

**The National Manufacturing Renaissance Council:
A Dynamic Model for Advanced Manufacturing Success?**

By Thomas A. Hemphill

Americans generally agree that they want their nation to remain the global leader in manufacturing. According to *Leadership Wanted: U.S. Public Opinions on Manufacturing*, a 2012 national survey, 90% of respondents rated manufacturing as “important” or “very important” for their economic prosperity and America’s standard of living. This survey reinforces the importance of the manufacturing sector to the good health of the American economy.

While continuing to expand its productivity over the last two years, the U.S. manufacturing sector has only modestly expanded its employment base. Since December 2011, the Bureau of Labor Statistics has reported an increase of 231,000 manufacturing jobs, for a total of 12,028,000 employed in the sector. Yet the need to develop a long-term, stable supply of next-generation employees for advanced manufacturing industries is a challenge that needs to be undertaken now—not later. With an anticipated surge in retirements from an aging workforce over the next few years, the demand for high-skilled workers will be needed for replacement *and* continued expansion.

There has also been a recent groundswell of business, government, labor, and academic support for the creation of a U.S. manufacturing strategy designed to help ensure America’s global economic competitiveness. In a recent paper, Kent W. Hughes of the Woodrow Wilson International Center for Scholars called for the development of a national manufacturing strategy consisting of three components: macroeconomic stability; policies that strengthen all manufacturing; and a new foreign economic strategy.

Macroeconomic Stability	Strengthen Manufacturing	Foreign economic strategy
<ul style="list-style-type: none"> • Steady growth • Low interest rates • Competitive dollar 	<ul style="list-style-type: none"> • R&D support • Training & education • Advice & research for small manufacturers • Generic export support 	<ul style="list-style-type: none"> • International trade agreements, e.g., Trans-Pacific Partnership

To that end, bills have been introduced in Congress to direct the president to develop a comprehensive national manufacturing strategy.¹ Underlying a national manufacturing strategy is what the National Association of Manufacturers (NAM) identifies in its recent report as its No. 1 goal, for “The United States [to] be the best place in the world to manufacture and attract foreign direct investment.”² A visionary statement to be sure, but how does the U.S. economy attain and maintain this goal of global manufacturing preeminence? An important factor in answering this question is found in NAM’s fourth goal: “Manufacturers in the United States will have access to the workforce that the 21st-century economy demands.”

The problem, as the Boston Consulting Group (BCG) argues, is that “companies are not doing enough to cultivate a new generation of skilled workers. Manufacturers have scaled back their in-house training over the years, and they underutilize important new sources of talent such as high schools and community colleges.” In the longer-term, the BCG forecasts a skilled-labor shortage:

The retirement of aging workers, as well as heightened demand for workers, could cause serious skilled-labor shortages in the U.S. By 2020, the nation could face a shortfall of

¹ Rebuild American Manufacturing Act of 2013, H.R.1127 and S.544.

² *A Growth Agenda: Four Goals for a Manufacturing Resurgence in America* (2013).

875,000 machinists, welders, industrial-machinery mechanics, and industrial engineers, according to the Bureau of Labor Statistics and BCG.

Because of these challenges faced by the U.S. manufacturing sector, we have begun to see the creation of regional economic development organizations focused on supporting the development and expansion of local manufacturing companies. A prime example of such economic development efforts is found in the creation of the National Manufacturing Renaissance Council (NMRC), a strategic partnership of public and private sector participants, whose purpose is to develop and expand America's potential in *advanced manufacturing* (emphasis added) in major urban areas across America. These public and private partners include state and local governments, manufacturers and their suppliers, unions, and educational institutions.

The NMRC is committed to four fundamental principles focused on building upon a solid foundation of American advanced manufacturing prowess. They include:

- Focusing on making the U.S. the global leader in advanced manufacturing;
- Developing regional strategic partnerships consisting of business, labor, government, education, and community interests;
- Creating a world-class educational system as a fundamental requirement for a strong advanced manufacturing sector; and,
- Reducing poverty, through the development of a strong advanced manufacturing sector, by building communities and a broad middle class.

