NORTH CAROLINA'S MANUFACTURING FUTURE

Community-Level Challenges, Solutions and Action

April 2014

The Great Opportunity as Uncovered in the 2013 Emerging Issues Forum

There has been a resurgence of manufacturing activity in North Carolina, but recent activity looks very different from a generation ago. While substantial production continues in furniture and textiles, new areas of strength have emerged including computers and electronics, transportation equipment and chemicals. This modern manufacturing represents a 21st century blending of assembly-line production with technological advances and computer integration.

Some things have not changed. Manufacturing remains NC's largest industry sector, contributing more to the state GDP than any other sector. Every dollar of manufacturing industry output generates $1.35 of wealth elsewhere in the state's economy.

While manufacturing remains a vital economic sector and critical to the well-being of many North Carolina communities, too many people continue to view manufacturing as only assembly line work, requiring minimal skills with minimal pay.

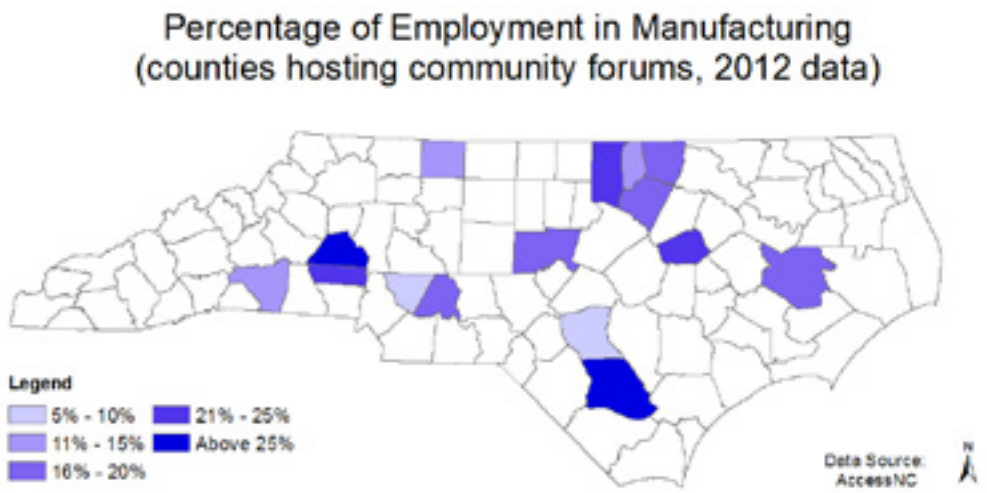
The Institute for Emerging Issues' (IEI) 28th Annual Emerging Issues Forum, @Manufacturing Works, in February 2013 focused on modern manufacturing opportunities for North Carolina. National and state leaders shared with attendees the tremendous opportunities ahead in manufacturing. They also shared challenges to communities seeking to more fully capture those opportunities.

Each Emerging Issues Forum serves as a unique opportunity for stakeholders across sectors, regions and perspectives in North Carolina to develop shared priorities on the topic. The process is one in which North Carolina State University's IEI uses the capital of higher education to create a space for the state to "think and do."

North Carolina Governor Pat McCrory indicated during the Forum that his administration had plans to tackle priorities regarding infrastructure and the brand of the state, including its manufacturing strengths. Thus, IEI focused its work on the remaining priority: **better aligning needs of manufacturing businesses with skills learned in North Carolina's educational systems.**

The Serious Challenges as Determined by IEI's County-Level Forums

Manufacturers, educators, city and county officials and other community leaders came to local forums with a common goal: connecting local residents to greater numbers of opportunities in modern manufacturing jobs. In partnership with the NC Association of County Commissioners, NC Cooperative Extension and the NC Community College System, IEI was able to help these community leaders focus on ways to better align the needs of their regional modern manufacturing businesses with offerings in North Carolina's educational systems.



