

TRAINING AND EMPLOYMENT NOTICE	NO. 23-07
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TO: ALL STATE WORKFORCE AGENCIES
ALL STATE WORKFORCE LIAISONS
ALL ONE-STOP CENTER SYSTEM LEADS

FROM: EMILY STOVER DeROCCO /s/
Assistant Secretary
Employment and Training Administration

SUBJECT: Building and Sustaining an Educated and Prepared STEM Workforce

1. **Purpose.** To share the Department of Labor's vision for the public workforce system's role in developing the talent needed for high growth industries requiring science, technology, engineering and math (STEM) skills.

2. **References.**

U.S. Department of Labor, Employment & Training Administration, *The STEM Workforce Challenge and the Role of the U.S. Department of Labor in a National Solution*, Washington, D.C. (2006).

U.S. Department of Labor, Employment & Training Administration, *Science, Technology, Engineering and Math (STEM) and the Workforce Investment System Roundtable: Connections in Action (transcript)*, available at <http://www.workforce3one.org/members/getmfileinfo.cfm?id=326>, Washington, D.C. (2007).

Committee on Prospering in the Global Economy of the 21st Century: An Agenda for American Science and Technology, National Academy of Sciences, National Academy of Engineering, Institute of Medicine, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, available at http://www.nap.edu/catalog.php?record_id=11463#toc, Washington, D.C. (2007).

3. **Background.**

Many of the fastest growing jobs in America will be filled by "knowledge workers" who have specialized skills especially in the areas of Science, Technology, Engineering and Math (STEM). STEM-related fields are many and diverse; equally diverse are the industries in which STEM jobs are critically important to growth and competitive success. There is increasing attention to the nation's capacity to be a world leader in innovating and applying scientific and technological advances.

Four major trends dramatically impact the STEM pipeline of the future: (1) an increasing number of high school graduates with insufficient academic grounding in STEM to successfully enter post secondary education to pursue STEM careers; (2) waning enrollment in technical studies, including two- and four-year college-level, graduate, and post-graduate science and engineering programs; (3) impending retirement of a large portion of the existing STEM workforce; and, (4) declining immigration of science, technology, engineering, and mathematics professionals.

In its report, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, the Committee on Prospering in the Global Economy of the 21st Century set forth four recommendations for federal policy makers to consider in order to enhance the science and technology skills of American citizens and enable this country to successfully compete in the global economy: (1) increase America's talent pool by vastly improving K-12 science education; (2) sustain and strengthen the nation's commitment to research that has the potential to fuel the economy, provide security, and enhance the quality of life; (3) make the United States the most attractive setting in which to study and perform research so that this nation can develop, recruit, and retain the best and brightest students, scientists, and engineers; and (4) ensure that the United States is the premier place in the world to innovate.

The U.S. Department of Labor (DOL) is already an important partner in federal efforts to strengthen the STEM pipeline. Through the Workforce Innovation in Regional Economic Development (WIRED) initiative, DOL is investing regionally in STEM talent development strategies.

In February 2006, DOL launched the WIRED initiative focusing on the role of talent development in driving regional economic competitiveness, increased job growth, and new opportunities for American workers. The WIRED framework brings together all the key players in a region to leverage their collective public and private sector assets and resources to implement strategies that will optimize innovation and successful regional economic transformation. The STEM fields are essential building blocks in innovation and economic transformation.

Much of President Bush's American Competitiveness Initiative, which is designed to encourage American innovation and strengthen the nation's ability to compete in the global economy, focuses on the development of skills in math and science in K-12 systems. Without this foundation, students cannot enter and advance in the

engineering and technology fields that are defining the innovation economy. More than ever, education is a critical component of economic development. The availability of a skilled workforce is the single most important factor companies consider when deciding where to open or expand a business. It is this reality that creates a cycle in many regional economies where there are not enough educated workers to attract new companies, so the people who possess an education must leave the region to find opportunities.

4. The Department of Labor's Current Contributions to a Stronger STEM Pipeline.

To help fill gaps in the nation's response to the STEM workforce challenge, DOL's Employment and Training Administration (ETA) seeks ways to employ its infrastructure, capacity, investments, and initiatives for maximum impact. DOL, in conjunction with other federal workforce agencies, annually invests \$15 billion in talent development activities. Moreover, the Department's unique commitment to regional talent development and economic growth strategies provides a powerful framework for collaboration and alignment across federal funding streams – both DOL and non-DOL - and public and private stakeholders.

The Department is promoting an action agenda in collaboration with other stakeholders and investors that should help to: expand the pool of potential STEM workers; strengthen the gateway for non-traditional populations into STEM careers; ease the transition for dislocated or transitioning workers into STEM fields; and integrate national, state, regional, and local efforts into a more powerful set of partnerships and coordinated strategies.

DOL believes the public workforce investment system has an important role in strengthening the STEM pipeline, specifically in collaboration with multiple agencies across the federal government and a wide array of strategic partners in the public and private sectors. Of particular interest to DOL is broadening participation in the STEM fields by women, under-represented minorities, and individuals with disabilities.

