



AEROSPACE & DEFENSE WORKFORCE ENHANCEMENT

As the world's largest aerospace professional society, serving a diverse range of more than 30,000 individual members from 88 countries, and 95 corporate members, the American Institute of Aeronautics and Astronautics (AIAA) urges Congress to enact and sustain policies that will enhance a robust, technologically-proficient aerospace and defense (A&D) sector that is essential to our continued national competitiveness and security.

The adequacy and size of the U.S. science, technology, engineering and mathematics (STEM) workforce is an ongoing concern for the A&D industry. Scientists and engineers are essential to U.S innovation and economic growth. It is also critical to note that many middle skilled jobs, such as those in advanced manufacturing, require an ever increasing array of STEM skills. To that end, the Government Accountability Office (GAO) has reported that the number of STEM degrees awarded grew 55 percent from 1.35 million in the 2002–2003 academic year to over 2 million in the 2011–2012 academic year. AIAA commends the programs that previously have been put in place by Congress, and hopes to see these continually enhanced.

Since 1997, *Aviation Week & Space Technology* has published a Workforce Initiative Report annually. Last year's report highlighted that the A&D workforce continues to shrink at approximately 2 percent per year. It also highlighted a paradox in the predictions of massive A&D retirements by the baby boomer generation. The baby boomers are far from leading voluntary attrition; rather, those employees with 0 to 5 years of experience, i.e., young professionals, are leading voluntary attrition with 14 percent leaving the industry entirely. Maintaining the young professional A&D talent will be an ever-increasing challenge with the competition of modern technology firms. AIAA encourages Congress to promote policies that will provide a growth-sustaining path for the A&D industry workforce pipeline.

Issue: Workforce Preparation. AIAA applauds the work of the 114th Congress in passing landmark legislation that includes provisions enhancing the pipeline of STEM-educated workers into the U.S. economy. This legislation, the Every Student Succeeds Act, will help strengthen the pipeline of students with globally competitive 21st-century skills, including STEM skills, coming out of our nation's K–12 schools. However, AIAA strongly believes that the work is not complete and the 114th Congress should consider further legislation to bolster the STEM pipeline.

The NSF Graduate Research Fellowship, the oldest STEM program available to graduate students, should be enhanced to provide additional funding to graduate students in STEM fields today. In addition, without adequate funding and appropriations for the NASA budget, their well-known student programs (e.g., research grants, internships, etc.) will be limited and at further risk.

Congress should continue to encourage, support, and recognize industry's efforts and participation in the promotion of a STEM workforce and STEM education. Such efforts could include internships, co-op programs, apprenticeships, job shadowing, teacher exchange programs, etc., that expose students, teachers, and those transitioning into A&D careers to the challenges, rewards, and benefits of a STEM education and career. Congress should also periodically evaluate the success of current industry STEM

programs through GAO studies, hearings, committee testimony, or other mechanisms and determine if other methods should be promoted.

Issue: Maintaining and Retaining a Skilled Workforce. In addition to implementing programs that help to inspire qualified individuals to enter and stay in the STEM workforce, industry, government, and academia must do a better job of sharing information and facilitating exchange with one another. Such efforts will go a long way to developing and preserving critical skills in the workforce. Federal incentives and/or grants should be more readily available to support industry, government, and academia partnerships that tailor training for high-level skills and provide R&D collaborations, e.g., Centers of Excellence. Some areas for these skills and collaborations could be: advanced manufacturing; information technology (IT); control systems; and autonomy. These opportunities would more actively engage young professionals and new STEM graduates in trending career paths as a function of the cutting-edge potential of the A&D industry.

Furthermore, there are excellent congressional efforts to transition qualified military veterans to civilian A&D careers, yet more emphasis could be placed on incentivizing industry's direct involvement in creating a process to categorize military skill sets. This process would provide a quicker and more seamless transition for veterans to enter the A&D industry at the proper career level.

The Department of Defense (DoD) has programs for the temporary exchange of DoD and private sector employees who work in the field of information technology in the Information Technology Exchange Program. This type of model should be expanded to include intergovernmental agreements throughout the A&D sector that includes exchange between industry, government, and academia alike. Congress should play a key role in encouraging the administration to develop a program that conducts this exchange. Mechanisms should be put in place to encourage industry to continue training and development activities with the current workforce.

Issue: Integrating New Knowledge into the Workforce. With many new, exciting fields emerging in A&D engineering, Congress must continue to work to develop programs that will help integrate these fields into the knowledge base and competency of the existing workforce. For example, advances in technology have increased workforce reliance on computational tools. This potentially adds risk to the research and design process unless a proper balance is encouraged to complete adequate end demonstrations of the technology through simulations, ground tests, and flight tests. Developing and sustaining the skills necessary to strike this balance is important to long-term U.S. preeminence in aviation, and teaching these skills in STEM mentoring programs ensures retention of hard-won lessons.

Issue: Foreign Professionals in STEM Fields. While bolstering the U.S. base of STEM workers, Congress should also renew its interest in facilitating the immigration of foreign professional workers in STEM fields. Efforts in the 112th and 113th Congress to pass legislation that would provide expedited immigration avenues to foreign workers in STEM fields failed, and it is AIAA's belief that these efforts should be revived in the 114th Congress, albeit with a sensitivity to the high-security level our country is experiencing. Legislation like the I-Squared Act of 2015, which would raise H-1B visa caps and exempt those who hold advanced STEM degrees from counting against the caps, represents a common sense approach to high skilled immigration. Highly skilled, foreign-born workers who have been educated at U.S. colleges and universities in STEM fields are engines of entrepreneurship and economic growth. Keeping more of these foreign-born STEM graduates in the United States is vital to ensuring economic prosperity throughout the A&D sector and enhancing that sector's contributions to U.S. competitiveness. If those graduates are able to remain in the United States, it alleviates the likelihood

that they will establish a business that will compete with U.S. interests in their home countries or elsewhere. An international A&D workforce is also reflective of an industry that operates globally.

AIAA Recommendations:

- Continue to pass legislation that enhances the pipeline of STEM-educated workers into the U.S. economy.
- Enhance NSF Graduate Research Fellowship funding.
- Appropriate funding for NASA through reauthorization to provide financial stability for research grants and/or fellowships.
- Provide tax incentives for industry to participate in STEM programs and training and development programs for the incoming, existing, and transitioning workforce, e.g., internships, apprenticeships, and tailored courses.
- Pass STEM visa legislation similar to that considered in the 112th Congress to encourage the retention of foreign professional STEM workers in U.S. industry.
- Direct more exchange between government, industry, and academia in the A&D sector via inter-government personnel agreements, and provide incentives for stakeholders to participate in these activities.
- Develop programs that enable integration of emerging A&D fields into the knowledge base and competency of the existing workforce, including the skills necessary to complete end demonstrations of new technologies.