Long before a national manufacturing strategy was even considered, there were coordinated efforts at the state and local levels to move beyond the dialogue stage to

experimentation and implementation with manufacturing councils. The concept of the NMRC, however, has its origins in the Chicago Manufacturing Renaissance Council, an inter-organizational effort largely catalyzed by the efforts of a Chicagoan, Dan Swinney, who in 2005 saw an opportunity to expand the number of middle-income Chicagoans employed in career positions in emerging advanced manufacturing companies. That's why the Chicago Manufacturing Renaissance Council is now tasked with creating, implementing, and advocating manufacturing development policy and programs in the Windy City and adjacent Cook County.

In this article, I will describe the conceptual origins of the National Manufacturing Renaissance Council, which is a result of the formation of the seminal Chicago Manufacturing Renaissance Council. Next, I turn to an in-depth description of what programmatic efforts drive the business model of the Chicago Manufacturing Renaissance Council, immediately followed by an analysis of educational performance metrics of the programmatic components of the business model. The next section explains the key members of the partnership that make up the National Manufacturing Renaissance Council development model and the recent organizational efforts to transfer the model to other regions of the nation. The concluding section discusses future challenges and opportunities facing the National Manufacturing Renaissance Council development model, including regional variations in interest-group cooperation, manufacturing infrastructure development, and funding challenges, as well as opportunities for developing regionally-based manufacturing strategies.

Origins of the National Manufacturing Renaissance Council

The idea behind the creation of the National Manufacturing Renaissance Council can be found in a 2001 U.S. Department of Labor-funded study, which concluded that Chicago's high value-added manufacturing companies needed an educated workforce possessing the requisite

skills in reading, writing, and basic computer operations; had to be motivated to come to work; and would be engaged in continuous, lifelong learning.³ The final report focused exclusively on workforce training and education programs and their importance to local economic and community development, an eventual blueprint for the mission statement of the Chicago Manufacturing Renaissance Council.

The concept of the NMRC began as a broad, representative regional consortium covering Chicago and Cook County, Illinois. Calling itself the Manufacturing Workforce Development Project (MWDP), the group first studied Denmark and Germany's best practices in public education, including a "dual system" that takes place both in the classroom and at the workplace, and a tri-partite skills certification system developed jointly by labor, employers, and government, and incorporated these practices in the organization's subsequent action plan. The result was a 20-year vision for change in local secondary and post-secondary education built upon a surprising conclusion: the problem with Chicago's school system was not the leveling of its funding, but rather how its schools performed.⁴ A follow-up study⁵, authored by the CLCR for the Illinois Manufacturers' Association, recommended implementing an "Illinois Manufacturing Career Path System" to benefit the state's manufacturers and citizenry. Subsequently, the CLCR/CFL study, *Creating a Manufacturing Career Path System in Cook County*, recommended the following key educational and economic development reforms for Cook County (which would later form the conceptual foundation for the Chicago Manufacturing Renaissance Council):

³*Creating a Manufacturing Career Path System in Cook County* (2001).

⁴ Ibid.

⁵ *The State of Illinois Manufacturing* (2003).

- A formal, well organized system that meets the needs of all partners in the community and economy;
- A workforce training and education system that focuses on basic employability skills including critical thinking and technical skills;
- A comprehensive system that can link the employers' needs for skills with the desire of Chicago's growing minority and immigrant community for jobs;
- Clearly defined and appropriate rules for the participants in the system; and
- Meaningful certification for employees and prospective employees based on input from companies, labor, and educational institutions.

The MWDP recommended that a "High Road" strategy be adopted for the Cook County economy, one that seeks a return to stakeholders by:

- Rrewarding high performance with high wages and incentives;
- Enhancing employees' skills and training;
- Increasing employee participation in the operation of the company, including recognizing the right to organize; and
- Committing to the community as well as to shareholders.

