance	Experience	Empower & Employ
<b>Key Work-Based Learning Components</b>					
Job Shadows	X				
Guest Speakers	X				
Co-Teaching	X				
Career Fairs/Expos	X				
Career Focused Field Trips		X			
Service Learning Projects		X			
Work-Based Learning Projects				X	
Career based graduation projects				X	
Capstone Class Projects				X	
*Internships (unpaid and paid)				X	
*Clinicals				X	
*Work-Study					X
*Apprenticeships					X

## Exhibit B – An employer recruitment tool

Exhibit B Criteria 6 WBL

### Career and Technical Education Employer Engagement Recruitment Survey

First Name: \_\_\_\_\_  
 Last Name: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Phone: \_\_\_\_\_

Industry: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_  
 State/Zip: \_\_\_\_\_

Contact Preference:  
 Phone  
 Email  
 No Preference

Check all the ways that you are willing to help

<b>Share Interests:</b>	<b>Mentor Interests:</b>
<input type="checkbox"/> Speak in classroom about your field	<input type="checkbox"/> Work with students on industry standards
<input type="checkbox"/> Chaperone field trip to college/worksite	<input type="checkbox"/> Offer summer externships for pathway teachers
<input type="checkbox"/> Mock interviews/resume review at school	<input type="checkbox"/> Host a field trip at your worksite
<input type="checkbox"/> Lead workshops	<input type="checkbox"/> Provide unpaid internships for students
<input type="checkbox"/> Sponsor a campus student organization	<input type="checkbox"/> Provide paid internships for students
<input type="checkbox"/> Host information session with students	
<input type="checkbox"/> Host job shadow days for students	
<input type="checkbox"/> Host tours of workplace for groups	
<b>Advice Interests:</b>	<b>Contribution Interests:</b>
<input type="checkbox"/> Work on CTE advisory board/committee	<input type="checkbox"/> Donate equipment
<input type="checkbox"/> Advise teachers about curriculum development	<input type="checkbox"/> Donate literature
<input type="checkbox"/> Serve as an industry expert for projects	<input type="checkbox"/> Offer scholarships for students
<input type="checkbox"/> Engage students in industry	<input type="checkbox"/> Other
<input type="checkbox"/> Share your industry contacts	
	<b>Other Interests:</b>

Comments:

## B. The business community's commitment to leading the development and implementation of work-based learning opportunities

The business community's commitment to developing and implementing work-based learning opportunities is one of the continuous progress metrics tracked by the partnership. **Exhibit C** documents that **92 employers** provided advanced manufacturing **work-based learning opportunities for 1,972 secondary students through adults** during the 2014-15 school year. A goal of the partnership is to grow the number of employers and the number of students/adults provided work-based learning opportunities each year.

North Carolina Northeast Career Pathways  
 Advanced Manufacturing Pathways  
 Work-based Learning Measures  
 Summary Data

Exhibit C  
 Criterion 6 WBL

Work-based Learning Measures	2014-15	2015-16	2016-17	2017-18
<b>Secondary Schools</b>				
Number of employers providing advanced manufacturing related work-based learning opportunities	71			
Number of students provided an advanced manufacturing related work-based learning opportunity	1,943			
<b>Community College/Workforce Development</b>				
Number of employers providing advanced manufacturing related work-based learning opportunities	21			
Number of students provided an advanced manufacturing related work-based learning opportunity	29			
<b>Total (Secondary – Adult)</b>				
Number of employers providing advanced manufacturing related work-based learning opportunities	92			
Number of students provided an advanced manufacturing related work-based learning opportunity	1,972			



**C. The work-based learning program includes in-depth industry tours, shadowing, mentorships, project based learning, service learning, structured volunteer experiences, internships and apprenticeships**

Exhibit D documents the range of work-based learning activities reported for the 2014-15 baseline year.

