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Good morning. In sessions over the last day, we have covered a full range of policy issues that impact the ability of U.S. and Canadian manufacturers to create a more integrated North American market. Now, we're going to turn to an issue that has less to do with national policy frameworks, but still threatens the ability of our manufacturers to compete and succeed in the global market. That issue is workforce.

The Manufacturing Institute is the research and services affiliate of the U.S. National Association of Manufacturers. The Institute conducts research on a host of issues facing U.S. manufacturers and we are expanding the reach of our services to accelerate innovation in manufacturing, but the issue that we really own as an organization is education reform and workforce development.

I have spent over 20 years in positions focused on education and workforce development and previously led the agency within the U.S. Department of Labor responsible for the \$15 billion U.S. public workforce development system. Obviously, my experience and expertise are primarily about the U.S. workforce, but I know that many of the challenges we face are also true north of the border. In my experience, manufacturing faces the greatest workforce challenge of any industry.

American society used to greatly value and respect men who built things with their hands. This was true through much of the 20th century as high school graduates sought work at the local factory and college graduates dreamed of becoming rocket scientists. That began to change in the 70s and 80s though as parents instead began to dream of their children as doctors or lawyers or bankers, and guidance counselors pushed students away from manufacturing careers and towards "college-appropriate" careers.

In most of our states, school systems responded to this shift in societal priorities and values by reducing or eliminating the once ubiquitous vocational, technical programs available to high school students. Fewer and fewer students were learning the skills needed to enter manufacturing careers or experiencing the excitement and sense of accomplishment that comes from building and making things.

Concurrent to these changes and continuing through today, a general malaise settled over public education in the U.S. High school drop out rates soared to over 30% of students. Graduates lacked the basic reading, writing, and mathematics skills needed in society. Enrollment in remediation courses at higher education increased, burdening higher education with a sort of “under preparation tax.” And employers noted a decline in the basic workplace requirements like punctuality and work ethic.

The cumulative effect of these shifts was to dramatically reduce the size and quality of the pipeline of workers entering manufacturing. Unfortunately, this could not have happened at a worse time for U.S. manufacturers.

Beginning in the late 1970s and early 1980s and accelerating after the collapse of the Soviet Union and the introduction of the internet, foreign manufacturers, particularly from East Asia, expanded and began to compete directly with U.S. firms. This began a difficult and very painful transformation of the U.S. manufacturing sector.

The manufacturing sector that emerged from that transformation was completely different from its predecessor. Computer controlled robots and machines now produced and moved goods. Clean suits were as common as hard hats. And workers were now responsible for the programming and maintenance of the machines. What had traditionally been a low-skill, routinized workplace was now a highly skilled, customized and integrated workplace.

Manufacturers were also under pressure to innovate. To remain competitive, they either had to regularly create and produce new products or find new and better ways of making their existing products. This added a creativity and critical thinking aspect to manufacturing jobs, further distinguishing traditional manufacturing from advanced manufacturing.

Not surprisingly, it was around this time that manufacturers began to report a skills gap. They were unable to find workers who were qualified to step in and contribute to their operations. This was a real threat because U.S. manufacturers were banking on their ability to produce high value goods and stay ahead of their competitors through innovation. Without a skilled workforce though, their innovation engine would grind to a halt.

For the past decade or so, manufacturers have managed to bridge that skills gap through a combination of productivity enhancements and poaching from other manufacturers. At the higher end of the skills continuum, larger companies in advanced manufacturing, technology, and healthcare vie for limited numbers of H1B visas to import some talent. But manufacturers’ ability to work around the skills gap has just about come to an end.

In a survey that the Institute just completed, over 80% of manufacturers reported a moderate-to-serious shortage in skilled production workers. 80%. Because of this shortage, over 50% of manufacturers report they have had trouble maintaining production schedules and 75% say that it has negatively impacted their ability to expand.

Those are some frightening results and make clear the threat that a lack of skilled workforce poses to manufacturers.