To reach this economic and community development end-game, the MWDP recommended a *Manufacturing Career Path System* (MCPS) be developed. A MCPS "describes the activities and objectives that can be provided by any training or education center that has the appropriate capacity to become certified, to recruit students, and to create the essential linkage with the next level of education provider or employers."⁶ The key characteristics necessary to establish a

⁶ *Creating a Manufacturing Career Path System in Cook County* (2001).

Manufacturing Career Path System (MCPS) include: being firmly anchored in a manufacturing sector analysis; grouping jobs/skill clusters in a career path that develops adaptable training and education systems leading to certification in the context of industry standards and employer requirements; and relying on a partnership of business, labor, government, and educators to develop all aspects of the system, including its objectives, standards, design, and implementation.

Over the next few years, there were some collaborative efforts to create an environment conducive to building the foundation for a MCPS, but the next major challenge was to create a permanent coordinating organization to implement the MCPS: enter the Chicago Manufacturing Renaissance Council.

The Chicago Manufacturing Renaissance Council Business Model

In 2005, the CLCR (which as of July 2013 is now called “Manufacturing Renaissance”) joined with the CFL, the City of Chicago, the Tooling & Manufacturing Association, the Illinois Manufacturing Association, and six other founding organizations establishing the nonprofit Chicago Manufacturing Renaissance Council (CMRC). The purpose of the CMRC is to demonstrate the efficacy of the MCPS through the collaboration of labor, local government, manufacturers, and educational institutions. The formal mission of the CMRC is to “make Chicago the global leader in advanced manufacturing and build a society that is socially, economically, and environmentally sustainable and restorative.” CMRC’s goals are to:

- Improve the public’s perception, or image, of manufacturing, and advocate for policies and programs that enhance the local manufacturing economy;

- Support education, training, and access to careers in manufacturing—especially for economically disadvantage communities;
- Increase the productivity and profitability of existing manufacturing companies in the Chicago region; and,
- Promote international best practices that offer long-term benefits to owners, managers, employees, communities, and the public sector.

Regarding its last goal, to “promote international best practices”, CMRC has drawn from research on the “cluster” concept of industrial development (where suppliers and final assemblers are geographically adjacent and operations carefully integrated) found in Spain, Italy, Germany and Denmark, so as to improve the efficiency and effectiveness of supplier-assembler manufacturing network demands for skilled human capital in the metropolitan Chicago region. In Mondragon, Spain, the CMRC referred to the Mondragon Cooperative Corporation, which has over 100 companies—many global leaders in their sector—employing 130,000 workers largely in advanced technology in manufacturing operations. In Italy, the Emilia Romagna region (which has a similar population total as Cook County) has over 60,000 manufacturing firms, many of them privately owned by a few employees, although many are cooperatively owned, versus 8,000 manufacturers presently operating in Cook County. From educational models studied in Germany and Denmark, the CMRC has modeled linking education to work tasks in manufacturing, emphasizing a national system of skill standards and credentials, social partnerships involving labor, business, government, education, and community leaders, and creating advanced educational institutions as an instrument of attracting and retaining high-quality jobs.

The CMRC, like any other purposeful organization, has an underlying business model. The CMRC business model consists of the following **core** programs—representing its “strategic choices for creating and capturing value”—designed to support education, training, and access to careers in manufacturing, while simultaneously increasing the productivity and profitability of manufacturers in the Chicago region (see Figure I below):

