

ASSET MAPPING FOR MANUFACTURING EDUCATION PROGRAMS

August 27, 2018



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BACKGROUND

In the Austin Metro Master Community Workforce Plan, the Workforce Solutions Capital Area Workforce Board states its objective of *helping 10,000 residents who are living at or below 200% of poverty to secure middle-skill jobs by 2021* using four primary strategies as follows:

- **Awareness and Enrollment.** Cultivate interest in high-demand, middle-skill careers
- **Training.** Equip workers with the skills they need to succeed
- **Placement.** Connect employers with local talent to fill middle-skills jobs
- **Advancement.** Assist frontline workers in acquiring skills to advance into middle-skill jobs

As indicated in the Austin Regional Manufacturer's Association (ARMA) 2017 Central Texas Manufacturing Workforce Study, the manufacturing sector supports this objective by providing a broad array of opportunities for middle-skill careers with wages averaging \$16.94 per hour for production jobs. Moreover, in the next 10 years the industry is projected to need over 19,000 workers in Central Texas due to replacement and growth. However, the same report cited employers' difficulties in attracting and retaining qualified talent, with a top challenge being "not enough relevant training programs/seats available."

Therefore, to identify the manufacturing education and training courses that are available in the Austin area, the Board contracted with Real WorkForce Solutions to conduct an Asset Mapping Project for Manufacturing Education Programs.

RESEARCH METHODOLOGY

The short-term project focused on identifying the number and types of programs that lead to National Association of Manufacturers (NAM)-Endorsed Skills Certifications (listing included as **Attachment 1**). Special emphasis was placed on the high-demand occupations that were identified in the ARMA Workforce Study which included Assemblers and Fabricators, Machinists and Tool Operators, Electrical and Electronics Technicians, Engineering, First-Line Supervisors, Maintenance, Quality Control, Production Workers, Software Developers, Semiconductor Processors, Sales, and Welders Note: For the Reader's convenience, individual overview reports have been prepared that detail each of the identified occupation's typical job duties, job titles, primary skills, education and work experience requirements, and core certifications, along with their respective Standard Occupational Classification (SOC) codes. Collectively, these reports are included as **Attachment 2**.

As a first point of reference, the project included a review of the Board's July 2018 snapshot of the Texas Workforce Commission's (TWC's) Eligible Training Provider (ETPS) listing to identify the manufacturing education and training programs that were included for the Austin area. This snapshot report is included as **Attachment 3**.

This initial scope was further expanded to include a review the 32 Austin-based post-secondary institutions that were listed on page 72 of the Master Community Plan (included as **Attachment 4**) as well as Texas State Technical College (TSTC) in Waco and Hutto to ascertain what manufacturing education programs they might be offering.

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Information was gathered regarding the Texas Education Agency's (TEA's) Endorsement Choices (included as **Attachment 5**) that include Science, Technology, Engineering and Mathematics (STEM), Business and Industry, Public Service, Arts and Humanities, and Multi-Disciplinary Studies. High school students must select from one of these five endorsements during their freshman year. It was determined that for the most part, engineering-related education fell within the scope of the STEM Endorsement while manufacturing, technology applications, marketing, and distribution and logistics all fell within the Business and Industry Endorsement.

Research was also conducted to gather information about the availability of Career Academies in the Austin area. Career Academies enable students to acquire skills for direct entry into employment upon graduation, or to use to transfer to degree plans in post-secondary education as desired. Numerous school districts in the area have articulation agreements with ACC that enable students to complete Career Academy work that is aligned with their selected TEA Endorsement.

In addition to this background research, the following organizations were contacted to gather additional insight and information.*

- American Youth Works
- Austin Career Institute
- Austin Community College (ACC)
- Austin Electrical IBEW Union 520
- Austin Regional Manufacturers Association (ARMA)
- Capital IDEA
- Centex Ind. Electrical Contractors
- E3 Alliance
- Goodwill Career Academy
- Ironworkers #482
- Plumbers and Pipefitters #286
- Skillpoint Alliance
- Southern Careers Institute (SCI)
- Texas State Technical College (TSTC)
- Texas Mfg. Assist. Center (TMAC)
- Texas State University

Individuals were asked to give their insights regarding their specific manufacturing education programs as well as their perceptions about manufacturing occupations in general. Additionally, to extent possible, they were requested to share information regarding program content, program costs, trainee demographics, and typical outcomes.

