

Best Practices

This report describes Greater Cincinnati's Partners for a Competitive Workforce (PCW) and the implementation of the manufacturing apprenticeship program for machine operators and welders. This report was completed by Stephen Tucker, Senior Manager of Industry Partnerships with Partners for a Competitive Workforce.

History: Regional Collaboration to Close the Skills Gap

Our community has a long history of collaboration to address our workforce challenges. For over ten years, businesses, workforce investment boards, economic development agencies, educational institutions, philanthropic funders, and community organizations across the tri-state have come together to coordinate service delivery, address skill shortages in specific industries, and serve employers.

Since 2001, the four workforce investment boards that serve the tri-state along with the Northern Kentucky Chamber have worked together to serve employers with coordinated services around major layoffs or hiring events in the region. Collectively, the four boards administer roughly \$13.5 million in federal funds across our tri-state region and serve nearly 50,000 individuals and 1,200 businesses.

In 2008, the Greater Cincinnati Workforce Network (GCWN) was convened as a regional public-private partnership aimed at growing the skills of our workforce to match the needs of employers in key industries. In early 2011, leaders from the workforce boards and GCWN launched a planning process to figure out how to more closely align our efforts and build on our successes. The result of this planning process was the creation of Partners for a Competitive Workforce (PCW) as the umbrella that brings together all of the region's workforce efforts under a common mission.¹

Partners for a Competitive Workforce Introduction

Partners for a Competitive Workforce (PCW) is a partnership in the Ohio, Kentucky, Indiana tri-state region focused on meeting employer demand by growing the skills of the current and future workforce. Our vision is that employers have the talent they need to compete, and people have the skills they need to get good jobs and advance in their careers.

Our partners include businesses, workforce investment boards, chambers of commerce, secondary and post-secondary educational institutions, service providers and philanthropic funders. The partnership is managed by the United Way of Greater Cincinnati, with major support provided by the National Fund for Workforce Solutions and local funders.

¹ <http://www.competitiveworkforce.org/History.html>

We have come together to coordinate all of the region's workforce efforts under a common umbrella, set joint priorities, and track our progress. Our main objectives are to align education with industry, build career pathways in healthcare, manufacturing, construction, and information technology and to connect businesses to qualified workers.

Manufacturing Problem Statement

Manufacturing is a major part of Ohio's economy. In 2011, Ohio's manufacturing sector GDP was 80.7 billion which accounted for 16.7 percent of Ohio's total GDP. The manufacturing sector is also a major employer in Ohio as well employing over 600,000 individuals within the industry and manufacturing is the second largest private sector employer behind only health care in the tri-state region.² From the Jobs Outlook 2020 study released in 2012, there will be more than 18,000 advanced manufacturing job openings within the next 10 years and in May 2014, the Southwestern Ohio Region along Interstate 75 with 27 counties stretching into Northern Kentucky and Indiana applied as the Southwest Ohio Aerospace Region and received a Department of Commerce designation as one of only 12 Manufacturing Communities in the United States.

Despite demonstrated opportunities in manufacturing, the supply side of the manufacturing equation (workforce) struggles to keep up with demand (open positions). The industry suffers from negative perceptions such as being low tech, repetitive, dangerous and an unwelcoming culture, which impacts educational recruitment of millennials and the building of the talent pipeline. Although seven out of 10 Americans believe manufacturing is the backbone of the U.S. economy, only three in 10 parents would recommend their children to pursue manufacturing careers. Locally, a focus group consisting of college-educated women all stated they would not advise their children, especially their daughters, to pursue technical careers. These attitudes coupled with a lack of understanding of advanced manufacturing of the 21st century drives potential young talent towards other industries.

At a time when manufacturing jobs are in high demand in Greater Cincinnati, manufacturers face the critical issue of a major skills gap between the current skills of the local labor pool and the competencies and qualifications needed to be successful in today's manufacturing. Employers often struggle to fill open positions due to a lack of a qualified labor pool and the problem will only get worse due to the industry's aging workforce and a nonexistent talent pipeline.

² Ohio Department of Job and Family Services, *Manufacturing in Ohio: A Post-Recession Employment Outlook*. (2013)

These complex issues require comprehensive integrated strategies and collaborating stakeholders to reach solutions. No single organization alone has the ability to close the skills gap and develop the talent pipeline for manufacturing. It will take a regional approach with customized local programming utilizing a collective impact model. The solution must also be led and driven by employers with strong support from education, workforce development and other key stakeholders.

Manufacturing Apprenticeship Program

In 2009, PCW convened the Advanced Manufacturing Career Pathway Partnership Team to meet the needs of employers and employees in the industry. Previous efforts by the Southwest Ohio Manufacturers Consortium and Gateway Community & Technical College's Advanced Manufacturing Career Pathways provided a strong foundation for this regional collaborative to come together focused on preparing a skilled manufacturing workforce. Since the inception of PCW's manufacturing work, more than 1,495 job seekers have obtained over 1,200 industry-recognized credentials with 80% increasing their earnings on average by \$7,500.00 annually. Impaq International, a research, evaluation, survey, and technical assistance firm conducted a quasi-experimental evaluation to assess employment outcomes of participants of PCW's Career Pathways and the study found that Advanced Manufacturing Pathway participants were 40% more likely to be employed and earn 42% higher wages 12 months after completing programming than individuals in a matched comparison group who did not participate. Partner employers have also seen a positive return on investment through reduced recruitment costs and turnover.

In March 2014, the Advanced Manufacturing Career Pathway Team adopted the industry partnership model and changed the name from Advanced Manufacturing Career Pathway Team to Advanced Manufacturing Industry Partnership (AMIP). The industry partnership model utilizes employer leadership to design career pathways with portable and stackable credentials that meet industry needs, engage education and workforce stakeholders to train the workforce, and utilize industry intelligence to develop long term strategies to improve the talent pipeline. The partnership researched the apprenticeship model and decided to assess the feasibility of developing an apprenticeship program.

Apprenticeship is one of the oldest forms of training in the United States and combines on the job training with related technical instruction to produce a highly skilled worker. The registered apprenticeship system dates back to 1937 with the passage of the Fitzgerald Act - national legislation that lays the foundation for the federal-state system that exists today. In 1977, the Department of Labor updated regulations for operation of the system and since then, the evolving 21st century economy, with its technological advances and shifting demographics required new regulations to support a more flexible National Apprenticeship System. The newly

revised regulations position Registered Apprenticeship to expand employment opportunities for millions of workers by providing the skills and training needed to succeed in today's growing and emerging industries. Program sponsors can now select from three different approaches to apprenticeship: competency-based, time-based and a hybrid of the two approaches.³

Best Practice - Hybrid Apprenticeship Program

Time based apprenticeships require a minimum of 2000 hours of on the job training and 144 hours of related technical instruction for a set amount of time and usually takes a longer time to complete whereas competency based training programs are comprised of competency standards set by industry that each student is assessed against. Progression through a competency based training program is determined by the student demonstrating that they have met the competency standards through performance and theoretical exams, not by time spent in training. This way, students may be able to complete a program of study much faster. Hybrid apprenticeship programs are a combination of the two approaches and give employers flexibility to customize the training to meet their immediate needs and skill up their workforce faster.

