Statement of the U.S. Chamber of Commerce

ON: THE REAUTHORIZATION OF THE AMERICA COMPETES ACT

TO: THE HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY

BY: THOMAS J. DONOHUE

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The Chamber's mission is to advance human progress through an economic, political and social system based on individual freedom, incentive, initiative, opportunity and responsibility.

The U.S. Chamber of Commerce is the world's largest business federation, representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations.

More than 96 percent of the Chamber's members are small businesses with 100 or fewer employees, 70 percent of which have 10 or fewer employees. Yet, virtually all of the nation's largest companies are also active members. We are particularly cognizant of the problems of smaller businesses, as well as issues facing the business community at large.

Besides representing a cross-section of the American business community in terms of number of employees, the Chamber represents a wide management spectrum by type of business and location. Each major classification of American business -- manufacturing, retailing, services, construction, wholesaling, and finance – is represented. Also, the Chamber has substantial membership in all 50 states.

The Chamber's international reach is substantial as well. It believes that global interdependence provides an opportunity, not a threat. In addition to the U.S. Chamber of Commerce's 112 American Chambers of Commerce abroad, an increasing number of members are engaged in the export and import of both goods and services and have ongoing investment activities. The Chamber favors strengthened international competitiveness and opposes artificial U.S. and foreign barriers to international business.

Positions on national issues are developed by a cross-section of Chamber members serving on committees, subcommittees, and task forces. More than 1,000 business people participate in this process.

Statement On
"Reauthorization of the America COMPETES Act"
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By
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Thank you Chairman Gordon, Ranking Member Hall, and members of the Committee, for inviting me to present this statement on the importance of a robust research and development program and rigorous Science, Technology, Engineering, and Math (STEM) education programs that will put the U.S. on course to maintain our ability to compete successfully in the global economy.

I commend Chairman Gordon and the Committee for your foresight in 2005. By joining Senator Lamar Alexander and Senator Jeff Bingaman in urging the National Academies to examine the top ten actions that federal policymakers could take to enhance the science and technology enterprise, you brought this issue to the forefront of the national debate on American competitiveness.

Your efforts resulted in the 2005 groundbreaking report *Rising Above the Gathering Storm*. From this report, the American public learned that the Internet had not only brought the world closer together and created a global marketplace, but that "the Death of Distance" had created international competition for jobs.

In the early years of the information age, America led the way in global innovation. We believed that the education system we had and that the research and development investments we had made would keep us in the lead. But Mr. Chairman as you stated at the 50th anniversary of this committee in March of 2008, "I fear that our country has coasted on the investments we made 50 years ago."

We are faced today with four challenges, a leaky pipeline for future talent; a lack of a national strategy for research and development; an aging workforce; and a set of national policies that need to be updated in order for America to regain its competitive edge.

At the heart of the knowledge economy is the notion that we can gather, manipulate, and convey information to create things and solve problems. There was a time when America topped the list for many key indicators such as: performance of students on international math and science exams, postsecondary degree attainment in the U.S. workforce, and number of patents awarded to U.S. companies. Today's results on those same indicators reflect a nation that is falling behind. I have seen these numbers and the trends are moving in the wrong direction.

Our students' results on national and international exams are especially troubling because they give us a glimpse of how deficient in STEM our future workforce will be. While we know

that there are great schools, dedicated teachers, and high-achieving students across the country, we must recognize that our STEM performance has reached a plateau while other countries have improved dramatically.

High school dropout rates in the United States are approaching 30 percent for all students and nearly 50 percent for African-American and Hispanic students. Unfortunately, for those who make it to college, 35 percent will need remedial math in the first year, 23 percent for writing, and 20 percent for reading (NCES 2004).

On the 2009 Nation's Report Card, also known as the National Assessment of Education Progress (NAEP), U.S. 4th graders who took the math test showed no improvement over previous years. Even more troubling, our 8th graders demonstrated only nominal gains after showing steady increases for years.

In the 2006 Programme for International Student Assessment (PISA) comparison, American 15-year-old students ranked 21st out of 30 in science literacy among their peers from developed countries, and 25th out of 30 in math literacy.

