



18th Annual Washington Policy Meeting – June 27-28, 2007

“Making Manufacturing a National Priority”

Workforce Education & Training Pre-Read Materials:
What can the manufacturing community do to enhance STEM education as a national priority?

OVERALL CONFERENCE OBJECTIVE:

To follow the overall objective of this conference, our breakout group will begin work to position STEM education initiatives and related programs as a major national priority to be addressed by the 2008 Presidential candidates.

There are three things we want to do i.e., we want to answer:

1. What are the next steps we can take back home to drive the necessary action to move the needle forward on these issues?
2. What do we need from the federal government, especially from the Interagency Working Groups (IWGs) on Manufacturing represented in this meeting and in the AMLF Luncheon Roundtable on Thursday?
3. How can we frame these issues to convince the 2008 Presidential candidates to address manufacturing in their campaigns?

ACCOMPLISHING THE OBJECTIVE:

As part of a series of on-going activities, the Workforce Breakout attendees will focus on two things – They will begin to identify:

- implications of current policy
- areas of best practice – programs and initiatives that are being implemented across the country

In doing these two things, we will establish recommendations for NACFAM and the membership to carry out as next steps for advancing STEM education and raising it as a national priority.

To help in the preparation for active participation at the June 27-28 event, you are encouraged to review the material below, which will serve as background for our discussion. There is a brief section on each of the following: legislative update and

programs. Also included at the end of this document are a list of questions to guide the discussion at the June 27-28 event.

LEGISLATIVE UPDATE (Senate and House Bills)

SENATE: Summary of the “America COMPETES Act” (S. 761)

The *America COMPETES Act of 2007* is a bipartisan legislative response to recommendations contained in the National Academies’ **Rising Above the Gathering Storm** report and the Council on Competitiveness’ **Innovate America** report. The bill is similar to the *National Competitiveness Investment Act of 2007* that was introduced in September 2006 by a bipartisan group of senators led by Senators Frist, Reid, Stevens, Inouye, Domenici, Bingaman, Enzi, Kennedy, Ensign, Lieberman, Alexander, Mikulski, and Hutchison.

Several sections of the bill include key proposals contained in the *American Innovation and Competitiveness Act of 2006* (S.2802), approved without opposition by the Senate Commerce Committee ... and the *Protecting America’s Competitive Edge (PACE) Through Energy Act of 2006* (S.2197) approved without opposition by the Senate Energy Committee last year.

The *America COMPETES Act of 2007* focuses on three primary areas of importance to maintaining and improving United States’ innovation in the 21st Century: 1) increasing research investment by the Federal government, 2) strengthening educational opportunities in science, technology, engineering, and mathematics from elementary through graduate school, and 3) developing an innovation infrastructure.

More specifically (in regards to STEM education) the *America COMPETES Act of 2007* would:

Strengthen Educational Opportunities in Science, Technology, Engineering, Mathematics, and Critical Foreign Languages by:

- Authorizing competitive grants to States to promote better alignment of elementary and secondary education with the knowledge and skills needed for success in postsecondary education, the 21st century workforce, and the Armed Forces, and grants to support the establishment or improvement of statewide P-16 education longitudinal data systems.
- Strengthening the skills of thousands of math and science teachers by establishing training and education programs at summer institutes hosted at the National Laboratories and by increasing support for the Teacher Institutes for the 21st Century program at NSF.
- Expanding the Robert Noyce Teacher Scholarship Program at NSF to recruit and train individuals to become math and science teachers in high- need local educational agencies.
- Assisting States in establishing or expanding statewide specialty schools in math and science that students from across the state would be eligible to attend and

providing expert assistance in teaching from National Laboratories' staff at those schools.

- Facilitating the expansion of Advanced Placement (AP) and International Baccalaureate (IB) programs by increasing the number of teachers prepared to teach AP/IB and pre-AP/IB math, science, and foreign language courses in high need schools, thereby increasing the number of courses available and students who take and pass AP and IB exams.
- Developing and implementing programs for bachelor's degrees in math, science, engineering, and critical foreign languages with concurrent teaching credentials and part-time master's in education programs for math, science, and critical foreign language teachers to enhance both content knowledge and teaching skills.
- Creating partnerships between National Laboratories and local high-need high schools to establish centers of excellence in math and science education.
- Expanding existing NSF graduate research fellowship and traineeship programs, requiring NSF to work with institutions of higher education to facilitate the development of professional science master's degree programs, and expanding NSF's science, mathematics, engineering and technology talent program.
- Providing Math Now grants to improve math instruction in the elementary and middle grades and provide targeted help to struggling students so that all students can master grade-level mathematics standards.
- Expanding programs to increase the number of students from elementary school through postsecondary education who study critical foreign languages and become proficient.

For more information, please visit:

http://commerce.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=248798&Month=4&Year=2007

HOUSE OF REPRESENTATIVES: Summary of The "21st Century Competitiveness Act of 2007" (House HR 2272)

Provisions in H.R. 2272 include many of the National Academies' recommendations:

- Keeps the National Science Foundation and the NIST research Labs on a 10-year doubling path;
- Helps to create thousands of new teachers and provide current teachers with content and pedagogical expertise in their area of teaching;
- Expands programs to enhance the undergraduate education of the future science and engineering workforce;
- Expands early career grant programs for outstanding young investigators at both the National Science Foundation and the Department of Energy;
- Strengthens interagency planning and coordination for research infrastructure and information technology.

Congressman **Bart Gordon**, chairman of the House Science and Technology Committee noted, “In this increasingly competitive world, where manufacturing jobs are rapidly being outsourced and we are importing more high-tech products than we are exporting, now is the time for us to act. We must strengthen our support for the creativity, innovation and talented workforce that makes the U.S. unique and gives us our edge. ... The day our universities are no longer the most sought after in the world, the day we see a brain drain because our best and brightest young scientists and entrepreneurs can’t get the funding to do their research and development here at home, the day our innovation is outsourced – that is the day that worries me.”