Apprenticeship is a training model that is highly customizable to meet specific employer needs. A proven strategy, combining on-the-job training with related technical instruction, apprenticeship produces skilled workers trained to industry and employer specifications. The Advanced Manufacturing Industry Partnership Team believed that the apprenticeship model could simultaneously address two of manufacturing's most critical issues, the skills gap and the talent pipeline. As such, the Advanced Manufacturing Industry Partnership Team decided to move forward with the development and implementation of a manufacturing apprenticeship program and identified the following objectives for our 2014 work;

- Secure employer participation in the sponsorship, development and design of a training initiative utilizing the apprenticeship model
- Secure funding for a pilot manufacturing apprenticeship program
- Secure accredited educational partners to provide related technical instruction, industry recognized credentials and college credit
- Consider registering programs with the Ohio State Apprenticeship Council

Employer "sponsorship" meant that participating employers would hire and "sponsor" an apprentice by paying them an agreed upon minimum salary with employer sponsored benefits, provide customized on the job training, increase apprentice wages as competencies are

³ United States Department of Labor, *21st Century Apprenticeship, How the Revised Regulations Strengthen the National Apprenticeship System.* (2008)

achieved and assist the partnership team with developing related technical instruction curriculum.

Employer Recruitment

The first objective of the AMIP's apprenticeship initiative was to secure employer participation in the sponsorship, development and design of a training initiative utilizing the apprenticeship model. Employer champions were identified and they engaged other like employers to discuss short and long term hiring needs, occupational shortages and sourcing options currently being deployed. Local chambers were also engaged and connected employer champions to other manufacturers who were suffering from similar workforce shortages. These discussions unveiled an immediate need for machine operators and welders and the necessity to develop a long term strategy to build a pipeline for both of these occupations. Further research demonstrated that Standard Occupational Codes 51-4041 (Machinist) and 51-4121 (Welding) are both expected to grow and add new jobs at a rate of 7.8% and 8.6% respectively by 2020 in the tri-state region while annual program completions are expected to remain stagnant. As a result of these conversations, eight employers agreed to sponsor 12 apprentices in a training initiative utilizing an apprenticeship model for two separate occupations, machine operator and welder fitter. The program will be developed to produce Machine Operators SOC 51-4081.00 and Welders SOC 51-4121.06 on a fast track to meet immediate demand and build the talent pipeline for the future. American Fan's Sam Bellamy on apprenticeship's: "We needed a long term strategy that met the needs of our business and also the community."

Best Practice - Upfront and Ongoing Employer Engagement

From the beginning of this process, sponsor employers were engaged and instrumental in the design and implementation of this program. Employers served as advocates by recruiting other employers and spent hours reviewing and developing the curriculum and the program. The employers have also remained highly involved in the on the job training portion of the program developing the technical skills necessary for apprentices to acquire all required competencies and complete the program. This upfront and ongoing involvement is critical to the long term success of the program.

Funding Development

The second objective of the AMIP was to secure funding for a pilot manufacturing apprenticeship program to primarily pay the educational expenses of the related technical instruction. Representatives from the Local Workforce Investment Boards and One Stop Centers are active participants on the AMIP and formed a subcommittee to discuss funding options utilizing Workforce Investment Act (WIA) dislocated worker and adult public funds. WIA dislocated worker and adult funds are available in two primary forms, on the job training (OJT) dollars and individual training accounts (ITA's). OJT's provide employers with wage reimbursements to offset on the job training costs associated with hiring unemployed,

underemployed or unskilled job seekers and ITA's are available to eligible job seekers to pay for in demand training with eligible training providers (ETP's) .

The subcommittee decided to explore leveraging Workforce Investment Act (WIA) dislocated worker and adult public funding with private funds available through PCW however, the eight sponsoring employers are located in two different Ohio Counties and Local Workforce Investment Board Regions which presented several challenges due to differing policies, funding levels and processes. For instance, the Southwest Ohio Region Workforce Investment Board serving Hamilton County usually allowed an OJT or ITA to be utilized exclusively by either the company or job seeker (new hire) at a maximum amount of \$5,000.00 whereas the Workforce One Investment Board of Southwest Ohio serving Butler County allowed OJT's and ITA's to be utilized simultaneously by employers and the job seeker (new hire) at maximum amounts of \$8,000.00 for an OJT and \$15,000.00 for an ITA. This meant that sponsoring employers located in Hamilton County would only have access to \$5,000.00 of public funding per apprentice where sponsoring employers located in Butler County could receive up to \$23,000.00 of public funding per apprentice. After many collaborative discussions, the Southwest Ohio Region Workforce Investment Board and the Ohio Means Jobs Center of Butler County agreed to dedicate up to \$8000.00 for eligible candidates for the manufacturing apprenticeship program with up to \$5,000.00 designated to cover training costs and up to \$3,000.00 designated for wage reimbursements. PCW agreed to cover additional expenses and fund expenses for apprentices who do not qualify via WIA funds. This public/private funding model ensures equity amongst employers regardless of county location. "Supporting apprenticeship was a no brainer opportunity," Sherry Kelley Marshall, President & CEO, Southwest Ohio Region Workforce Investment Board.

Curriculum Development

With both sponsorship and funding in place, the AMIP began to focus on curriculum development and delivery of the related technical instruction. Although employers identified machine operators and welders as the occupations of need, there were ongoing discussions regarding if sponsoring employers were actually in need of machinist instead of machine operators. This was due to the vast differences of the actual duties performed as a machine operator between sponsor employers. A machinist is a person that can accurately machine parts to print, using a variety of machines and/or methods and is highly-skilled with expertise operating many types of machines such as precision grinders, lathes, boring machines, drill presses and milling machines. Machine operators on the other hand commonly have the skills to operate one or two tooling machines and they typically run jobs previously setup by a machinist or supervisor. Although machine operators are required to have the same foundational skills as a machinist such as safety, blue print reading, shop math and programming, they need additional hands on experience to acquire the skills to become a

machinist. Upon careful review of each sponsoring employer's machine operator's job descriptions and an analysis of the actual job duties performed, it was determined to develop the program to produce machine operators who could eventually be trained to become machinist. Sponsor employers reviewed several training options currently recognized by industry and decided to utilize the Manufacturing Institute's Skills Certification System as a guideline for the apprenticeship programs and its related curriculum to train apprentices.