The OECD's *Education at a Glance 2009* report, shows university-level graduation rates have virtually doubled from 18 percent in 1995 to 36 percent in 2007 in other OECD countries with available data. In contrast, the United States dropped from Rank 2 in 1995 to Rank 14 in 2007.

Our universities are preparing more graduate students from other nations than our own. Temporary visa holders accounted for 55% of U.S. science and engineering postdoctoral students in academic institutions in fall 2005.

The 2009 annual report by IFI Patent Intelligence, states that 51 percent of new patents issued by the U.S. Patent and Trademark Office were awarded to companies from outside the United States. While IBM was still number one with 4,186 patents, only four U.S. companies were in the top 10 down from five in 2008 and of the top 35, only 12 are U.S. companies.

I agree with President Obama that we must be makers of things and not just consumers of things. But in order for us to make things whether we are talking about nanotechnology, green energy, or life-saving medical devices, we must have people who possess the skills to do this work.

One challenge is that the American workforce is aging across all sectors. The Aerospace Industries Association reported in 2008 that Lockheed Martin conservatively estimates it will need to hire 140,000 people in the next ten years, but that figure could be as high as 190,000 with half of that number being STEM professionals.

The aging of the baby boomer generation means a growing percentage of the industry's workforce will be eligible to retire in coming years. Nearly six percent of the R&D workforce retired in 2008, up from two percent the year before. Retirement eligibility remained roughly the

same at 13 percent but is forecast to rise to more than 20 percent of the workforce by 2013. (Aviation Week)

The nature of work has evolved with the knowledge economy, and if America is to remain competitive, we must move from a model where only the elite STEM professionals are trained in these disciplines, to a model where all citizens have a common foundation in these subjects and are STEM-capable.

We must create a new definition of what it means to be a STEM professional. They are not just doctors, engineers, research scientists and information technology specialists. They are also electrical line workers, skilled technicians, and allied health professionals among others.

This means we must invest in an education system that will produce the workers we need, and invest in R & D so that our universities and private industry can continue to innovate.

The Carnegie Corporation of New York joined with the Institute for Advanced Study to create a STEM commission that released a report last year entitled the Opportunity Equation. The report emphasizes the importance of changing the way that math and science are taught. "Learning math and science from textbooks is not enough: students must also learn by struggling with real-world problems, theorizing possible answers, and testing solutions."

Through the Math and Science Partnerships at the Department of Education and the National Science Foundation, there is ample opportunity to improve teaching in math and science. We are encouraged that there are preliminary efforts to coordinate programs between the Department of Education and the National Science Foundation. Hopefully this will increase shared learning, provide a framework for evaluating programs, improve efforts to scale success throughout schools, districts and states, and reduce duplication of effort when possible.

The Institute for a Competitive Workforce (ICW) at the U.S. Chamber of Commerce is working with Carnegie and others to bring the business community together around these concepts. In November, ICW released the second report in its Leaders and Laggards series focused on education reform in America. We will encourage our members to support the policies and programs that will help to move the nation forward.

We must change the attitudes in this country about STEM and create a new paradigm where young people and adults understand the connection between STEM learning, career opportunities, and improving our society.

We applaud President Obama for advancing the development a national STEM agenda. The President and Secretary Duncan should be commended on their efforts to improve STEM learning by making it a priority in the Race to the Top competitive grant applications and through the Investing in Innovation Fund.

In November of 2009, President Obama launched the "Educate to Innovate" campaign which aims to increase STEM literacy so that all students can learn deeply and think critically in science, math, engineering, and technology; move American students from the middle of the

pack to top in the next decade; and expand STEM education and career opportunities for underrepresented groups, including women and girls.

The business community firmly supports these goals and has pledged to engage its employees in state and local activities that support teaching and learning in STEM subjects. Several corporations have aligned their corporate philanthropy programs with these goals as a way to scale successful programs quickly. ExxonMobil supports the UTeach program and the National Math and Science Initiative. IBM s transition to teaching program directly addresses the STEM teacher shortage. The Knoxville Chamber of Commerce has launched the Volunteers 4 STEM initiative that will pair 500 STEM teachers with professionals in relevant fields who can provide them with advice and support.