Fifteen counties co-hosted local manufacturing community forums:

Despite the differences across the communities, their strategies and priorities are captured by three primary themes:

1. Increasing opportunities for work-based learning programs to help close skill gaps.

2. Rebranding manufacturing locally as a career option.

3. Developing community networks to foster deeper, ongoing partnerships among educators, industry and civic leaders.

The communities came eager to act. Some communities had already begun working on solutions before the community forums were underway, facilitating faster implementation. Others were in earlier stages of development. Most importantly, many offer to other communities helpful insights and directions for replication.

Work-Based Learning

There is considerable debate about the extent of a skill-to-jobs gap in the United States, and North Carolina has not escaped the fact v. fiction discourse. However, it is telling that in every community where IEI hosted a community forum, attendees heard directly from local manufacturers who expressed they could not find enough skilled workers to fill existing jobs. Educators in the room responded eagerly to opportunities to work directly with manufacturers to better meet their needs.

Communities gave significant attention to the need for more work-based learning programs that teach the skills needed by employers and offer an opportunity to retrain or cross-train individuals from other industries. They clamored to hear more about apprenticeships, co-ops and internship programs, common work-based learning programs in which students apply their classroom education on the job. In many instances, well-structured programs allow students to complete their formal education and "graduate into employment."

Challenge

Modern manufacturers continue to express frustration at the inability to attract qualified young workers with the technical skills and interpersonal skills required in modern manufacturing work settings. At the same time, young

people and recent graduates lament their inability to find high-paying jobs. This problem may become more dire as many experienced workers retire in the near future.

At the center of this skills mismatch problem identified by North Carolina's modern manufacturing industry is the need to merge the relevance of classroom and experiential learning with the skill demands of modern manufacturers. Developing and implementing these types of programs require communication and collaboration between education providers and employers.

Communities across the state recognize the importance of establishing strong collaborations between K-12 schools, community colleges and local manufacturers. These connections and collaborations increase the number of students engaging in work-based learning programs, especially in the areas of engineering and industrial technologies. It is critical that these programs include small and medium-sized enterprises, which comprise the majority of modern manufacturing enterprises. While the need for these collaborations is consistent across the state, some communities are faced with challenges requiring unique responses for special populations. For example, communities hardest hit with offshoring and the economic downturn of the Great Recession recognize a pressing need to identify opportunities for chronically unemployed and displaced workers. Additionally, communities with significant military populations expressed a need to find ways to support retiring and transitioning military personnel.

Potential Solutions

The following priorities addressing work-based learning were identified by community leaders:

• Develop [one-year] entry-level apprenticeship programs between high school and community college. A well-designed program helps expose high school students to the array of opportunities within manufacturing while applying skills and training learned in the classroom. Additionally, it helps students establish a career path bridging a high school diploma and higher education with on-the-job training.

• Implement National Association of Manufacturers Skills Certification Systems locally and regionally. National, portable certificate programs establish a standard mastery of technical skills necessary in modern manufacturing. Certificates can be integrated as early as high school in conjunction with career and technical education programs and community college instruction. A well-aligned pathway supplemented with industry-recognized certifications through high school, community college and "the shop floor" helps students graduate into employment.

• Implement manufacturing job shadowing programs for middle school students. Connect students with local manufacturing professionals/employees for exposure to modern manufacturing. This emphasizes how classroom and experiential learning is applied in real-world, high-tech manufacturing settings.

• Create apprenticeship programs targeting veterans and displaced workers. In conjunction with North Carolina's Apprenticeship and Training Bureau (NC Department of Commerce), implement targeted efforts to train and provide on-the-job skills needed in modern manufacturing. These worker retraining programs merge employers' workforce needs, hands-on training and essential classroom instruction.

In an interesting example, Cabarrus County has developed seven career development academies. These academies are located within local high schools and provide specialized classroom and hands-on instruction, including a modern manufacturing academy that is expected to be fully implemented by August 2015. Read more about the Cabarrus initiatives here.

"It is our hope that we will be able to offer students multiple entry points into our academies. We want parents and students to see that there are many different paths to careers and many opportunities to progress during a career [in manufacturing]. The goal is that students will earn college credit, industry credentials, and participate in work-based learning, thus leaving high school with a diploma and ready to work."