The Manufacturing Institute launched the Skills Certification System to address the skills gap challenge facing manufacturing. The Skills Certification System is designed by industry, for industry, and is endorsed by the National Association of Manufacturers. The Skills Certification System is grounded on the National Career Readiness Certificate (NCRC) issued by ACT which is a portable, evidence-based credential that measures essential workplace skills and is a reliable predictor of workplace success.⁴ Through assessments called "WorkKeys" individuals can demonstrate employability skills in applied math, locating information, and reading for information leading to the NCRC. The AMIP was familiar with the NCRC and decided to require all program applicants to achieve the National Career Readiness Certificate (NCRC) with a minimum score of a 4 in each area of assessment in order to qualify for the apprenticeship program. This was done to assess and verify applicant academic and work readiness.

Lesson Learned - Focus on Candidate Quality

Some employers expressed concerns with the quality of the candidates recruited for the program. Several candidates were no call no shows for their interviews or seem to lack several soft skills or may have had a criminal record that was not acceptable to employers. One employer also questioned whether the NCRC Level 4 Certification was a reliable assessment to determine readiness and suitability for the program. It was recommended that we add the Talent and Fit Assessments to the recruiting process.

The AMIP was also familiar with the Manufacturing Skill Standards Council (MSSC) Certified Production Technician (CPT) credential. MSSC CPT Curriculum prepares individuals for entry level production positions within a manufacturing environment. Successful completion of production modules in Safety, Quality Practices & Measurement, Manufacturing Processes & Production, and Maintenance Awareness lead to certification in each area and the MSSC CPT Credential.⁵ These courses can be completed between 60 and 140 hours depending on the skill level of the participant and has been recognized and accepted by several employers in our region.

⁴ <http://www.themanufacturinginstitute.org/Skills-Certification/Skills-Certification.aspx>

⁵ <http://www.msscusa.org/production-certification-cpt/>

Sponsoring machine operator employers wanted to investigate nationally recognized certifications for metalworking and became interested the Right Skills Now (for Manufacturing) certificate program. The Right Skills Now certificate program is designed to provide fast-track, high-skilled manufacturing training in the following areas: job planning, benchwork, materials, manual milling, manual turning, CNC milling and CNC turning. The Right Skills Now program curriculum is closely aligned with standards set forth by the National Institute of Metalworking Skills (NIMS). NIMS set skills standards for the metalworking industry and certify individual's skills against these standards. NIMS certifications are earned through secondary, postsecondary, and work-based curricula and include both "hands-on" performance and theory tests. 52 NIMS credentials allow employers to hone their credentialing requirements and choose only those certifications that are applicable to the needs of their company.⁶

Sponsor welding employers were also interested in attaching a nationally recognized credential with the welding related technical instruction. This was important to them as a way to validate employee quality to their customers. The American Welding Society's (AWS) Certified Welder program is nationally and industry recognized and uses performance-based testing to validate procedures used in the structural steel, petroleum pipelines, sheet metal and chemical refining industries.⁷ Although sponsoring employers currently recognized the American Welding Society (AWS) Certified Welder program, they stated that some of the certified welding candidates could weld but couldn't perform other tasks required of welders such as shop math, blue print reading, interpreting drawings and symbols or understanding metallurgy. For these reasons, sponsoring welding employers discussed coupling an increase in hours of instruction on foundational skills with the AWS welding certification to develop a highly knowledgeable and competent employee.

AMIP employers met biweekly for two hours per session discussing and aligning knowledge, skills and abilities (KSA) requirements, qualifications and responsibilities required of newly hired machine operators and welders at their businesses. Sponsors developed common job descriptions and identified core educational requirements necessary to produce highly competent and skilled machine operators and welders. After three months, the following coursework was identified to be delivered during the related technical instruction and classroom hours of the machine operator and welding apprenticeship programs;

Machine Operator Related Technical Instruction

Materials Measurement and Safety

Job Planning Benchwork and Layout

⁶ <http://www.themanufacturinginstitute.org/Skills-Certification/Certifications/NAM-Endorsed-Certifications.aspx>

⁷ <http://www.themanufacturinginstitute.org/Skills-Certification/Certifications/NAM-Endorsed-Certifications.aspx>

CNC Milling Level I
CNC Turning Level I
Algebra Trigonometry and Geometry
Machine Math

This technical coursework combined with 12 months of on the job training will provide employers with a skilled manual and CNC machine operator. Apprentices will receive 2000 hour of on the job training and 435 hours of related technical instruction (Appendix A1 & A2). Apprentices will also be required to secure the following 4 NIMS Certifications needed for a NIMS Level I Machinist Credential: Measurement Materials and Safety, Job Planning Benchwork and Layout, CNC Operator Turning, CNC Operator Milling.

Welder Fitter 1 Related Technical Instruction

Welding Safety and First Aid
Blueprint Reading, Interpretation of Drawings and Symbols
Shop Math
Measurement Instruments
Metallurgy Properties of Materials and Gasses
GMAW, Gas Metal Arc Welding
FCAW, Flux Cored Arc Welding
GTAW, Gas Tungsten Arc Welding
Metallurgy Techniques (Labs)

The welding coursework was developed to meet the needs of two local employers. Both employers stated that they needed apprentices to learn core welding competencies as soon as possible. The program will consist of 2000 hours of on the job training and no more than 240 hours of related technical instruction (Appendix A3) with the goal of achieving an American Welding Society D1.1 Certification. Completers will also receive college credits towards a degree. This technical coursework combined with 12 months of on the job training will provide employers with skilled welders.

Best Practice = Front Loaded Related Technical Instruction

The welding employers worked with their educational partner to have apprentices report to school two weeks prior to reporting to on the job training. This was done to allow apprentices to complete basic safety and first aid training before they worked on the shop floor. Once on the floor, they began learning core welding competencies on day one. "The week of classes on safety, first aid and blueprint reading I started before working was helpful. Maybe we should have more schooling before we actually start work," Chelsea Reese, Welding Apprentice, American Fan.

Program Development

AMIP created minimum applicant qualifications, work schedules and a wage progression scale for the apprenticeship program. Employers requested that the following minimum requirements be met to be considered for the apprenticeship program; high school diploma or GED, Silver Level NCRC, valid driver's license, reliable transportation and the ability to successfully pass a drug screen and a criminal background check. Individuals with criminal convictions will be considered on a case by case basis. The term of each apprenticeship will last for 12 months with a 90 day probationary period. Apprentices will receive employer sponsored benefits, college credit and participate on a hybrid based wage progression scale. Apprentices who cancel/terminate will be replaced by a new apprentice or incumbent worker.

Machine operator sponsor employers agreed to an apprenticeship schedule where apprentices participate in on the job training 4, ten hour days (minimum 2000 hours annually), Monday – Thursday and attend related technical instruction every Friday for eight hours per week for 53 weeks (435 RTI annually).