Exhibit D  
Criterion 6 WBL

Northeastern NC Career Pathways  
**Advanced Manufacturing Summary**  
**Secondary - Adult**  
**Work-based Learning Components 2014-15**

Work-based Learning Component	No. Students/Adults Served
Job Shadows	180
Guest Speakers	450
Career Fairs/Expos	1,134
Career Focused Field Trips	276
Internships	29

Exhibit E documents the names of employers providing advanced manufacturing internship opportunities according to the 2014-15 baseline data submitted by our institutional partners.

Exhibit E  
Criterion 6 WBL

NC Northeast Advanced Manufacturing Pathway Internships – 2014-15			
Employers providing Advanced Manufacturing Pathway Internship Opportunities	Community College	Contact Person	Type of work-based activity
Cummins Rocky Mount Engine Plant	Nash	Ralph Emerson	Paid internships including wages, tuition and books
Kaba Ilco Corp	Nash	Kathryn Price	Paid internship
Honeywell	Nash	Lois Ries	Paid internship
Universal Leaf	Nash	Vanessa Smith	Paid internship
Edwards Inc.	Nash	Fred Tyson	Paid Internship
George and Company	COA	Jeffery Wines	HVAC Internship
Florez Design Studio	COA	Beth Dobson	Drafting Internship
Heath Chappell Heating and Air Conditioning	COA	Heath Chappell	HVAC Internship
Norris Mechanical	COA	Hershey Norris	HVAC Internship
Northeastern Electric	COA	Thomas Wall	Electrical Technician Work-Study
R.A. Hoy Heating and Air Conditioning	COA	Jim Garberina	HVAC Internship
Roberts	Pitt	Carl Horton	Industrial Technology Internship
Advance Mechanical	Pitt	David Moody	A/C, Heating & Refrigeration Internship
Advanced Air Solutions	Pitt	Betty Rankin	A/C, Heating & Refrigeration Internship
Aire Serv Heating	Pitt	Keike Woolard	A/C, Heating & Refrigeration Internship
Equipment Plus TFS	Pitt	Bill Humbles	A/C, Heating & Refrigeration Internship
Goodwin Refrigerations Services, Inc.	Pitt	Brent Goodwin	A/C, Heating & Refrigeration Internship
Harry Teal Comfort and Services	Pitt	Harry Teal	A/C, Heating & Refrigeration Internship
MacGregor Village Apartments	Pitt	George King	A/C, Heating & Refrigeration Internship
Pitt County Schools - Facilities	Pitt	Aaron Errickson	A/C, Heating & Refrigeration Internship
Pitt Electric	Pitt	John Winslow	A/C, Heating & Refrigeration Internship
Mechanical Air Inc. East	Pitt	Jim Ennis	A/C, Heating & Refrigeration Internship

While our 2014-15 baseline data reflects a good array of career awareness WBL opportunities (i.e. job shadows, industry tours, career fairs, etc.) we were able to document just 29 of the more intensive work-based experiences, i.e. internships, paid work experiences, work-study, apprenticeships, etc.). As we expand the implementation of our pathway our goal is to significantly grow this number of more intensive WBL experiences. Implementation strategies for 2016-17 that address this goal include –

1. Improving our system for collecting work-based learning data from our community colleges and workforce development boards to ensure that all of the more intensive WBL experiences are being reported, and
2. Create a regional database of employers who are willing to offer the more intensive WBL experiences. Work began on this database this summer as manufacturing employers shared their commitments to implementing the manufacturing pathways as a part of the regional application for the DOL America’s Promise Grant. Below is a list of employers in the region who have manufacturing registered apprenticeship programs and/or are committed to offer one or more of the more intensive WBL experiences. This list will be used both to encourage other employers to provide similar experiences and to encourage our educational and training partners to recruit students to take advantage of these opportunities.