-Lisa Conger,
Director, Career & Technical Education
Cabarrus County Schools

Rebranding Manufacturing

Across North Carolina, there remains an outdated, but often stubbornly held, view of manufacturing as assembly line work requiring minimal skills and offering minimal pay. The disconnect between that perception and the reality of modern manufacturing has economic consequences. For education-to-work programs to succeed, students need first to be interested in a career in manufacturing.

Rebranding modern manufacturing as a viable career choice is critical to attracting employees to the workforce pathways. In order for companies to attract workers and for communities to harness the benefits of this economic renaissance, students, parents, educators and sometimes even community leaders will need a refresh on the brand.

Challenge

Despite the fact that modern manufacturing compensation is, on average, more than twice the state average, many young people report that they would not consider jobs in this field. Union County is an example of a place where this challenge is being met with a campaign. However, this perception is not just a challenge among youth. In the Forums, some individuals who had worked in traditional manufacturing admitted to discouraging their children or grandchildren from pursuing opportunities in manufacturing because they saw only opportunities for "dead end" jobs. As a result of the lack of understanding about the range of skilled positions and wages as well as recent technology innovations, some available manufacturing training programs struggle to recruit students. Other programs have succesfully recruited students, but desire to appeal to a broader range of students.

Potential solutions

By leveraging resources at the state, regional and local levels, targeted campaigns are able to address misperceptions about the range of modern manufacturing careers. These campaigns offer the added benefit of educating communities on the array of goods/products manufactured in their midst. Engaging career influencers—teachers, counselors and parents—is pivotal to changing the way that students and those making career transitions view and understand opportunities available in modern manufacturing.

The following rebranding priorities were identified by community leaders:

- Promote and rebrand the value of a manufacturing culture in North Carolina with targeted awareness campaigns aimed at reducing the stigma associated with technical and vocational education.

- Provide career influencers with current and relevant information on opportunities and trends in new and modern manufacturing.

- Focus awareness efforts on ways to cultivate local, homegrown talent.

• Offer periodic local tours for students and educators to dispel myths and misperceptions surrounding manufacturing.

In one example, Catawba County's "Extreme STEM" tour took 4,581 8th graders on behind-the-scenes tours at STEM businesses including manufacturing plants to expose these young students to what manufacturing looks like today, emphasizing specialized training in science, technology, engineering and math. The students were amazed at what they experienced. To learn more about other rebranding campaigns, click here.

Community Networks

Developing the capacity to respond to local needs, changes and deficiencies requires a broad, regularized and diverse engagement of leaders from education, industry, economic development and government. Strong networks and interconnected community-level resources play an integral role in moving alignment projects and ideas into action.

Challenge

Manufacturers need communities with a broad awareness of what they produce, what their workforce needs are and the benefits these businesses offer to the broader community. Communities need more manufacturers and enterprises to actively engage with local educational institutions. Developing an increased level of engagement that promotes deeper understanding of cross-sector needs and capacity as well as bridging the gap between academics (i.e. what is taught in the classroom) and professional development (i.e. the technical and soft skills needed in the workplace) requires up to date awareness of ever-changing motivations and needs of manufacturers.

"The Institute for Emerging Issues community forum provided an opportunity to open the avenues of dialogue between multiple community stakeholders including industry, the Chamber of Commerce, Economic Development, public schools, and Isothermal Community College. As a result, we have begun exploring new strategies for developing a skilled workforce through education and customized training programs. Implementation of these strategies will support existing industry, enhance our ability to recruit new industry, and further diversify the local economy."

-Matt Blackwell
Executive Director
Rutherford County Economic Development

Potential solutions

Successful networking and aligned local assets and resources require key leaders who:

• champion alignment strategies,
• identify existing assets on which communities can build when implementing new strategies,
• secure new or additional resources deemed critical to alignment execution and
• remove barriers that impede execution of alignment strategies.

To better understand the needs of manufacturers and capacity of educational institutions, community leaders identified the following priorities critical in strengthening local networks:

• Identify local champions to establish local manufacturing associations that can maintain consistent and timely communication between

industry and education and promote information sharing.