Welder sponsor employers will follow a schedule of on the job training Monday – Friday, 6:00AM to 2:30PM (minimum 2000 hours annually) and related technical instruction Tuesday, Wednesday and Thursday, 4:00PM to 8:00PM for 20 weeks (240 RTI annually). Both the machine operator and welder apprenticeship schedules were developed to not only meet the production needs of employers but to reduce the risk of cancellations by apprentices.

Best Practice - Apprentice Friendly Schedule

Historically, apprenticeships have cancellation rates between 45 and 55 percent with 26 percent of apprentices cancelling within the first 12 months. As such, the AMIP developed an apprentice friendly schedule to provide apprentices with a manageable work, life schedule.

Diagrams 1.1 and 1.2 provide a visual summary of the machine operator and welding apprenticeship programs.

Diagram 1.1 Machine Operator Program

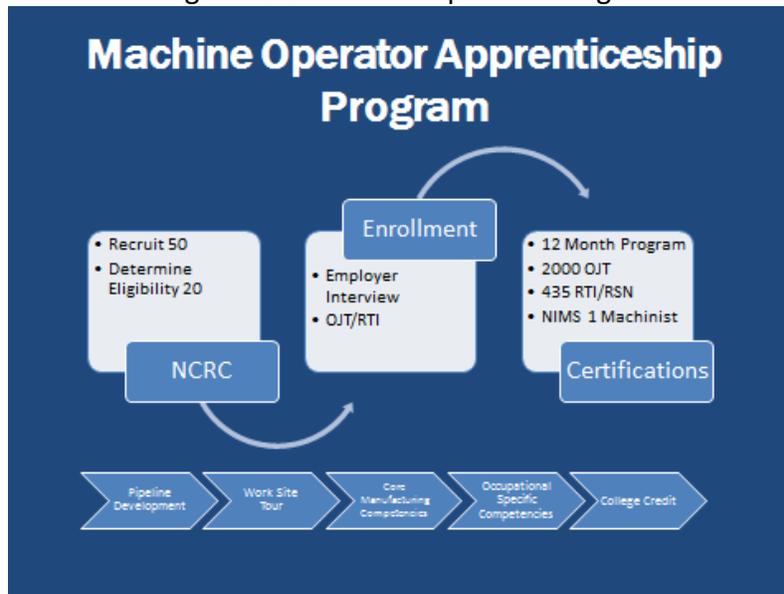
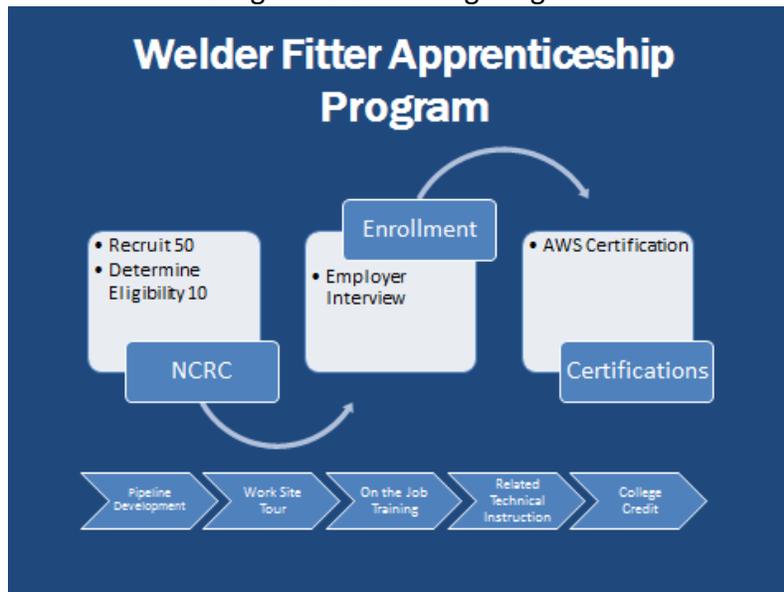


Diagram 1.2 Welding Program



The apprenticeship model utilizes a defined wage progression scale and apprentice agreements must contain a statement of the compensation to be paid to the apprentice. Competency wage progression scales reward increases upon successful completion of specific competencies whereas time based wage progression scales reward increases based on time in service. AMIP implemented a hybrid based wage progression scale with \$12.00 an hour as the starting salary of apprentices with a \$1.00 per hour increase rewarded as competencies and on the job training hours are achieved.

Machine operator apprentices will receive a \$1.00/hour increase upon completing 1000 hours of on the job training and Measurement, Materials and Safety, and Job Planning, Benchwork and Layout NIMS Certifications. Machine Operators will receive an additional \$1.00/.hour increase upon completing an additional 1000 hours of on the job training and CNC Milling Level 1 and CNC Turning Level 1 NIMS Certifications. Machine operator apprentices will earn a wage of \$14.00 an hour for successfully completing the 12 month program, obtaining all 4 NIMS Certifications and the NIMS Level 1 Machinist Credential. Apprentices will then transfer to their individual employer occupational classification system and wage scale.

Welding apprentices will also receive \$12.00 an hour as the starting salary with a \$1.00/hour increase rewarded as competencies are achieved. Welding apprentices will receive a \$1.00/hour increase upon completing 1000 hours of on the job training and 120 hours of related technical instruction. Welding Apprentices will receive an additional \$1.00/hour increase upon completing an additional 1000 hours of on the job training and the final 120 hours of related technical instruction. Welding apprentices will earn a minimum wage of \$14.00 an hour for successfully completing the 12 month program and obtaining the D1.1 AWS certification. Apprentices will then transfer to their individual employer occupational classification system and wage scale.

Educational Partner Request for Proposal and Selection Process

Currently, the AMIP has 10 educational partners who provide programs and services to job seekers and incumbent workers participating in manufacturing programs with many interested in participating in this initiative. The AMIP decided it would be best to offer a fair and open competitive process to identify an educational provider and on June 3, 2014, a request for proposal (Appendix B) was released to identify and select a partner educational provider to deliver related technical instruction for the manufacturing apprenticeship program. The educational partner is responsible for delivery of the related technical instruction to include nationally industry recognized certifications and college credit. An educational provider selection committee was created consisting of 3 employers from Butler County, 3 from Hamilton County, 1 Butler County WIB Representative and 1 Hamilton County WIB Representative. Cincinnati State was selected as the educational provider for the machine operator track. Apprentices will attend 435 hours of RTI, obtain NIMS Certifications and receive

college credit. Butler Technical Career School was selected as the educational provider for the welding track. Apprentices will attend 240 hours of RTI, obtain AWS Certification and receive college credit.