RESEARCH FINDINGS

A complete listing of organizations providing manufacturing education programs is included in **Appendices 1 – 3** of this report. As shown, the combined offerings include a cross-section of dual credit classes, certificate programs, continuing education (CE) coursework, associate degree plans, pre-apprenticeships, and business-specific programs. The overall findings are organized into three primary categories as shown on the following page:

* IBEW #520, Centex, Ironworkers #482, SCI, TSTC, Texas State University did not participate in the interview process.

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- **Programs Are Not Filled.** It was determined there are scores of courses and programs that are readily available in the greater Austin area for a variety of manufacturing-related occupations, including the ones specifically cited in the ARMA Workforce Study. Research determined that most classes are not filled to capacity. For example, Austin Community College (ACC), which has the largest offering of manufacturing education programs indicates that more than half of its CE and certificate classes go unfilled.

Programs Are Not Filled

CNC Tool Operators, Metal & Plastic
Electrical & Electronic Equip Assemblers
Electrical & Electronics Engineering Technicians
Engineers (Manufacturing)
First-Line Supervisors
Inspectors, Testers, Sorters, Samplers, & Weighers
Semiconductor Processors
Welders, Cutters, Solderers, & Brazers

Programs Do Not Have Capacity

Logistics & Supply Chain Management –
Continuing Education Options

- **Programs Do Not Have Capacity.** It was also determined that there are generally only two to four seats available for ACC's CE classes for Logistics and Supply Chain Management. This is because these courses are integrated with the credit classes and therefore only a few CE slots are available. However, if credit seats are unfilled when a class is ready to start, then the additional slots may be re-allocated to CE students. Additionally, it appears there may be an online freight brokering course available through Texas State University CE. However, capacity is unknown at the time of this report. (Note: Although Logistics and Supply Chain occupations were not specifically cited in the ARMA Workforce Study, they were included in this project because they offer a NAM-Endorsed Skills Certification.)

- **Programs Do Not Exist.** Finally, it was determined that there are currently no programs specifically designed for Assemblers and Fabricators, General Machinists, Production Workers and Helpers, Sales Representatives for Manufacturing-Related Products, and Software Developers for Manufacturing Products.

Programs Do Not Exist

Assemblers & Fabricators
Machinists, General
Maintenance & Repair Workers, General
Production Workers, Helpers
Sales Reps., Whol. & Mfg, Tech. & Scientific Prod.
Software Developers

However, ACC states that in response to the ARMA Workforce Study, it is creating two new manufacturing-related programs that should be operational by Fall 2018. One will be geared towards entry-level manufacturing process operations (Assemblers/Fabricators/Production Workers) and the other will be for middle-skill Automated Manufacturing Technicians. Both programs will include hands-on training along with internships.

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Additionally, online research indicated that both TSTC and Texas State University CE may offer general machining and maintenance worker training courses. However, the capacity levels are not known.

Although there were no specific programs identified for the specialized positions of Sales Representatives for Wholesale & Manufacturing, Technical & Scientific Products, and Software Developers, it was observed that courses related to sales and marketing, and also software development applications, were available.

Finally, it was observed that although some school districts offered a few classes that provided dual credit opportunities for drafting, electrical and electronics, pre-engineering, and welding, there appeared to be no Career Academy courses specifically designed for direct entry into manufacturing priority areas such as Assemblers and Fabricators, Maintenance and Repair Workers, and Machinists.

CHALLENGES

Recruiting Issues. Organizations consistently cited difficulties in recruiting candidates for their manufacturing education programs. As noted, ACC indicated that about half of its seats go unfilled. Additionally, Goodwill Career Academy and Austin Career Institute are no longer offering manufacturing education programs that were listed on the July 2018 ETPS. Capital IDEA stated that they do not include manufacturing education programs in their scope as they have historically found it difficult to find individuals who are interested in these occupations. Moreover, 88% of the respondents in the ARMA 2017 Manufacturing Workforce Study indicated that “recruiting qualified workers has been a challenge for our company.”