For more information on HR 2272, please visit:

<http://science.house.gov/press/PRArticle.aspx?NewsID=1837>

PROGRAM UPDATE:

DVIRC’s STEM Talent Development Forum – A Regional Response

The nation’s first regional STEM (Science, Technology, Engineering and Math) Talent Development Forum was convened by the Delaware Valley Industrial Resource Center (DVIRC) and the National Council for Advanced Manufacturing on June 26-27, 2006 at the Hilton Philadelphia Airport Hotel. More than 170 representatives from business, education, government, economic development entities, and trade and professional associations participated. Viewed as *A Dialogue for Action*, the Forum was held to bring the national conversation about the critical role of education in American competitiveness to the regional level, and more importantly, galvanize the region’s institutions into creating a collaborative action agenda to promote STEM education.

In response to the National Academies’ landmark report **Rising Above the Gathering Storm**, the Forum focused on one of the report’s major recommendations -- Increase America’s talent pool by vastly improving K-12 science and mathematics education. This recommendation supported DVIRC’s broad regional goal of increasing enrollment in STEM education at both the secondary and post-secondary levels. The three major goals of the Forum were to:

- 1) **Advance the dialogue** about what regional business-education collaboratives could do to ensure that the region’s and the nation’s education systems provide a continuous supply of highly trained technicians, technologists, engineers, mathematicians and scientists. This, in turn, will teach the U.S. to safeguard its global economic leadership;
- 2) **Identify successful local, regional and state-level program models** that can be used by regional collaboratives to attract K-12 students to STEM related careers and to strengthen K-20 STEM education programs; and
- 3) **Articulate actions** that can be taken at the local, regional and state levels to develop focused support for STEM education in K-16 systems so that businesses have the talent they need to compete more effectively in the global marketplace.

Key Recommendations resulting from the June 2006 Forum

The top recommendations for action distilled from the Forum and from post-Forum participant feedback include:

- Form a Regional Compact for STEM Education
- Involve Industry in Shaping STEM-Related Education Programs
- Increase Enrollment in STEM Education
- Develop a Plan

Immediately following the Forum, a Regional Compact was circulated for support among the participants.

For the full report and details on specific regional recommendations, visit:

<http://www.dvirc.org/stem-proceedings-2006.pdf>

Advanced Manufacturing Competency Model

What is the Advanced Manufacturing Competency Model?

The Advanced Manufacturing Competency Model describes the common core skills and competencies required for careers across manufacturing sectors. The model is not a skill standard or an assessment tool, but rather serves as an industry-driven framework for educators, training providers, and communities to use as a starting point in ensuring that training resources and investments are aligned with the needs of employers.

How can regions use the competency model?

Depending on the current status of their talent development activities, regions can use the competency model in many different ways to enhance workforce development strategies and improve communication and collaboration among public/private partnerships. The following are examples of the how the competency model could be used as a guiding framework to:

- Design workforce data collection surveys;
- Conduct an “audit” of education and training providers to determine gaps in current training offerings;
- Design and develop education and training programs; and
- Design customized training services at One Stop Career Centers.

ETA, in partnership with the National Association of Manufacturers (NAM) and the National Council for Advanced Manufacturing (NACFAM), is working to broadly disseminate and promote the Advanced Manufacturing Competency Model. In parallel with this effort, ETA is also seeking to demonstrate and document the application of the model within the education transformation efforts of WIRED regions. By integrating the competency model into relevant regional initiatives, ETA seeks to enhance the talent development strategies of each participating region, and develop written case studies to guide future use of the competency model.

For more information on the Advanced Manufacturing Competency Model, please visit:

<http://www.careeronestop.org/CompetencyModel/>

Questions for Breakout Session group discussion on June 27-28:

- What is the likely short-term impact of this new legislation and full-funding (if approved in the 2008 Appropriations process) on state, regional and local goals and/or programs to improve STEM education?
 - To attract high school/community-technical college/and 4-year college students to STEM-related careers?

- To address the skills gaps many medium and smaller manufacturers are experiencing as they introduce new technologies and innovation into their companies?
- What were the accomplishments of the Philadelphia STEM Collaborative ... and next steps in building support for STEM education in the Greater Philadelphia region.
- Building on the example provided by Philadelphia, what role can the manufacturing community play in supporting external STEM education initiatives at the local and regional levels? In improving internal STEM-related education and training programs to enhance the skill levels of incumbent workers and if need be assist incumbent workers broaden the knowledge base and/or acquire new skills?
- How can small and medium-sized manufacturers collaborate with public and non-profit sector initiatives at the local or regional level to identify and utilize new advances in delivering STEM-related education and training within their companies? Within their communities?
- How can manufacturers collaborate with public and non-profit sector entities to update on a continuing basis their understanding of the changing knowledge and skill needs of their region's companies and workforce candidates/workers? And to make periodic alternations and additions to their region's strategic STEM action plan?
- How can resources, such as the Advanced Manufacturing Competency Model, be used by companies and communities to promote STEM?
 - Does the Competency Model bring anything new to the education and training table? If so, what?
 - Does the Competency Model change any basic elements in the way students, workers and dislocated workers acquire new/different knowledge and skills in "the learning and training" environment? If so, how?
 - Does the use of the Competency Model represent a "plus" ... or "nothing different" ... to company education and training professionals and programs? To secondary and post-secondary education and training professionals and programs?
 - How would you use the Competency Model in your company/organization ... and why would you use it?
 - How does the Competency Model fit with Career Pathways?