

Workforce

ISSUE: Our nation is not producing enough qualified workers to fill important jobs at aerospace companies and the shortfall will increase as retirements grow.

BACKGROUND

The major long-term threat to our preeminence in aerospace comes from our own demographics. The generation of talent that won the space race and the Cold War is reaching retirement age and America is not producing the number and quality of scientists, engineers and technicians necessary to replenish those ranks. The 2005 National Academies report, *Rising Above the Gathering Storm*, provided a definitive statement of the problem and the challenges that must be overcome to fix it. The numbers are stark: the average age of aerospace and defense workers rose to 45.7 percent in 2010. Among our largest companies, 57 percent of the workforce is 45 or older, meaning that within 10 years well more than half of their employees will become retirement eligible. Fifteen percent of the aerospace engineering workforce will be eligible for retirement in 2012. Among our largest companies, 29.43 percent of the engineering workforce will be eligible to retire in 2016.

America's schools and universities are not currently producing enough qualified graduates to replace these valuable workers and reversing that fact presents difficult challenges. Only five percent of American bachelor's degrees are in engineering, compared with 20 percent in Asia. Of the 70,000 engineers that the United States graduates each year, only about 40,000 are eligible to work in U.S. aerospace because of security restrictions. Plus, our industry must compete with all other U.S. industries for these graduates.

To compound the problem, 55 percent of all engineering doctoral degrees awarded by U.S. universities in 2009 went to foreign nationals. The dramatic reduction during the past 20 years in the number and range of new aerospace programs makes it even harder to attract and retain top talent. The educational pipeline for engineers is weak. Although fourth graders score well against international competition, our students fall near the bottom by 12th grade. And according to a recent study by the Education Department, 68.5 percent of middle school students were being taught by math teachers who had no major or certification in math.

For years, AIA companies have committed more than \$160 million annually to science, technology, engineering and mathematics education. Our companies are committed sponsors of national programs that engage students directly, including CyberPatriot, FIRST Robotics, MATHCOUNTS, and Project Lead the Way. Member companies also sponsor AIA's signature STEM program, and the Team America Rocketry Challenge, which has already engaged more than 50,000 students from across the nation and will celebrate its tenth anniversary season in 2011-2012.

We also work with other national organizations that are making a difference, including the Business-Higher Education Forum, Change the Equation and the National Governors Association, and have spearheaded formation of the Business and Industry STEM Education Coalition movement to address the workforce needs of our industries in common cause with many others.

AIA RECOMMENDATIONS

The consequences of failure to solve our nation's STEM workforce problem are clear. America's dominance in military aerospace will erode, and ultimately end, putting our national security at direct risk. American aerospace's powerful economic engine will sputter, harming our economy and lowering our quality of life. Therefore, overcoming the challenges to improve STEM education and workforce preparation is a top priority for our industry. Our companies have adopted four broad goals:

- Revitalize the U.S. aerospace and defense workforce;
- Motivate and inspire young Americans to study and pursue careers in STEM disciplines;
- Endorse, financially support and promote STEM education, workforce activities and policies that have proven successful; and
- Become a strong and reliable partner with government and other stakeholders at the national, state and local levels to achieve the right future technical workforce.