The major themes regarding recruitment issues included:

- *Manufacturing employment has a stigma associated with it (e.g., “dirty jobs”, low wages).*
- *Manufacturing employment is not actively promoted to youth in school.*
- *Manufacturing training programs are not actively marketed in the community.*

Training Disconnection. The research uncovered some inaccuracies on the Board’s July 2018 ETPS snapshot for manufacturing education and training programs. First, only 12 programs were included, and, of these, four are no longer being offered by the provider. Additionally, another two programs were listed as Austin-area; however, the provider is located in Houston and does not appear to have any programs currently available in the Central Texas region.

But, perhaps the biggest takeaway is the apparent disconnect between the ETPS and the true number and types of manufacturing education and training programs in and around Austin. As shown in the **Appendices**, the Asset Mapping Project identified numerous pre-apprenticeship, CE, certificate, and associate degree programs related to manufacturing training that appear to be suitable for possible ETPS inclusion.

Instruction Limitations. With respect to finding and retaining adequate instructors, the non-accredited institutions and accredited institutions offering CE programs stated that they did not have great difficulty. Additionally, they indicated that their instructors were more likely to be part-time, with an ability to adapt their schedules to meet student and/or business needs.

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However, the accredited institutions offering credit-based programs and/or degrees indicated that it could be problematic for them to find and retain qualified personnel. Basically, the difficulty is due to the requirement of their crediting body that their instructors possess both advanced education and work experience. For the most part, the instructors of credit-based courses are typically full-time employees.

OPPORTUNITIES

Special Populations. Manufacturing occupations appear to offer good career opportunities for two important populations in the Austin region:

- **Opportunity Youth.** Opportunity Youth are individuals aged 16-24 who are not connected to employment or education. Typically, they are willing to work, but may not be interested in making long-term education or training commitments to get a job. Therefore, some of the short-term manufacturing education programs and apprenticeships offer great prospects. They enable Opportunity Youth to become gainfully employed and earning a wage within a condensed time period.
- **Ex-Offenders.** Ex-offenders are individuals who have been previously convicted of a crime and who have successfully served their sentences. Because many manufacturers are agreeable to hiring individuals with a criminal record, occupations within this sector serve as good entry-points for their re-entry into the workforce. American YouthWorks recently received a Re-entry Employment Opportunities (REO) grant from the US Department of Labor that may be a good catalyst for serving this population.

Demand-Driven. The research determined that most entities are very willing to modify their programs, including curricula and scheduling to meet the needs of both local manufacturers as well potential students. In fact, both ACC CE and Texas Manufacturing Assistance Center (TMAC), have established business partnerships with local area employers to provide them with training for their incumbent workforce. Additionally, both Goodwill Career Academy and Capital IDEA indicated that they are interested in providing manufacturing-related training programs if they can successfully recruit interested trainee candidates.

Related Occupations. The research noted several organizations as identified in **Attachment 6** that are offering education and training programs for truck driving, weatherization, general construction, refrigeration, and heating, ventilation, and air conditioning (HVAC). Additionally, it identified local labor organizations that are offering apprenticeships in electrical, plumbing, and pipefitting (including a welding certification). These skilled trades occupations are closely aligned with the manufacturing sector. They are also included in the Board's Targeted Occupations List, In-Demand Industries List, and In-Demand Occupations List; and typically provide career opportunities for special populations, such as Opportunity Youth and Ex-Offenders.

RECOMMENDATIONS

To further strengthen its commitment to the manufacturing sector, the Board should consider adopting the following tactics to support two of its primary strategies. They will help the Board mitigate the challenges and seize the opportunities identified in this Asset Mapping Project.

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- **Awareness and Recruitment.** *Develop a comprehensive outreach plan designed specifically to attract and recruit individuals for careers in manufacturing. Establish a budget exclusively for manufacturing outreach activities and identify the methods to use, such as radio and/or television, print ads, billboards, bus signs, press releases, and other media. Record the results of each activity to track the return on investment.*

Tactics to target the General Population could include:

- Creating a social media campaign highlighting manufacturing career opportunities, including Facebook, Twitter, and LinkedIn.
- Prominently displaying information about manufacturing careers, including success stories, on the Board's website.
- Instructing Workforce Solutions Center staff, including Case Managers to actively promote the viability of manufacturing careers to their customers, especially Opportunity Youth and Ex-Offenders.
- Inviting education and training organizations to come to the Workforce Solutions Centers to recruit candidates for their classes and programs.
- Hosting Manufacturing Career Fairs in partnership with local employers at the Workforce Solutions Centers to fill current job openings.
- Conducting Manufacturing Training Fairs at the Workforce Solutions Centers to enroll individuals into education programs to fill future job needs.