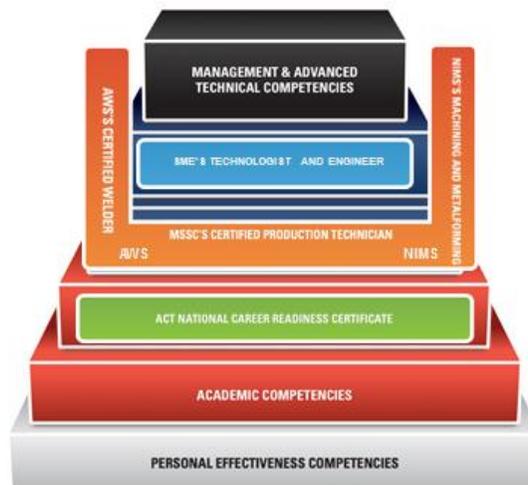
In response to this crisis, The Manufacturing Institute has developed and is implementing solutions that will position the U.S. to “grow our own” talent.

The core premise of our solution is that, in manufacturing, we have standards for every imaginable input and output. Whether it is the composition of steel, the tolerance of machines, or the failure rate of a part, manufacturers can give the details to three decimal points. So we created a system that allows manufacturers to be as rigorous in the standards they apply to their most important asset – human capital.

These standards come not in the form used by traditional education, which measures seat time through credit hours. Instead, our standards are competency based, demonstrated through mastery, and verified through certification.

To develop our solution, called the NAM-Endorsed Manufacturing Skills Certification System, we joined with several other leading industry groups to create a system of nationally portable, industry-recognized credentials. These credentials -- and the training required to obtain them -- certify that an individual possesses the basic skills required to work in any sector of the manufacturing industry.

[Pyramid Slide]



As you can see on this slide, our system is built on a pyramid of skills certifications, with an initial focus on the skills required for all entry-level jobs in manufacturing today:

- Personal effectiveness skills;
- Foundational academic competencies – for manufacturers, those are applied math, reading, locating and using information;
- General workplace competencies such as teamwork, problem-solving, and the fundamentals of business;
- And, the industry-wide technical skills related to basic manufacturing processes including production, logistics, machining, quality assurance, safety and health, and technology.

The foundational competencies in the first tiers are grounded in ACT’s National Career Readiness Certificate. The workplace and technical competencies are covered by the Manufacturing Skill Standards Council’s Certified Production Technician, the National Institute for Metalworking Skills’ Machining and Metalforming certifications, and the American Welding Society’s Certified Welder series. Finally, the Society of Manufacturing Engineers’ Engineering Technologist certification caps our entry-level skills system, recognizing the infusion of technology into all manufacturing processes.

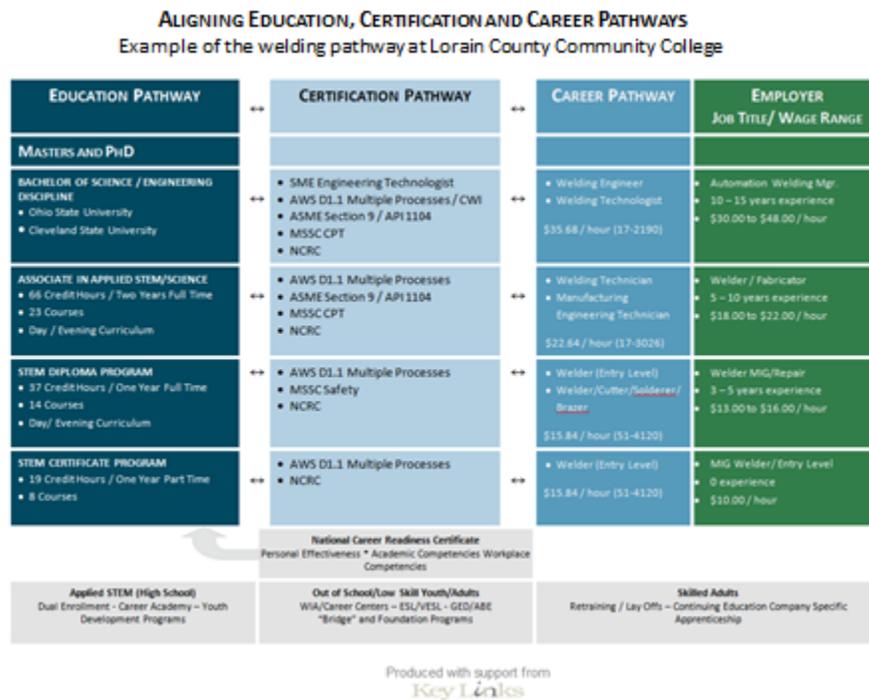
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One of the key elements of our system is that it provides individuals with the right skills to work in any sector of manufacturing. This includes everything from life sciences to aerospace, food processing to automotive, and consumer products to energy.