Apprenticeship Recruiting Process

The Ohio Means Jobs Centers of Hamilton and Butler Counties, our local One Stops recruited and developed a pool of prescreened candidates to be considered for sponsorship in the program. Forty-seven job seekers attended a Manufacturing Apprenticeship Fair to meet with sponsor employers on August 5, 2014 at Standard Aero in Sharonville Ohio where they were provided a detailed overview of the program and expectations. Employers communicated specific information regarding their hiring needs and characteristics they were looking for in an apprentice and attendees had the opportunity to meet individually with each employer. All job seekers who attended were pre-screened and met the minimum requirements requested by sponsoring employers. Suitable candidates were scheduled for second interviews and completed work site tours to determine and ensure fit for the applicant and employer before an offer of apprenticeship was extended.

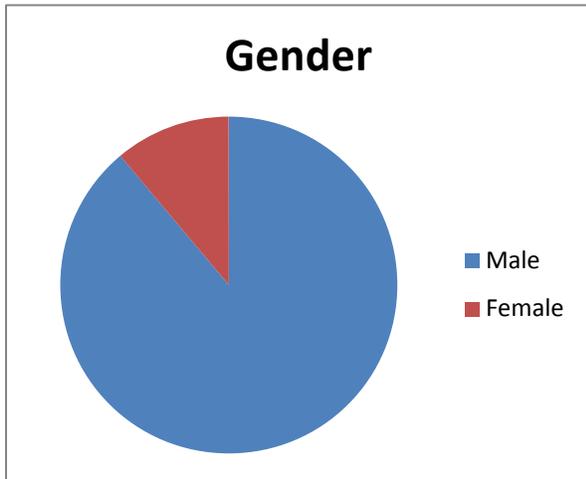
Lessons Learned - Increase time and resources designated for recruiting and screening

Workforce stakeholders believed that there was not enough time to screen, test and develop the pool of candidates. It was suggested that we may want to consider increased advertisement, educating community based organizations about program expectations and conducting more information sessions to reach more people. One apprentice stated that “my friends would have loved to participate in a program like this but they just didn’t know about it.” The job fair also may have created a situation where employers were in competition with each other giving an advantage to candidates which could lead to employer poaching. As a result, high caliber candidates were offered sponsorships by multiple employers which caused some confusion. Increased awareness will increase applicants and create a higher caliber candidate pool.

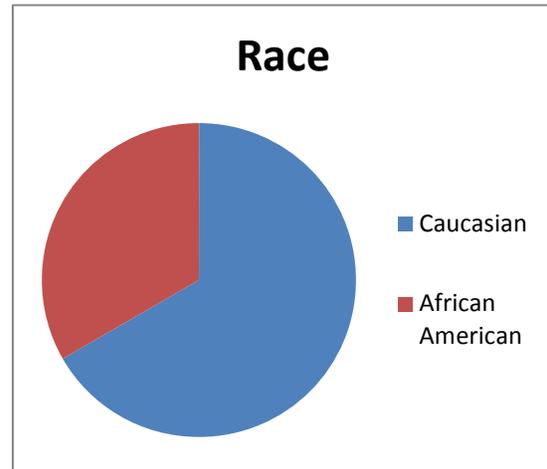
Apprentice Demographics

The initial cohort of the machine operator and welding apprenticeship program consisted of eight males, 1 female, 6 Caucasians, and 3 African Americans. The ages of the apprentices range from 19 to 55 with the average age being 35. Two apprentices accepted in the program had prior criminal convictions. Please see graphs 1.1, 1.2, 1.3, and 1.4 for detailed demographic information.

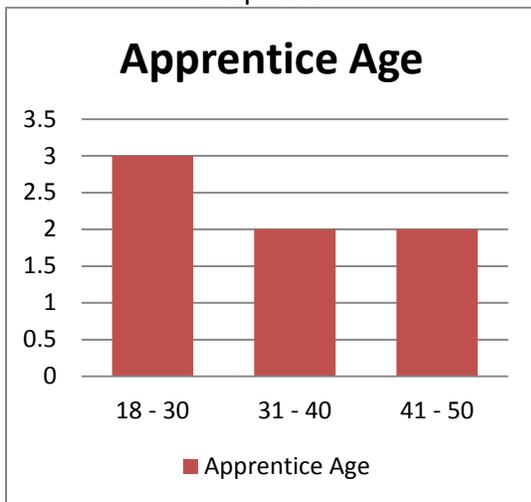
Graph 1.1



Graph 1.2



Graph 1.3



Graph 1.4

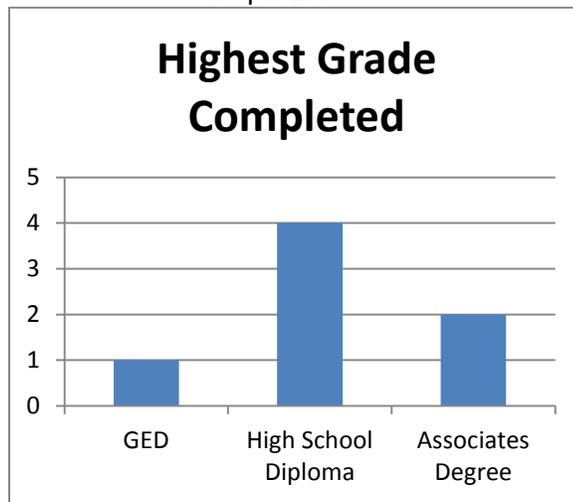
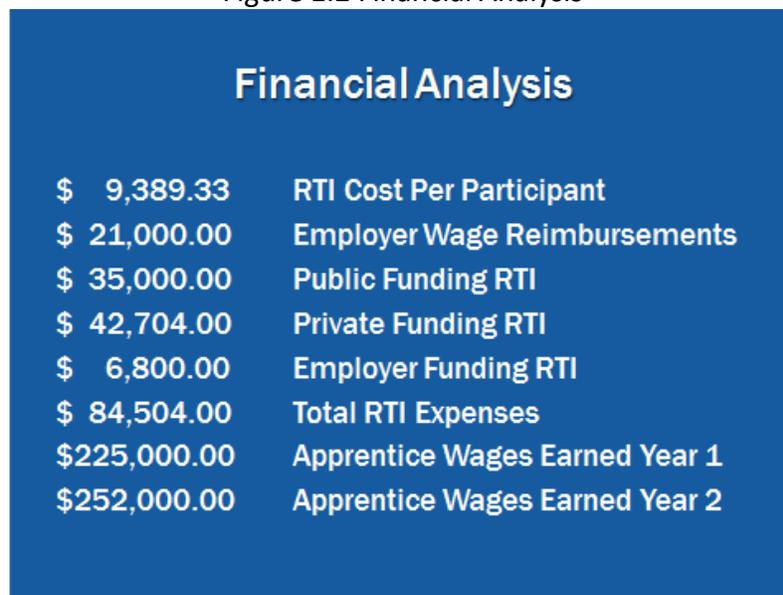


Figure 1.1 reflects Programmatic Outcomes to date and Figure 1.2 provide a Financial Analysis as of December 21, 2014.