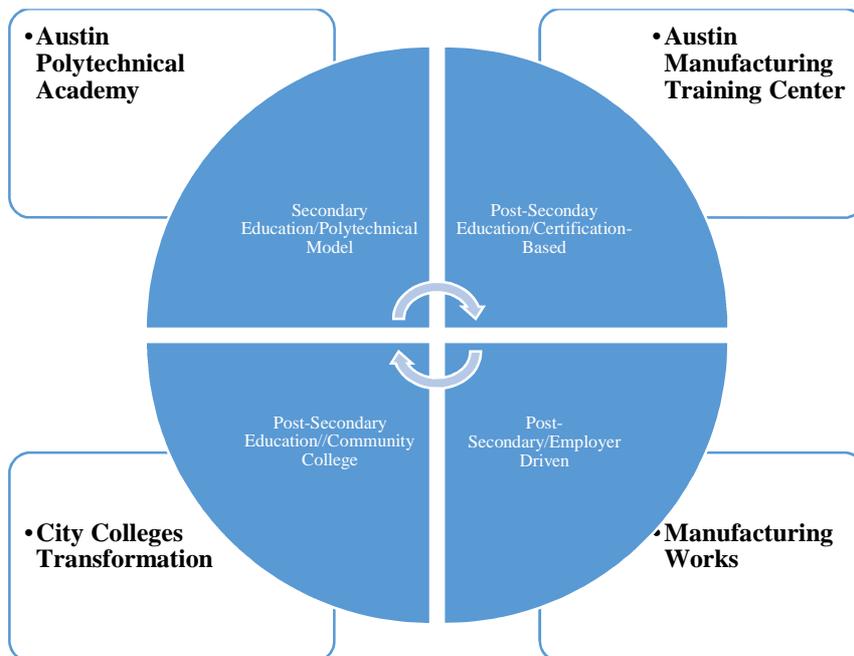
- *Austin Polytechnical Academy.* The Austin Polytechnical Academy (“Austin Polytech”) is a Chicago public high school located on Chicago’s West Side whose mission is to educate the next generation of leaders in all aspects of manufacturing, from skilled production and engineering, to management and company ownership. CMR made the case for this type of school to exist, and in collaboration with the Chicago Teachers Union, helped catalyze the design and development of the manufacturing career program of the school. In 2010, a state-of-the-art Manufacturing Technology Center was unveiled, which utilizes the same computerized, high technology equipment used by today’s modern manufacturing companies. As part of the career program, Austin Polytech cooperates with over 60 local manufacturers to provide students with manufacturing facility tours, job shadowing opportunities, and paid internships and summer jobs. Also, under a student operated entrepreneurial initiative called MECH Creations, a half dozen students are actively involved in starting a manufacturing-based business focused on manufacturing and retailing trumpet mouth pieces.
- *Austin Manufacturing Training Center.* Launched in November 2011, the Austin Manufacturing Training Center (AMTC), located at Austin Polytechnic, provides adult students with computer numerically controlled (CNC) machine training (during work-week evening hours) and industry-recognized certification (CNC Operator and CNC

Setup, Program, and Operator certificates from the National Institute for Metalworking Skills (NIMS)).

- *City Colleges Transformation.* The CMRC has actively worked with the City Colleges of Chicago (CCC) to upgrade their advanced manufacturing programs, establishing degree programs and strong ties with manufacturing companies, and bringing them in line with international best practices. This initiative has resulted in accreditation of CCC programs at Richard J. Daley Community College by NIMS, including a Continuing Education Certificate (Basic Manufacturing), an Advanced Certificate in Manufacturing Technology – Maintenance Mechanic, and an Associate of Applied Science in Manufacturing Technology – Maintenance Mechanic, and recently at Wilbur Wright Community College, including Advanced Certificate programs in Computerized Numerical Control and Industrial Maintenance. The Daley College manufacturing technology programs have been awarded grant funding from the Illinois Network for Advanced Manufacturing; the Partnership for New Communities; and the Safer Foundation Ex-Offender Re-Entry Program, which provide logistical and financial assistance to students for this training.
- *ManufacturingWorks.* In 2005, the City of Chicago leveraged \$1 million in funding to create ManufacturingWorks, a demand-driven program that specializes in meeting the workforce demands of high-performance manufacturers for training/certification of workers in specific technical skills. Additionally, ManufacturingWorks provides “lean” training, which emphasizes employee efficiency techniques on-the-job, to help manufacturers reduce costs and increase performance.