Currently, DOL is gathering information from the workforce investment system about efforts to connect to STEM education and employment opportunities locally. Toward this goal, the Department sponsored a Web conference, or Webinar, in early May, open to members of the workforce investment system, economic development experts, educators and employers, that discussed innovations and partnership across the system. This session demonstrated that the system is becoming increasingly aware of STEM as it affects the workforce and early efforts are underway to build non-traditional partnerships to promote the STEM pipeline.

5. Role of the Public Workforce System in Building and Sustaining a Prepared STEM Workforce.

The Department of Labor encourages Workforce Investment Boards (WIBs) and One-Stop Career Centers to be knowledgeable and engaged partners in efforts to help address the escalating challenges of “growing” the STEM pipeline. The public workforce investment system is uniquely positioned in many communities to be an important partner because of its universal access to human capital that ranges from at-risk youth to experienced workers; its strong partnerships with community colleges, employers, and faith-based and community organizations; and its continued transformation supporting high growth industries, many of which require a highly skilled STEM workforce.

At the community level, K-12 and postsecondary education (particularly research universities) have a leading role on educating students in the STEM fields and preparing them for employment. But the demands of the current and future STEM pipeline require immediate action from many other stakeholders, including the public workforce investment system, foundations, professional associations dedicated to STEM fields, non-profit organizations, employers, and government.

There are a number of steps that WIBs and One-Stop Career Centers can take to be proactive partners and address gaps in current efforts to prepare the STEM workforce. Many of them draw on the expertise of the public workforce investment system in workforce preparation and its role as an intermediary between employers and talent development institutions.

WIBs and One-Stop Career Centers need to be committed to developing strategies for talent development in support of economic growth and to facilitating alignment and integration of existing public and private STEM resources. In order to prepare and expand the number of students entering STEM-related careers, WIBs and One Stops must be prepared to implement STEM workforce education strategies across the continuum of education with a focus on post-secondary opportunities for workers. Public workforce entities need to:

- Become knowledgeable on STEM pipeline issues. Attached to this TEN is a background paper on the STEM workforce challenge that identifies additional resources. Also attached is a description of how existing initiatives/funding can be utilized, such as the High Growth Job Training Initiative, Community-Based Job Training Grants and WIRED. WIBs and One- Stop Career Centers need to analyze what this information means to their region and community.
- Meet with organizations in the state and community that are leaders in the STEM fields and participate in forums dedicated to this issue.
- Identify STEM-related industries that are growing and expanding in the local and regional economy.

- Conduct a gap analysis. With STEM partners, WIBs should gather data on the need for additional STEM education and training in your region, identify gaps in existing services and infrastructure, and develop strategies to fill those gaps.
- Build capacity within One-Stop Career Centers to provide career guidance on the STEM fields which identifies approaches for developing proficiency including apprenticeship, internships, on-the-job training, alternative career pathways/career lattice models and non-academic training routes.
- Provide services to develop a skilled workforce to meet the needs of STEM employers including:
 - Recruiting and screening qualified STEM workers;
 - Posting job listings;
 - Providing incumbent worker training and linkages to other training resources;
 - Developing customized labor market information;
 - Providing job retention services such as mentoring and career guidance;
 - Identifying work-based learning opportunities in STEM fields for internships, apprenticeships, on-the-job training, and other training activities;
 - Providing information on STEM to alternative schools, faith and community-based organizations and other training providers in the workforce investment system;
 - Offering summer academic enrichment activities in the STEM fields;
 - Designing educational tools and programs for displaced and incumbent workers; and
 - Supporting participants' school preparation and critical transition points such as high school to college, between 2- and 4-year college, and from undergraduate study to the workplace.

By taking the above steps and engaging in a broad range of activities related to STEM, the public workforce investment system can meet the goals of:

- Coordinating and aligning regional STEM workforce preparation and training activity;
- Implementing employment activities, strategies and resources (new and existing) that result in significant and sustainable impact;
- Increasing accessibility and broadening STEM education and training opportunities targeted to women, under-represented minorities, individuals with disabilities, youth and dislocated workers;
- Increasing the number of workers entering STEM employment;
- Increasing access for STEM employers to job candidates with sought-after skills and background; and
- Establishing and expanding strategic partnerships with the workforce system and regional STEM employers; higher education institutions, including community colleges; K-12 and alternative secondary schools; faith-based and community organizations; industrial and national laboratories, and STEM professional associations to build the region's STEM expertise, financial and operational capacities.

In an increasingly global, knowledge-driven society, STEM education and skills development are critical to American economic competitiveness and growth. Long-term strategies will require coordinated efforts among public, private, and non-profit entities to promote innovation and to prepare an adequate supply of qualified workers for employment in STEM fields.

6. **Actions Required.** States are requested to share this Training and Employment Notice with appropriate stakeholders.
7. **Inquiries.** Questions should be directed to the appropriate ETA regional office.