Figure 1.1 Outcomes to Date



Figure 1.2 Financial Analysis



Sponsoring employers and remaining apprentices were interviewed and surveyed to identify program strengths and potential areas of improvement. AMIP also facilitated several discussions during our bimonthly partnership meetings regarding the development, design and implementation of the machine operator and welding apprenticeship program and identified the following additional areas of improvement.

Continuous Improvement

Develop an effective referral process

There were several discussions regarding the recruiting and referral process. One employer stated that it may be beneficial to allow the employers to recruit and select their own candidate and refer the candidate to the OMJ Center to determine WIA eligibility. With this model, community based organizations can refer candidates directly to the employer for consideration. This may minimize competition between employers. Another suggestion was to create a list of eligible, prescreened candidates utilizing a ranking system and provide the list to participating employers. Employers can then contact apprentices they have an interest in sponsoring to schedule interviews and to select their apprentice. A majority of AMIP also believed the job fair model is an ineffective process to connect job seekers with employers. Employers believed that job seekers in attendance may not have properly understood both tracks of the apprenticeship program and basically had an “I’ll take anything” attitude.

Throughout 2014, Partners for a Competitive Workforce have begun several innovative strategies to close the skills gap and develop the talent pipeline for manufacturing. With a renewed national focus on apprenticeship, PCW, Southwest Ohio Region Workforce Investment Board and Ohio Means Jobs Centers of Hamilton and Butler counties are partnering to fund apprenticeship programs for welders and machine operators. Eight employers have agreed to sponsor twelve apprentices in a hybrid manufacturing apprenticeship program. A public/private investment of \$105,504.00 dollars is projected to generate \$477,000.00 dollars in apprenticeship wages over the first 2 years and provide participants with skills to advance in their careers and businesses with a qualified workforce. Although the financial impact is extremely positive, the true victory for this initiative is the coalition building and the collaborative process which resulted in diverse stakeholders aligning to address manufacturers immediate and future workforce needs. “Employers willing to try a new approach to recruitment and training and consider our candidates, now that’s a win, win, win,” Sherry Kelley Marshall, President & CEO, Southwest Ohio Region Workforce Investment Board.

Machine Operators 1 Training Emphasis on National Institute for Metalworking Skills (NIMS) Certification



Machine Operator training provides foundational training on machine safety, measurement and blueprint reading, manual milling and turning, an overview of CNC (with a project) and statistical process control. The program prepares students for the NIMS certification through hands-on training and a project. The in-class courses and project comprises 210 hours of training and requires the fabrication of several metal parts.

The outcome of training will be the use and understanding of geometric dimensioning and tolerances, precision measurement tools and reading blueprints for operation of various machine tools used to manufacture and repair mechanical assemblies. Students completing the course will understand machining applications, tooling criteria, and be able to inspect materials and product to ensure they meet specifications. Additionally, students will be expected to perform machining operations such as drilling, tapping, boring, turning and conventional milling and lathe work using various manual and CNC machine tools.



The training concludes with an emphasis on statistical process control (SPC), lean quality processes and communications for continuous improvement and reducing errors. The SPC module will focus on eliminating defective products, and lowering costs through reduced waste.

Course Title	Course #	Contact Hrs	Credit Hrs.	Start.	End	Tuition
Machine Shop Math	105	15	1	9/12/14	10/3/14	\$485.71
Mechanical Plan Reading 1	111	45	3	10/10/14	1/2/15	\$728.57
OSHA General Industry Safety	110	15	1	9/12/14	10/3/14	\$242.86
Mechanical Machining	120	105	2	11/20/14	3/5/15	\$971.43
Introduction to CNC	125	45	2	10/10/14	1/2/15	\$728.57
Statistical Process Control (SPC)	130	15	1	4/23/15	5/5/15	\$242.86
		240	10		Total	\$3,400.00



Machine Operators 2 CNC Programming and Inspection

Program Description: Introduces programming of computerized numerical control equipment with hands-on programming and operation of a CNC mill. Machine Operator 2 training provides students with step-by-step coverage of CNC machining processes, and an introduction to CAD/CAM and inspection of parts. This course is designed for machine operators, machinists, programmers, engineers, and supervisors.

Course Objective: The outcome of training will be the understanding and develop CNC programs to develop parts in compliance with industry plans, specifications, and standards. Students will be able to inspect and evaluate parts and materials to meet design specifications. Students will also be able to exhibit and have an understanding of the following:

- Students will be able to design and fabricate a custom part according to specifications
- Students will be able to interpret mechanical blueprints and symbols
- Apply math and calculation skills to solve technological problems
- Given a part drawing, use it to determine an efficient process and program for creating the part and determining efficient tool paths
- Create 3d models of projects and create code with the software program (SolidWorks)
- Introduction to MasterCAM mill and lathe.
- Choose proper tools needed and feed and speed rates to fabricate parts
- Write programs for and operate computer-numerically controlled milling machines and generate the G-code
- Troubleshoot program by running simulation
- Demonstrate knowledge of safety practices and consistently execute them when operating the computer-controlled mill.

Course Title	Course #	Contact Hrs	Credit Hrs.	Start.	End	Tuition
Mechanical Plan Reading 2	112	30	2	4/24/15	5/15/15	\$485.71
CNC Programming	135	90	3	5/22/15	8/7/15	\$1,457.14
CNC Tooling and Maintenance	140	45	2	8/14/15	9/18/15	\$728.57
CNC Modeling and Programming	150	45	2	9/25/15	10/30/15	\$728.57
		210	9		Total	\$3,400.00

PCW - Welding Technology

WELDING APPRENTICESHIP CURRICULUM

Course Name	Required Hours for Certificate	Curriculum Delivery	Max Students Per Session	Session Training Hours	Hours per Training Session	Training Criteria	College Credit Articulation	Grading Weights O/A
Technical Skills								
Welding Safety & First Aid	12	Classroom/Lab	6	4:00pm-8:00pm	4	NCCER 29101-09	per AG Franklin University	5
Blueprint Reading, Interpretation of Drawings and Symbols	12	Classroom	6	4:00pm-8:00pm	4	NCCER 29202-03	per AG Franklin University	5
Shop Math	12	Classroom	6	4:00pm-8:00pm	4	NCCER 00102-09	per AG Franklin University	5
Measurement Instruments	12	Classroom/Lab	6	4:00pm-8:00pm	4	NCCER 00103-09	per AG Franklin University	5
Metallurgy Properties of Materials and Casts	20	Classroom/Lab	6	4:00pm-8:00pm	4	NCCER 29105-09	per AG Franklin University	5
GMAW - Gas Metal Arc Welding	50	Lab	6	4:00pm-8:00pm	4	NCCER 29206-03	per AG Franklin University	20
FCAW - Flux Core Arc Welding	50	Lab	6	4:00pm-8:00pm	4	NCCER 29207-03	per AG Franklin University	20
GTAW - Gas Tungsten Arc Welding	50	Lab	6	4:00pm-8:00pm	4	NCCER 29209-03	per AG Franklin University	20
Metallurgy Techniques (labs)	22	Classroom/Lab	6	4:00pm-8:00pm	4	NCCER 29203-09	per AG Franklin University	15
Training Total Hours Available								100