Figure I

The CMRC Business Model



CMRC is also in the process of establishing the following three initiatives. With funding from a \$1.25 million grant in 2012 from the City of Chicago, CMRC, along with its managing partner, Manufacturing Renaissance, has recently proposed the establishment of the *Austin Manufacturing Innovation Park*, a research and development (R&D) and training facility in the Austin neighborhood on Chicago’s West Side, with initial feasibility study funding of \$500,000 coming from the J.P. Morgan Chase Foundation. Inspired by the “cluster” model of manufacturing innovation pioneered in Europe, the Austin Manufacturing Innovation Park’s mission is to serve as a catalyst for innovation by:

- Producing a R&D resource to help regional manufacturers compete in the global economy;

- Training local residents in advanced manufacturing skills to create a sophisticated workforce for the Austin Innovation Park and regional manufacturers; and
- Engaging in medium-term research to supplement industry and university efforts in cutting-edge, future-oriented manufacturing sectors.

The *Austin Manufacturing Innovation Park*, a manufacturer-oriented expansion of CMRC's employment-based business model by assisting local manufacturers with a wider scope of business assistance services, is attracting new manufacturing companies to engage in production in Austin, with a preference for companies that are focused on future-oriented sectors with implications for the regional economy, including renewable energy. In addition to providing companies an R&D resource for short-term knowledge and expertise to improve their products and services, the Austin Manufacturing Innovation Park plans to engage in medium-term research into future and emerging markets in the global economy. This initiative is designed to pioneer a new, advanced manufacturing-based development strategy, and establish a new model of regional development, resulting in job creation and long-term sustainability anchored in the local community. Partners with CMRC in this initiative include the JPMorgan Foundation, the Alliance for Regional Development, World Business Chicago, and Bryan Cave LLP.

Furthermore, CMRC in partnership with the Chicago Community Trust, the Safer Foundation, the National Institute for Metalworking Skills (NIMS), and the Arturo Velasquez Institute of Daly College, is providing Computer Numerical Control (CNC) training to ex-incarcerated individuals returning to the local community. Under the *Reentry Advantage* initiative, training will cover all competencies required for a CNC operator. Successful graduates will earn a NIMS CNC Operator certification, while more advanced students will also earn the higher-level CNC Set-Up, Program and Operator certification.

CMRC'S Organizational Performance

The performance results of the CMRC business model are accumulating, providing empirical indicators of its long-term success. As of October 2013, Austin Polytechnical Academy (APA), through its APA Career Program (a manufacturing skills development collaboration between the Chicago Public Schools and CMRC), has enrolled 178 students for the Fall 2013 school year, an increase of 35 students from the end of the previous school year. Since APA began its jobs placement program in manufacturing in 2010, 103 students/graduates (not all students graduate from the program) have had 174 paid employment experiences. Moreover, 151 students have earned 224 National Institute for Metalworking Skills (NIMS) credentials as of October 2013. These NIMS skills certifications are highly valued, as they reflect a formal level of technical competency that is recognized by manufacturers nationally. What is emerging is not only the specific outcomes of these career programs, but also the effort at building a functional example of a private/public partnership that aligns the Chicago Public Schools with the human capital demands of the local economy—thus, providing positive benefits to both private and public stakeholders.

APA's graduating class of 2011 has 58% of its 71 graduates enrolled in either a two-year or four-year college or university, with at least six graduates studying engineering and one pursuing full-time employment in the manufacturing sector (10% of the class actively pursuing careers in manufacturing or engineering). For APA's class of 2012, of the 68 graduates, eight are pursuing higher education in engineering, while seven are currently employed in the manufacturing sector (22% of the class actively pursuing careers in manufacturing or engineering). For APA's class of 2013, 30 students have graduated, with preliminary data showing that four graduates are employed full-time in the manufacturing sector. Data for full-