- Create regional educational and training assets that align local enterprises with educational institutions. One example is Snap On Tools in Murphy, NC.
- Get information flowing by conducting surveys of manufacturers to ascertain their workforce needs.

IEI was particularly impressed by the example of the North Carolina Advanced Manufacturing Alliance, a consortium of ten community colleges, local Workforce Investment Boards (WIBs), companies, non-profit entities and local education authorities. The Alliance is a dense network that seeks to increase the number of North Carolinians with certificates, diplomas and degrees in modern manufacturing disciplines within a two-year period. To learn more about other community networks, click here.

Communities Taking Action

Communities across the state are working hard to better align their educational systems with the needs of local manufacturers. Interviews and survey data in the fall of 2013 revealed significant breadth and depth to these efforts, including initiatives focused on work-based learning programs and on re-branding manufacturing (click here for more details on these programs). At the same time, they suggest that networks are important features of these initiatives and that focused meetings, such as IEI's community forums, can promote greater ties among local organizations. Additionally, IEI found that within local networks, one or two organizations play connector or hub roles, serving as leaders in moving the work forward. Not surprising, community colleges are often in this role but the data also found instances where the role was filled by an economic development commission, a workforce development board or the K-12 school system (click here for more on our network mapping).

As a result of IEI's community forum in Stanly County and years of deliberation amongst local leaders, a capital campaign—launched in July 2013 by Stanly County Community College—is raising $3 million with an initial $500,000 commitment approved by the Stanly County Board of Commissioners. Economic data provided by the Centralina Workforce Development Board indicates significant future job growth for Stanly County in trade contractors, metalworking machine manufacturing, fabricated metal product manufacturing, and automotive repair and maintenance.

-Stanly County Community College press release, 2013

The Importance of Connector Organizations and Convenings

The network map for Catawba County shows the important leadership roles played by Catawba Valley Community College (CVCC) and Hickory Public Schools (HPS). Two of the organizations with the most connections, the Manufacturing Solutions Center and Education Matters in Catawba Valley, are initiatives of CVCC, with HPS as a partner in Education Matters. Even in this well-connected environment prior to the IEI community forum, connectivity related to educational alignment increased after the meeting. To see the Catawba County network map, click here.

NCSU MFG Center

In January 2014, President Obama visited NC State University to announce a partnership with the university and the U.S. Department of Energy. This new venture is anchored by a $140 million investment for the creation and implementation of the Next Generation Power Electronics National Manufacturing Innovation Institute. The Institute will develop advanced manufacturing processes for the production of semiconductors used in energy production. This announcement is further evidence of North Carolina's positioning as a leader in science, technology, engineering, and math (STEM) as well as promoting the state as a national and global leader in advanced manufacturing.

North Carolina's Manufacturing Future

Manufacturing today is alive and well in North Carolina, but it is changed from a generation ago. In order for the state to capitalize on modern manufacturing's potential, policymakers and community leaders must work aggressively to close any technical skills gap with work-based learning programs, target efforts to rebrand manufacturing as a viable career option, and strengthen community networks.

With North Carolina's communities poised to take advantage of the incredible opportunities modern manufacturing has to offer, the state's position as a leader in manufacturing is bright and promising.

Global Leaders Germany 2014

The University of North Carolina's Center for International Understanding (CIU) is launching a Global Leader Germany 2014 program. It will provide a unique opportunity for representatives from North Carolina communities to learn first-hand about the German system of supporting manufacturing. Using a competitive process among communities co-hosting a 2013 manufacturing forum, IEI is sponsoring representatives from two communities to participate in the Germany program. Catawba and Chatham Counties have been chosen based, in part, on successful implementation of Apprenticeship Catawba and Central Carolina Community College's Innovation Center (servicing Chatham and surrounding counties). Program attendees will have the opportunity to meet with manufacturing experts in Germany to discuss how German manufacturing companies benefit from targeted branding and collaboration with educational systems, their immediate communities, and research and development institutions.