Verification provided by:
 Dennis L. Beam
 Associate Director of Business and Industry
 Adult Workforce Education
 Butler Technology and Career Development Schools



Request for Proposals:

Release Date:

June 3, 2014

Deadline:

12:00 PM on July 3, 2014

EDUCATIONAL PROVIDER REQUEST FOR PROPOSAL OVERVIEW

Partners for a Competitive Workforce (PCW), Southwest Ohio Region Workforce Investment Board and Ohio Means Jobs Center of Butler County invites proposals from organizations to perform Related Technical Instruction (RTI) for competency based apprenticeship programs for welders and machine operators. We are seeking educational partners for two separate programs to deliver related technical instruction requested by sponsor employers. This initiative is designed to:

- Create Competency Based Apprenticeship Programs for Welders and Machine Operators with curriculum designed with Sponsor Employers
- Provide customized training for job seekers leading to Nationally Recognized Credentials and College Credits
- Produce skilled workers trained to employer specifications to meet employer workforce needs
- Leverage public and private funding to produce a quality workforce
- Register programs with the Ohio State Apprenticeship Council

Background

Manufacturing is a major part of Ohio's economy. In 2011, Ohio's manufacturing sector GDP was 80.7 billion which accounted for 16.7 percent of Ohio's total GDP. The manufacturing sector is also a major employer in Ohio as well employing over 600,000 individuals within the industry.¹ In greater Cincinnati, manufacturing is the second largest private sector employer and the Southwestern Ohio Region along Interstate 75, with 27 counties stretching into northern Kentucky, received a Department of Commerce designation as one of only 12 Manufacturing Communities in the United States.

¹ Ohio Department of Jobs and Family Services, *Manufacturing in Ohio: A Post-Recession Employment Outlook*. (2013)

At a time when manufacturing jobs are in high demand in Greater Cincinnati, manufacturers face the critical issue of a major skills gap in the qualifications of the local labor pool and competencies needed to be successful in today's manufacturing. Employers often struggle to fill open positions due to a lack of a qualified workforce.

In the Cincinnati Region, there will be over 18,000 advanced manufacturing skilled job openings within the next ten years with several top in-demand occupations including machine operators, welders and engineers. Standard Occupational Codes 51-4041 (Machinist) and 51-4121 (Welding) are both expected to grow and add new jobs at a rate of 7.8% and 8.6% respectively by 2020 (Demand) while annual completions (Supply) are expected to remain stagnant. To address this issue, Industry Partnership Employers agreed to sponsor and develop a Competency Based Training Program utilizing an Apprenticeship Model. The program will be developed to produce Welders SOC 51-4121.06 and Machine Operators SOC 51-4081.00 on a fast track to build the talent pipeline leading to higher skilled jobs.

Apprenticeship is one of the oldest forms of training in the United States and combines on the job training with related technical instruction to produce a highly skilled worker. The registered apprenticeship system dates back to 1937 with the passage of the Fitzgerald Act - national legislation that lays the foundation for the federal-state system that exists today. In 1977, the Department of Labor updated regulations for operation of the system and since then, the evolving 21st century economy, with its technological advances and shifting demographics required new regulations to support a more flexible National Apprenticeship System. The newly revised regulations position Registered Apprenticeship to expand employment opportunities for millions of workers by providing the skills and training needed to succeed in today's growing and emerging industries. Program sponsors can now offer three different approaches for apprentices to complete a program: competency-based, time-based and a hybrid of the two approaches.²

Proposed Solution

In an effort to develop the manufacturing talent pipeline, seven employers have agreed to sponsor 10 apprentices in a Competency Based Manufacturing Apprenticeship Program. It was determined to have two separate tracks, with customized on the job training and related technical instruction for two separate occupations, Machine Operator 1 and Welder Fitter. Competency based training programs are comprised of competency standards set by industry that each student is assessed against to ensure all the outcomes required have been achieved. Progression through a competency based training program is determined by the student completing a performance test and related theoretical exam developed and recognized by industry. This allows students to complete a program of study quicker and become productive employees on a fast track.

Sponsor employers reviewed several training options and decided to utilize the Manufacturing Institute's Skills Certification System as a guideline for the Apprenticeship Programs and its related curriculum to train apprentices. Applicants will have to achieve the National Career Readiness Certificate (NCRC) with a minimum score of a 4 in each area of assessment in order to qualify for the apprenticeship. Candidates will also complete the Talent and Fit Work Keys assessment to determine suitability. Eligible and suitable candidates will be interviewed and provided with a work site tour/work experience to determine and ensure fit for the applicant and employer. Sponsored apprentices will complete 2000 hours of on the job training and competency based curriculum and assessments leading to the National Institute for Metalworking Skills (NIMS) or the American Welding Society (AWS) Certifications to demonstrate competency and completion of the Apprenticeship Program. The term of each apprenticeship will last for 12 months with a 90 day probationary period. Apprentices will also receive College Credit.

Apprenticeship models utilize a defined wage progression scale and each apprentice agreement must contain a statement of the compensation to be paid to the apprentice. Competency wage progression scales reward increases upon successful completion of specific competencies whereas time based wage progression scales reward increases based on time in service. The group decided to utilize the competency based wage progression scale with \$12.00 an hour as the starting salary of apprentices with a \$1.00 an hour increase rewarded as competencies are achieved. Machine Operator Apprentices will receive a \$1.00 increase upon completing 1000 hours of on the job training and Measurement, Materials

² United States Department of Labor, *21st Century Apprenticeship, How the Revised Regulations Strengthen the National Apprenticeship System.* (2008)

and Safety, and Job Planning, Benchwork and Layout NIMS Certifications. Machine Operators will receive an additional \$1.00 increase upon completing an additional 1000 hours of on the job training and CNC Milling Level 1 and CNC Turning Level 1 NIMS Certifications. Machine Operator Apprentices will earn a wage of \$14.00 an hour for successfully completing the 12 month program and obtaining all 4 NIMS Certifications. Apprentices will then transfer to their individual employer occupational classification system and wage scale.

Welding Apprentices will also receive \$12.00 an hour as the starting salary with a \$1.00 an hour increase rewarded as competencies are achieved. Welder Apprentices will receive a \$1.00 increase upon completing 1000 hours of on the job training and 120 hours of related technical instruction. Welding Apprentices will receive an additional \$1.00 increase upon completing an additional 1000 hours of on the job training and the final 120 hours of related technical instruction. Welder Apprentices will earn a wage of \$14.00 an hour for successfully completing the 12 month program and obtaining the D1.1 AWS certification. Apprentices will then transfer to their individual employer occupational classification system and wage scale.