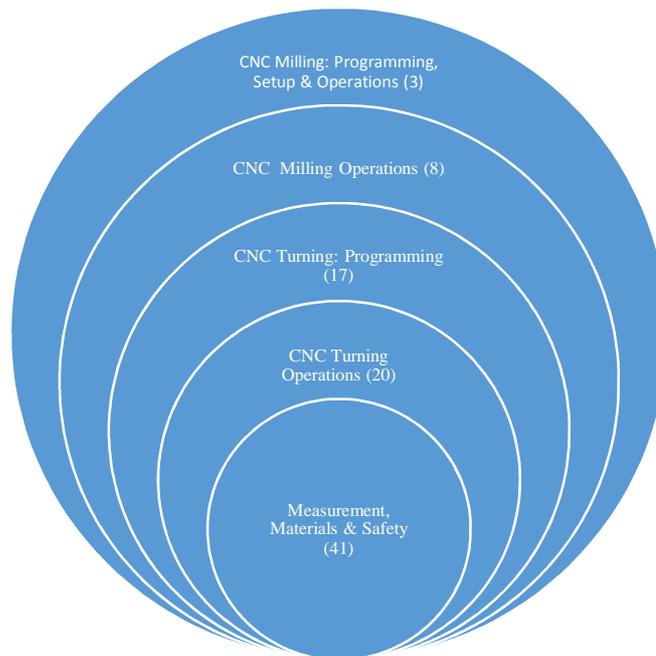
time employment of graduates is not always easily obtainable, as some graduates do not respond to follow-up queries on their present employment situation or cannot be readily located for employment status inquiries.

From its inception in November 2011 through October 2013, Austin Manufacturing Training Center (AMTC) has graduated 17 students (of 25 who began the training program) who have completed the AMTC training program, for a 68% completion rate. Of these 25 student, three have been recent hires in manufacturing, while 17 were presently employed in a manufacturing position before entering the AMTC training program, and the remaining five employees are either employed in non-manufacturing (3) position or their employment status is unknown (2). Currently there are 19 students who are enrolled in AMTC training program, with one enrollee having dropped the program. As of October 2013, there have been a total of 89 NIMS certifications awarded to AMTC students (see Figure II below). The Reentry Advantage program, which serves previously incarcerated individuals returning to the community, started with 17 men, with 15 having completed the program and all earned at least three NIMS credentials. Of the 15 men, 14 are now employed in manufacturing companies and the remaining student has a job offer.

Figure II

Austin Manufacturing Training Center

NIMS Certifications Earned



In the City Colleges Transformation, Daley College received NIMS accreditation for its Advanced Manufacturing Technology program in November 2012. Within the last year, the program has been responsible for more than 10% of all NIMS credentials earned by students in Illinois, while these students have successfully passed certification requirements for nearly 200 NIMS credentials. Also, 53 manufacturing students have been hired for jobs and internships since the recent launch of the College to Careers at CCC. Enrollment in manufacturing programs at Daley College is up 40 percent between Fall 2012 and Fall 2013; the number of students completing the Advanced Manufacturing Program has increased steadily from 30 in FY2009 to 85 in FY2013. Daley College is the only educational institution in Illinois with two high-tech welding machines that give students access to hands-on-training, and it recently acquired the

VRTEX 360 that allows students to practice welding virtually and a robotic welding educational cell including software to practice programming offline. The Daley College Advanced Manufacturing Program was recently recognized by CMRC for the NIMS accreditation and the college's advancement of manufacturing within Illinois.