**Northeast NC Advanced Manufacturing Career Pathways  
Employers Offering Intensive Manufacturing Work-based Learning Experiences**

	Provide Internships	OJT	Incumbent worker training	Use pathway to upskill incumbent workers	Offer paid work experience	Registered Apprenticeships
ABB Pinetops, NC		x	x	x		
Advance Air Solutions	x					
Advance Mechanical	x					
Aire Serv Heating	x					
American Computer Dev.				x		
Bridgestone		x	x	x		
City of Rocky Mount Utilities						x
Cummins Rocky Mount Engine Plant	x				x	x
Edwards Inc.						x
Equipment Plus TFS						
Flagstone Foods at Ann’s House of Nuts	x	x	x	x	x	
Florez Design	x					
George and Company	x					
Goodwin Refrigeration Services	x					
Greenville Utilities Commission		x			x	x
Harry Teal Comfort and Services	x					
Heath Chappell Heating and Air Conditioning						
Honeywell	x					
Hospira, Inc.						x
Kaba Ilco Corp.		x	x	x	x	x
Kelhin Carolina System Technology, LLC		x	x	x	x	x
Mechanical Air Inc, East	x					
Mestek, Inc.		x	x	x	x	x
Norris Mechanical	x					
Northeastern Electric	x					
Nutkoo USA, Inc		x	x	x	x	
Ossid LLC		x	x	x	x	
Penco Products, Inc.		x	x	x		
R. A. Hoy Heating and Air Conditioning	x					
Roberts	x					
Thermal Spray Solutions		x		x		
UGL Services						x
Universal Leaf	x					
Weyerhaeuser Plymouth Lumber				x		

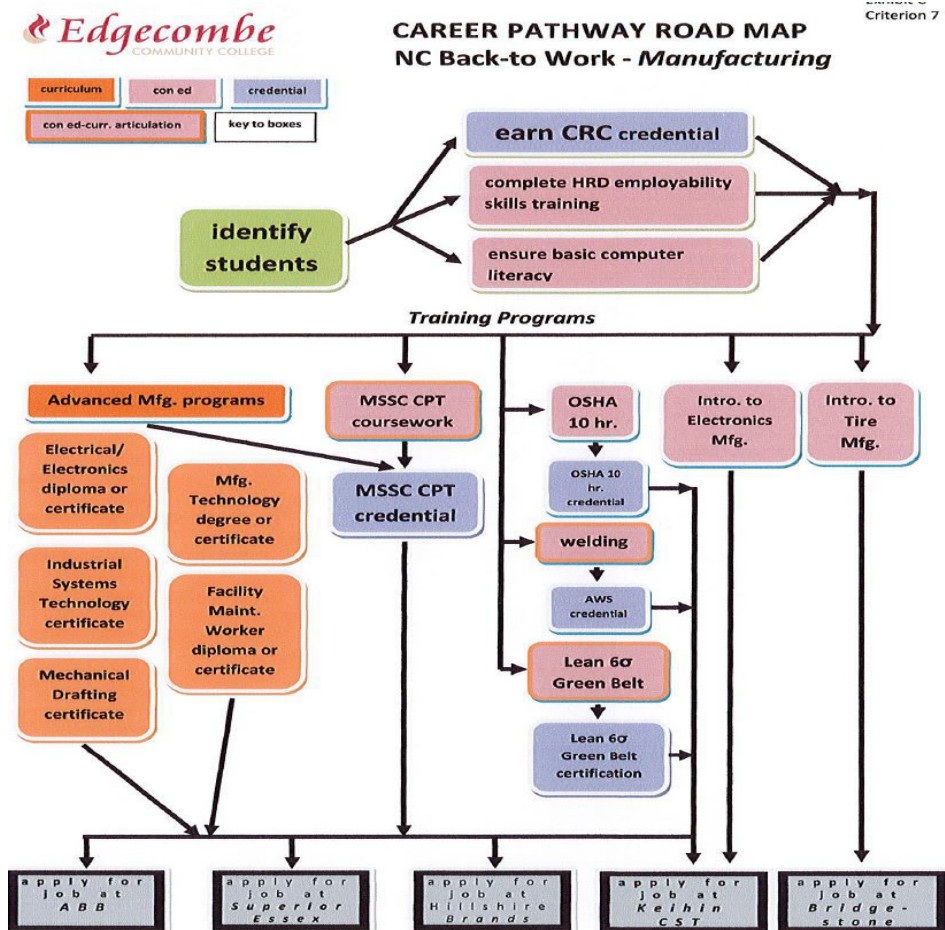
## Criterion 7

### Multiple Points of Entry and Exit

A. Pathway design allows for individuals to enter and exit at different points of the pathway without duplicating credit or prior learning