Scope of Services:

The apprenticeship model utilizes on the job training and related technical instruction to develop a highly technical and qualified workforce. We are seeking proposals from educational providers to deliver the coursework included in the Right Skills Now Program for Machine Operators and the Welding curriculum identified below leading to D1.1 AWS Certification. Curriculum must be accredited allowing College Credit counting towards a degree or include an articulation agreement with an accredited institution.

Machine Operator 1

The Right Skills Now (for Manufacturing) certificate program is designed to provide fast-track, high-skilled manufacturing training in the following areas: job planning, benchwork, materials, manual milling, manual turning, CNC milling and CNC turning. The Right Skills Now program for manufacturing curriculum is closely aligned with standards set forth by National Institute of Metalworking Skills (NIMS). Completers must obtain 4 NIMS Machining Certifications and receive college credits towards a terminal degree. This technical coursework combined with 12 months of on the job training will provide employers with a skilled manual and CNC machine tool operator. Apprentices will receive 2000 hour of on the job training and 400 hours of related technical instruction.

The educational provider will be responsible for delivering the following coursework;

Materials Measurement and Safety
Job Planning Benchwork and Layout
CNC Milling Level I
CNC Turning Level I
Algebra Trigonometry and Geometry
Machine Math

Educational Provider Major Duties and Responsibilities:

- Deliver coursework on the requested subjects leading to NIMS Certification
- Assist apprentices in securing the following 4 NIMS Credentials needed for a NIMS Level I Machinist
 - Measurement, Materials and Safety
 - Job Planning, Benchwork, Layout
 - CNC Operator, Turning
 - CNC Operator, Milling

- Offer/Support apprenticeship schedule where apprentices participate in On the Job Training 4, ten hour days, Monday – Thursday and attend Related Technical Instruction every Friday for eight hours per week
- Build and sustain relationships with apprentices and employer supervisors and other key stakeholders through ongoing, open and effective communication mechanisms
- Training must receive College Credit and count towards a Degree
- Maintain records in G Stars database

Welder Fitter

The welding coursework was developed to meet the needs of two local employers. Both employers stated that they needed apprentices to learn core welding competencies as soon as possible. The program will consist of 2000 hours of on the job training and no more than 240 hours of related technical instruction with the goal of achieving an American Welding Society D1.1 Certification. Completers should also receive college credits towards a degree. This technical coursework combined with 12 months of on the job training will provide employers with skilled welders.

The educational provider will be responsible for delivering the following coursework;

Welding Safety and First Aid
 Blueprint Reading, Interpretation of Drawings and Symbols
 Shop Math
 Measurement Instruments
 Metallurgy Properties of Materials and Gasses
 GMAW, Gas Metal Arc Welding
 FCAW, Flux Cored Arc Welding
 GTAW, Gas Tungsten Arc Welding
 Metallurgy Techniques (Labs)

Educational Provider Major Duties and Responsibilities:

- Deliver coursework on the requested topics leading to AWS D1.1 Certification
- Assist apprentices in securing AWS D1.1 Certification
- Offer/Support apprenticeship schedule where apprentices work Monday – Friday, 6:00AM to 2:30PM and go to school T,W,TH, from 4:00 to 8:00 for 20 weeks for RTI
- Build and sustain relationships with apprentices and employer supervisors and other key stakeholders through ongoing, open and effective communication mechanisms
- Training must receive College Credit and count towards a degree
- Maintain records in G Stars database

PROPOSAL SPECIFICATIONS

Proposal Components

Proposals should include the following:

1. **Contact Information:** Name(s), address(s) and contact(s) of the lead and fiscal agent organization(s) making the application, and the name(s), address(s), and contact(s) of major participants. Please use the attached Cover Sheet.
2. **Statement of Qualification:** Describe the background of the proposing organization and the qualifications for carrying out this work. If multiple organizations are proposed to carry out elements of the work, then each must state its qualifications for the specific component of the work it will carry out. Also include accreditations and relevant articulation agreements.
3. **Description of Courses:** Please provide a detailed description of each individual course including topics covered, text utilized, contact hours, course length, and number of college credits. Proposers should include course evaluation methods and strategies for apprentices to demonstrate competency in each area.
4. **NIMS/AWS Certification:** Please provide information regarding your strategy to assist apprentices with obtaining the required NIMS and AWS Certifications.
5. **College Credit counting towards a Degree:** Please describe all college credits to be awarded and the degree to which these credits could be applied. Also communicate and describe if credits earned are transferable to a four year degree. If so, please indicate the specific degree and institution.
6. **Program Costs:** Proposers should provide a total cost per participant and a minimum number of apprentices necessary to operate this program. It should be noted that the Machine Operator track will attend related technical instruction every Friday for approximately 12 months for 8 hours per day, and the welding track will attend their related technical instruction T,W,TH, for 12 hours per week for 20 weeks.
7. **Additional Costs:** Please indicate any anticipated additional costs to operate/administer this program.

Contract

As the lead organization of PCW, the United Way will contract directly with the selected organization.

Proposal Response

Proposals should be no longer than 10 pages in length using Arial or Times New Roman font no smaller than 11 point size and one inch margins. **Submission using electronic format is required. The cover page is not included in the page limit.**

Appendices are not counted in the page total and should clearly relate to the proposal content and demonstration of qualifications. Do not include marketing materials or public relations information.

Submission Deadline

Please email a letter of intent to apply no later than June 16, 2014

The proposal must be received by 12:00 PM (EST) on Thursday, July 3, 2014 via email to stephen.tucker@uwgc.org

Selection Process

A committee consisting of employers and Workforce Investment Board Representatives will evaluate each proposal and contact selected finalists for interviews via phone or in-person. We expect to announce our selection by July 18, 2014, with implementation as follows;

- July 21, 2014 – Program Announced, Recruiting Begins
- Week of August 4, 2014 Apprenticeship Fair
- August 15, 2014 – Candidate Pool Selected
- August 18, 2014 – September 5, 2014, Candidate Interviews/Work Site Tours/Sponsorships Offered
- September 8, 2014 – First day of Work/Class

Communication

Please address any questions about the RFP to:

Stephen Tucker, Senior Manager of Industry Partnerships
(513) 762-3720
stephen.tucker@uwgc.org



Proposal Cover Page

Registered Apprenticeship Program Retention Counseling

Applicant Name:

Address:

Project Contact Person:

Project Contact Title:

Telephone:

Fax:

E-mail:

Web site:

I hereby certify that the information provided in this submission is accurate.

(Print Name / Title) **(Electronic Signature)**

I hereby certify that I am duly authorized to sign contracts on behalf of this organization.

(Print Name / Title) **(Electronic Signature)**