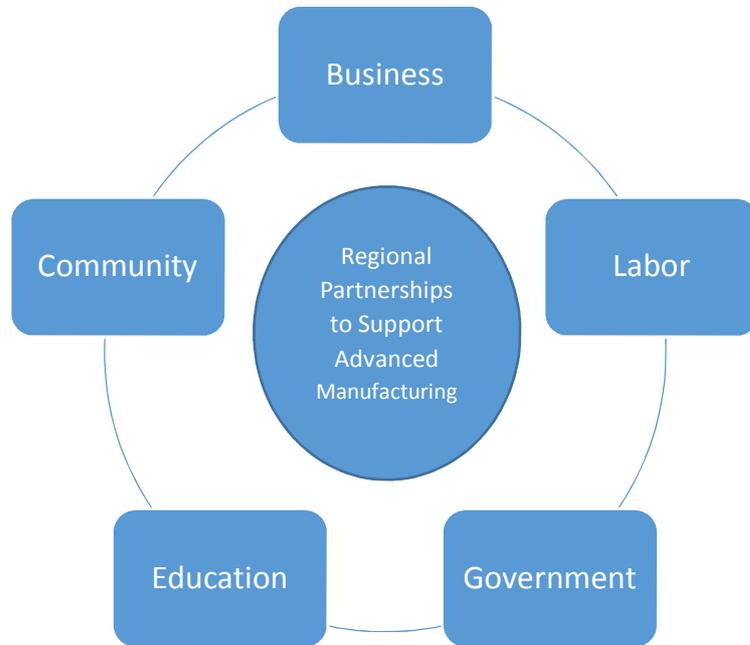
ManufacturingWorks has had at least one job placement in 666 companies located in the greater Chicago area, with a total of 3,354 total job placements during the period 2005 – March 31, 2013, with a 90-day job retention rate of 79%. The interview-to-hire ratio for all hires is 1.83:1, with the average wage-per-hour for all job placements \$11.93. From July 2010 – December 2012, ManufacturingWorks had 816 job placements in a variety of manufacturing sectors, including food (19%), metals (33%), plastics (41%) and others (6%).

The NMRC Development Model

The successful performance of the Chicago Manufacturing Renaissance Council catalyzed the creation of the National Manufacturing Renaissance Council, or NMRC, to transfer this generic advanced manufacturing-based development model (see Figure III below) to other cities/regions throughout the U.S. The NMRC is a strategic partnership of public and private sector organizations representing business, labor, government, education and community development organizations that support programs, in the areas of secondary education, workforce development, and green production, and advocate policies in support of economically, socially, and environmentally sustainable regional development opportunities in advanced manufacturing.

Figure III

The NMRC Development Model



The leadership team of the NMRC is diverse, and represent extensive experience in their respective sectors. It includes leaders from Manufacturing Renaissance; Society of Manufacturing Engineers; Educational Foundation; National Urban League Policy Institute; California Teachers Association; The Manufacturing Institute (the education arm of the National Association of Manufacturers); the AFL-CIO; the National Institute of Metalworking Skills; the San Francisco Bay Area Manufacturing Renaissance Council; and the Detroit Manufacturing Renaissance Council. This leadership team focuses on national thought leadership efforts concerning advanced manufacturing and workforce development issues.

The first effort to replicate the NMRC advanced manufacturing development model took place in 2011 with the establishment of the Bay Area Manufacturing Renaissance Council

(BAMRC).⁷ Over the past two years, BAMRC has received state and local grants for Laney College to develop a manufacturing-focused high school, McClymonds High School, in Oakland. Furthermore, BAMRC partners have helped raise over \$17 million to meet industry demand for skilled labor in the East Bay region, and to develop high-quality practices and programs that will connect East Bay residents with industry recognized credentials leading to high-skill, high wage careers. The newest member of the NMRC is the Detroit Manufacturing Renaissance Council (DMRC) that was formally launched in November 2013. The chair of the Steering Committee is William Jones, the executive director of Focus Hope.⁸ The goal of the DMRC is to strive to be the central organization for manufacturing policy in the greater Detroit area.

Exploratory efforts to gauge stakeholder interest in replicating the NMRC advanced manufacturing development model recently have taken place in New York (2012), Mobile (2013) and Spokane (2013).