Interested students can enter this pathway from many points;

- High school students through pathways leading to STEM or manufacturing concentrator status.
- Where offered, some high school students can enter through manufacturing academies or pre-apprenticeship programs. Examples are the [IAM Academy](#) in Nash County and the Pitt County pre-apprenticeship program.
- Traditional high school graduates and students enrolled in community colleges can initially enter the program at their local community college. **Manufacturing Career Pathway Roadmap** is an example of multiple training/education options at Edgecombe Community College that lead to local manufacturing career.



- Adults seeking employment, a new career or career advancement can enter through the adult pathway option with WIOA assistance. This pathway entrance can be accessed from either the NCWorks Center or the career center at the community college.
- **B. Pathway includes non-degree training that articulates credit to degree pathways and awards credit for appropriate prior learning experiences, and earned certifications,**

and

**C. The pathway provides special consideration for veterans to demonstrate skills based on prior military experience**

Most of our community colleges have amended their policies or are in the process of reviewing their existing policies designed to provide veterans and non-veterans credit for skills they have already developed and allow students to move through coursework based on the mastery of a set of skills. The schools with such policies are documented on the Advanced Manufacturing planning charts as illustrated in the screen shot on the next page.

Community College Options
You can view the Educational Catalogue for NC Community Colleges at this link: <a href="http://www.nccommunitycolleges.edu/search/content">http://www.nccommunitycolleges.edu/search/content</a> Click on the Education Catalogue link.
<a href="#">* ^Beaufort Community College</a>
<a href="#">* ^ College of the Albemarle</a>
<a href="#">* ^Edgecombe Community College</a>
<a href="#">* ^Halifax Community College</a>
<a href="#">Martin Community College</a>
<a href="#">*Nash Community College</a>
<a href="#">*Pitt Community College</a>
<a href="#">* ^Roanoke Chowan Community College</a>
<a href="#">*Wilson Community College</a>
* Indicates Northeastern Community Colleges that offer competency-based assessments to award credit for appropriate prior learning experiences and earned certificates.
^Indicates Northeastern Community Colleges that offer special consideration for veterans to demonstrate skills based on prior military experiences.

An example of a competency-based program currently in place is Edgecombe Community College where the Manufacturing Technology Program utilizes ***“DuPont Solutions Clarity Training”*** which allows students to test and bypass modules based on skills and knowledge they have already attained through past industry experiences and training.

Most of our community colleges have expressed a desire to expand opportunities in competency-based education and training that lead to awarding of credit for prior training. It is an area we will be focusing on as we expand the implementation of the manufacturing pathway.

**D. Pathway includes postsecondary registration with the Department of Labor’s RACC program to offer registered apprenticeship completers a path to complete their postsecondary degree**

Following is a list of the documented DOL RACC registered Manufacturing Apprenticeship Programs in our region.

**Northeast NC Advanced Manufacturing Career Pathways  
DOL Registered Apprenticeships in Manufacturing Related Occupations**

<b>Employer</b>	<b>Program Occupation</b>
Cummins Rocky Mount Engine Plant	Instrumentation Technician
<u>Kaba Ilco Corp</u>	Tool and Die Maker Milling Machine Setup, Operator, Numerical Maintenance Mechanic Industrial Maintenance Electrician CAD Designer II
<u>Hospira, Inc.</u>	Maintenance mechanical/Electrical Tech II
UGL Services	Facilities Maintenance Technician
Edwards Inc.	Metal Fabricator
City of Rocky Mount Utilities	Journeyman Substation Technician

Source: NC Department of Commerce NCWorks Apprenticeship

One of the goals of our partnership as we expand our implementation is to increase both the number of manufacturing registered apprenticeship programs and the number of participants who complete these programs.