Tactics to target Opportunity Youth could include:

- Educating high school counselors about the many career opportunities that are available in manufacturing and encouraging them to share this information with students and their parents/guardians.
- Developing collateral materials (brochures, fliers, etc.) to attract young people to manufacturing careers and distribute these to schools, malls, clubs, and other locations frequented by youth as well as to local community organizations, including American YouthWorks, Capital IDEA, E3 Alliance, Goodwill Career Academy, and others.
- Establishing a peer-to-peer recruitment process - - - inviting young adults who have recently secured jobs in manufacturing to visit Board-funded youth programs to tell participants and their parents/guardians about their careers, including how they got the job, what it's like, and what they like about it.
- Educating administrators of the foster care system about potential manufacturing career opportunities for youth exiting their programs.
- Requiring Board-funded youth providers to include a manufacturing career exploration component as part of programmatic activities.
- Participating in school-sponsored career days to educate students about manufacturing.
- Sponsoring field trips to local manufacturers to expose students to employers and occupations.

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Tactics to target Ex-Offenders could include:

- Educating members of the justice system, including police officers, parole officers, and judges along with individuals working within the juvenile justice system about manufacturing career opportunities and encouraging them to share this information with offenders and ex-offenders.
 - Developing collateral materials (brochures, fliers, etc.) to inform currently incarcerated and recently released individuals about manufacturing careers and distribute these to courthouses, jails, prisons, half-way houses, and other locations frequented by individuals involved with the justice system.
 - Establishing a peer-to-peer recruitment process- - - sponsor ex-offenders who have recently secured jobs in manufacturing to visit Workforce Solution Center orientations to tell others about their new careers, including how they got the job, what it's like, and what they like about it.
- **Training.** *Update the ETPS to include all of the manufacturing courses as well as skill trades programs that are available in the community and also create additional training mechanisms to address programs that do not currently exist.*

Tactics to update the ETPS could include:

- Dedicating staff resources to assist providers with completing required paperwork.
- Serving as a liaison between the providers and TWC to ensure programs are accurately depicted and are placed on the system in a timely manner.
- Acting as a watchdog to ensure ETPS information remains accurate - - - informing providers when it appears that a program may be expiring and needs to be renewed.
- Expanding the results of this Asset Mapping Project to include education for skilled trades, such as truck driving, plumbing, construction, and HVAC.

Tactics to create new training mechanisms include:

- Cultivating relationships with local manufacturers to develop work-based training opportunities, including on-the-job training for entry-level occupations such as Machinists and Maintenance Workers.
- Working with area employers and industry associations to create manufacturing education programs for Sales Representatives for Wholesale & Manufacturing, Technical & Scientific Products and Software Developers.
- Encouraging local schools and community colleges to include a manufacturing-specific career track as part of Career Academies.
- Promoting the use of prior learning assessments to recognize the knowledge that an individual has acquired outside of the traditional classroom setting, including military service, on-the-job training, and/or corporate training.
- Researching the four-year advanced manufacturing degree that was recently approved in South Carolina to determine if it is suitable for replication here.

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CONCLUSION

Overall, it appears that there is a robust and diverse supply of education and training programs available in the greater Austin area to prepare workers for careers in the manufacturing industry. Moreover, there is a willingness by organizations to create new curricula as needed to meet both the existing and emerging needs of local manufacturers. Finally, manufacturing occupations, as well as related skilled trades jobs, serve as excellent career gateways for harder-to-serve and economically disadvantaged individuals, including Opportunity Youth and ex-offenders.

Therefore, to further promote the Board's stated objective of *helping 10,000 residents who are living at or below 200% of poverty to secure middle-skill jobs by 2021*, it is recommended that it increase its recruitment efforts to actively educate and attract individuals to these careers. At the same time, it should assist local organizations in registering their education and training courses on the ETPS so prospective students have full access to all offerings and it should also work with local entities to continue to create and develop new programs as needed, including work-based training to meet existing and future workforce needs.