Future Challenges and Opportunities for the NMRC Development Model

Interest in both maintaining and expanding manufacturing operations in the U.S. continues to be a hot topic of discussion among American business leaders. The demand for a skilled, advanced manufacturing workforce goes hand-in-hand with capital expansion. In its August 2013 study, the Boston Consulting Group (BCG) concludes that rising exports and “reshoring” of manufacturing in the U.S. from China “could create 2.5 million to five million

⁷ The strategic partners in the BAMRC include: the California Federation of Labor; California Manufacturers & Technology Association; Career Ladders Project; the California Teachers Association; and the East Bay Economic Development Alliance.

⁸ A broad range of organizations and companies have joined the DMRC, including the Detroit Economic Growth Corporation; the United Autoworkers; the Work Intelligence Network; Detroit Employment Solutions; Bridgewater Interior Corporation; Lear Corporation; Macomb Community College; Wayne State University; the Advanced Manufacturing Institute of the University of Michigan; the Detroit Federation of Labor; the American Federation of Teachers – Michigan; Integrated Manufacturing Assembly; and Rickman Enterprises.

American factory and service jobs associated with increased manufacturing by 2020.” As mentioned earlier, BCG forecasts a high-skills gap in manufacturing that could approach 875,000 machinists, welders, industrial engineers and industrial machinery mechanics by 2020. In an October 2012 BCG study, “Made in America, Again: Understanding the U.S. Manufacturing Skills Gap and How to Close It”, American companies surveyed indicated that they are nearly five times more likely to move production back to the U.S. rather than from the U.S. to access high-skilled employee talent.

The demand from U.S. manufacturers for employees with advanced manufacturing skills will steadily increase over this decade, with an opportunity for public-private partnerships to assist in facilitating the supply of human capital and other services necessary for the economic resurgence of many of America’s beleaguered urban areas—also the traditional “home” of much of America’s manufacturing infrastructure. This is where the NMRC development model could help facilitate America’s manufacturing resurgence.

The critical question is: How exactly will the NMRC development model be operationalized in these disparate urban/regional locations? What happens in Chicago, may only work in Chicago, as each city has its own particular economic and political dynamic, e.g., the level of cooperation among special interests and institutions, which, in the case of manufacturing infrastructure, will be at different stages of development. Other questions naturally follow: How dependent will be specific programs be on sources of public and private funding? What is the duration of such funding? How much should each local/regional manufacturing renaissance council be dependent on established educational, business association and governmental institutions?

Because of broad stakeholder involvement from representatives of local public, non-profit and private institutions, each local/regional manufacturing renaissance council should be responsible for developing its own advanced manufacturing strategy. The expansion of the CMRC beyond its employee skills development focus into assisting local manufacturers (Austin Manufacturing Innovation Park) with a broader scope of business assistance is a **positive** evolution in the role of the NMRC development model, which is capable of facilitating a local/regional advanced manufacturing strategy. This approach to de-centralizing the operational components of a national manufacturing strategy allows for each regional council to determine works best in their own state and locality, and in the long term allows for social and technological innovation to flourish. New knowledge can often be transferred as “best practices” throughout the country, thus encouraging the nation’s manufacturing sector to better meet global competition.

The complexity of each manufacturing renaissance organizational structure should be based on a “make-or-buy” decision. Thus, where established organizations can be utilized to deliver on needed advanced manufacturing programs and initiatives, they should be incorporated into the goals and objectives of each council (the “buy” decision); where not, each council should be responsible for developing its own “in-house” programs and initiatives (the “make” decision). This is a logical and efficient development of a local/regional manufacturing network—especially one which needs to leverage limited financial and organizational resources. The flexibility and adaptability of each local/regional manufacturing renaissance council to its environment should allow for the evolution of each council. In other words, “structure should follow strategy.”

For the NMRC development model to flourish, it will require that each local/regional manufacturing renaissance council pose the right questions and actively listen to its stakeholders' answers (and expectations) so as to facilitate a realistic manufacturing strategy, and assist in developing a manufacturing network that leads to sustainable economic success in urban areas across America. The development and implementation of these local/regional manufacturing strategies can be a real foundation for a national manufacturing strategy to flourish in an America that values advanced manufacturing leadership in the global marketplace.