**Criterion 8**

**Evaluation**

**A. The plan assessment includes baseline data**

During 2016, secondary schools, community college and workforce development baseline data metrics for advanced manufacturing careers were established and collected for July 1, 2014 through June 30, 2015. [Advanced Manufacturing Pathways Metrics Summary Reports](#), summarizes the data sets that have been established and the baseline data collected. As

demonstrated by the forms, the plan is to collect and publish the data annually using the format laid out in the summary report.

The secondary schools are leading the effort to expand accountability through the collection and reporting of additional supporting data. One example is collecting data on the number and types of career guidance activities that at least 75% of a grade level experience. As we move forward, and hopefully have the software in place to collect additional data, we hope to expand the community college and workforce board data to include pathway retention rates – number enrolled vs. number who achieved certificate, diploma, degree, industry certification, etc. as well as employment and wage data on community college completers and workforce development clients hired in advanced manufacturing career pathways.

### **B. The plan of assessment includes definition of success including goals and timelines**

Simply stated the two prongs that define our Advanced Manufacturing Career Pathway goal are --

- 1) Increase the number of individuals who have a postsecondary credential that leads to a stable and satisfying advanced manufacturing career, and
- 2) Provide employers with the highly skilled workforce needed to meet the needs of the advanced manufacturing industry in Northeastern North Carolina.

The two outcomes that will define success are 1) a steady year-to-year increase in the numbers of those who attain advanced manufacturing credentials, and 2) a steady year-to-year increase in advanced manufacturing work-based learning opportunities, and employer engagement activities.

The initial assessment plan involved collecting appropriate metrics related to these two outcomes from secondary schools, community colleges and the workforce development boards. Later as the pathways are more fully implemented the goal would be to include 4-year college data as well.

Ultimately, we would like to track employment and wage data of advanced manufacturing pathway completers, but at present there is no viable reporting mechanism available to gather this information. We will continue to pursue this goal.

### **C. The plan of assessment includes recurring assessments throughout the pathways development**

A data reporting/collection system and set of metrics have been established for secondary schools, community colleges and workforce development boards. As demonstrated in **Advanced Manufacturing Pathways Metrics Summary Report** the evaluation design includes collecting goal related data from each of the education and training partners on an annual basis. As stated in the previous section once the pathways are more fully implemented the goal would be to include 4-year college data and employment data as well.

#### **D. The team has designed a mechanism for updating the pathway and associated strategies**

Critical to the implementation, review and revision of the advanced manufacturing pathways are periodic reviews. These reviews are included in our pathway design model and are designed to occur every 12 to 18 months. The first periodic review for the advanced manufacturing pathway was held on April 18, 2016 at Nash Community College.

There were 67 individuals representing employers, secondary schools, community colleges, universities -- East Carolina University, N.C. State University and Elizabeth City State University, workforce development boards, N. C. Department of Commerce, Chambers of Commerce and economic development.

Employers representing the following manufacturing industries participated--

Cummins Engines	Domtar Paper	Perdue Farms	Nucor Steel	World Cat
Berry Plastics	Bridgestone Tires	PCP Piezotronics	Tyson Foods	

The meeting included an update on the industry from the employer perspective, a time of sharing pathway implementation progress and best practices and the opportunity to network and review/revise the pathways that were developed earlier. Agreed upon pathway changes were made and are posted to the Northeast Career Pathways website. In addition time was allocated for the host, Nash Community College, to showcase their advanced manufacturing educational facilities through a virtual tour. Feedback from the review session was very positive and suggestions were collected to further enhance the review process as we move forward.