AFTERWARD: POST PROJECT NOTES

The following is a list of thoughts that RWFS recommends the Board consider as it utilizes the information contained in the Asset Mapping Report.

Retaining and Advancing Existing Workers

The current economy presents both a challenge and an opportunity for manufacturing employers as well as for current workers in the sector. While the Great Recession of the last decade resulted in high unemployment levels, the current economy is marked by historically low levels of unemployment. However, many workers remain trapped in low-wage jobs with no clear advancement paths to higher skills and wages.

The "*When Is A Job Just A Job – And When Can It Launch A Career?*" report that was issued in June 2018 by JFF/Burning Glass points to three distinct categories of jobs:

- **Lifetime Jobs** are careers in themselves. They pay well and offer long-term stability.
- **Springboard Jobs** are those that offer career advancement. Workers often progress within the same field to occupations with higher pay.
- **Static Jobs** are jobs that offer lower pay when compared with other middle-skill jobs and have low potential for advancement.

The report notes that manufacturing in particular contains many Static Jobs that do not have routes for workers to easily advance to higher skills and wages. Workers may be limited from getting the training and education needed to advance due to family obligations, lack of

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transportation to education sites, and/or overtime work (either for income needs or because it is required by employers). The absence of clear advancement paths within companies also results in another issue that is widely reported by employers – workers who are willing to move to another employer for a small increase in hourly wages or benefits.

To meet these challenges, the manufacturing sector needs to embrace an ongoing escalator model where current workers are constantly moving up while new workers enter the lower steps. This will require new ways of thinking and acting by employers (who will need to identify quantitative and qualitative increases in talent) and educators (who will need to increase enrollment and graduation levels).

Several approaches can be used to tap into the currently-employed workforce.

- Creating new or expanded apprenticeship programs as the “gold standard” for work-based learning – excellent models exist in the building trades and can be adopted or adapted;
- Re-purposing tuition reimbursement and other training funds that are currently in employers’ budgets (e.g., tie completed coursework to wage advancements);
- Utilizing prior learning assessment tools to provide credit for skills learned outside of a traditional classroom setting;
- Expanding the use of “stackable” credits to encourage workers to continue their education and training throughout their careers;
- Designing on-the-job training programs that provide credits to be applied to college credit and/or recognized certifications; and
- Attracting workers from low-wage jobs in other sectors, and from those exiting the military (the building trades have experienced success with the Helmets to Hardhats program).

Creating Interest in Younger Youth

This Asset Mapping Report points to a predominant need for filling seats that exist in training programs, not creating more seats or more programs. Painting better pictures of the advancement potential for manufacturing workers is a starting point for demonstrating to students and their parents that manufacturing is not the alternative to college-level skills, but rather a hands-on way for acquiring those skills while also earning wages and avoiding the need for large student loans.

In the past, the case for manufacturing has often been an economic one (you can make good wages). However, now, the TEA Endorsements structure required throughout Texas provides an open door for manufacturers to present their careers in a positive light and to have students on manufacturing career paths throughout high school. This will require increased attention by employers working directly with schools (beginning at the lower grade levels), so that more students are encouraged to choose these paths as they enter high school. There are numerous actions that can be taken to seize these opportunities to educate and attract younger youth, including:

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- Sponsoring Maker Fairs in the early grades that demonstrate the fun and the challenges of making products in a manufacturing environment;
- Creating more internship opportunities with students under 18 in a manufacturing setting;
- Hosting K-12 counselors, teachers, administrators, and students at employers' sites to showcase the new world of advanced manufacturing;
- Creating multiple, coordinated Manufacturing Day events in partnership with K-12 schools in conjunction with the national initiative that occurs on the first Friday of every October;
- Employing high-quality videos, such as those available nationally through Edge Factor (www.edgefactor.com) to promote manufacturing careers to multiple audiences – supplement with local examples (see www.readynwi.com for local employer videos);
- Working with Texas FAME (Federation for Advanced Manufacturing Education) on “signing day” events that celebrate student achievement and demonstrate the prestige of advanced manufacturing training programs; and
- Researching the Dallas Promise initiative to determine if it is suitable for replication in Austin.