Another important feature of our system is that (1) manufacturers are driving the education reform but (2) we are not asking manufacturers to pay for it. U.S. manufacturers already face a significant structural cost disadvantage in comparison to the rest of the world and we will not ask them to absorb the cost of dealing with the failures of our education system. Instead, we have found willing partners among the country's community colleges.

[Pathway Slide]



There are over 1,200 of them nationwide and they have the ability to integrate these certifications into their programs of study. This allows us to develop a detailed crosswalk between the educational courses students may take, the certifications they would be qualified to earn, the jobs available for individuals with those certifications, and the amount of money one could expect to earn.

We've already implemented this approach successfully in five states and are now expanding it to 26 additional states. Once we've successfully implemented in those states, community colleges will be the go-to place for students to find the right skills for manufacturing and manufacturers to find future workers with the right skills.

Now that we have a system in play focused on entry level skills, we've begun work with a national consortium of universities, to add higher level, sector and occupation specific credentials – to industry standards – building the pipeline of engineers and engineering technologists.

Our progress to date has been significantly strengthened by our partnership with the state and sector associations in the U.S. – 300 of them who have become the voice of demand to education leaders within their states.

This summer, we received a huge assist from none other than the President of the United States. At an event at Northern Virginia Community College, President Obama fully endorsed the Manufacturing Skills Certification System and pledged to help us achieve our goal of half a million newly certified workers in the next five years.

So, why does this American system matter to Canada and how can it contribute to the cross border activities we are focused on today?

As has been mentioned over the previous day, the trading relationship between the U.S. and Canada is the most important to each respective country, constituting hundreds of billions of dollars annually. Despite recent security “enhancements,” the border between our two countries is extremely porous.

Everything from feedstock to parts to finished products crosses our border in both directions everyday, making our manufacturing systems extremely interdependent. Having a system that ensures a consistency in workforce quality will benefit that relationship and lead to better product quality.

One sector that warrants particular focus is energy. From the oil sands in Alberta to our Marcellus shale in the northeast to the XL pipeline that will further connect our two countries, the U.S. and Canada are taking very active measures to expand their energy industries.

The foundational skills that are necessary to make that expansion happen are very much the same skills required in the manufacturing sector and, indeed, our National Academy of Sciences is now working on recommendations to build the U.S. energy workforce and this model is the foundation of those recommendations. It is easy to envision a system where the production, welding, metalworking, and technology skills are certified with industry-recognized, internationally portable credentials.

Maybe that's too aggressive as an opening vision, but I think there are some steps that would help to better define the common skills that both U.S and Canadian manufacturers and workers require. This includes:

- Mapping the U.S. and Canadian certifications to understand how the two sets of credentials align;
- Creating an articulation agreement where certifications from one country can transfer in to the other; and
- Highlighting the education pathways from high school to college and exemplary programs so that institutions on both sides of the border can learn from the best.

I know John and others in Canada have been focused on skill certifications and worker credentials for sometime and I am confident that we can learn from them just as our recent experience in establishing a pathway of credentials across all manufacturing sectors can provide lessons and examples for our Canadian partners.

So, John, I look forward to working with you, and I will begin our partnership by giving you the floor.