The America COMPETES Act of 2007 laid the foundation for a revitalization of a national STEM agenda. In conjunction with the American Recovery and Reinvestment Act, the COMPETES Act addresses the concern about public investments in STEM education, workforce development, and research.

In relation to federal research and development much of the American COMPETES Act has yet to be implemented fully which makes it difficult to truly assess its impact to date. However, progress has been made and the incremental impacts have largely been positive. The creation of ARPA-E represents a bold step towards bypassing some of the traditional "stove-piping" that frequently hinders the efficiency and expediency of research and development at DOE and its National Laboratories. While implementation was initially slow, the $400 million cash infusion from the Stimulus Bill has already led to significant movement. The projects that this program supports, ranging from advanced batteries to electricity generation, are projects that would probably not otherwise receive federal funding because they are simply too risky. As the Congress recognized in creating ARPA-E, it is vital that we keep an eye well beyond the horizon and take chances on these high risk—high reward projects that might just change the entire landscape of how we produce and use our energy resources.

While several of the education programs that were authorized through America COMPETES have not been running long enough to evaluate how well they are working, we believe that the focus on improving the number and quality of STEM teachers; increasing support and access for STEM students at the postsecondary level; attracting underrepresented groups to STEM courses and careers; supporting basic research; and establishing programs that will help create new forms of energy and commercialize new innovations moves the right direction.

We encourage the committee to focus on evaluation as a priority when considering funding for new programs so that we can better understand where resources will do the most good. We also urge the committee to continue to be vigilant about duplication of funding and efforts among the Department of Education, the National Science Foundation, NASA, the Department of Energy and other federal agencies. Coordination should be encouraged whenever possible to maximize the impact of government resources for individuals and for communities.

When possible, the committee should look at incentives that lead to public-private partnerships, the commercialization of new technologies, and regional STEM initiatives. These innovation ecosystems drive job creation, economic development, and regional stability that will contribute to regaining America's lead in the global innovation market.

There are thousands of civilians and military personnel who have extensive STEM education and training. Unfortunately, the certifications that they have often do not translate from the military to the civilian world or vice versa. The lack of reciprocity in certifications and licensure creates two problems, it discourages people from entering or leaving the military due to the need for retraining, and it wastes time and taxpayer dollars when people must be trained again to do something that they have already been certified to do. Inova Hospital in Virginia has a created a joint program with the Army Reserve so that together they can recruit, train, credential, license and certify qualified Soldier candidates who are entering the health care field. I encourage the committee to find ways to replicate and scale programs like this one. We must find a way to make skills more transferable if we are going to expand and strengthen our workforce.

While I realize it's not necessarily within the scope of the COMPETES Act or this Committee's jurisdiction, but given the focus of this hearing on innovation and American competitiveness, I would be remiss if I didn't note perhaps the single most important policy the federal government has for helping the private sector develop the products and ideas that will continue to keep the U.S. economy competitive for generations to come. The research and development (R&D) tax credit encourages businesses of all sizes to undertake cutting-edge research projects in the United States. Research and development is the very lifeblood of our knowledge economy. At a time when the American economy is weak, research and development across industry sectors makes it possible to create and maintain good, high-paying jobs at home and sharpens the ability of companies to compete in the global marketplace.

The Chamber has long supported the enactment of a permanent and stronger R&D tax credit. The Chamber believes the R&D credit spurs economic growth and encourages investments we need to make in important areas of the economy such as renewable energy and energy efficiency technologies, health care, biotechnology, manufacturing processes, and information and communications technologies. Making this credit permanent would bring certainty which would encourage businesses to make long-term, high risk investments in the United States.

We commend the committee for its work on this issue and its dedication to ensuring that the America COMPETES Act achieves its purpose. Global competitiveness is a top priority for the business community and we will not be able to compete and win without strong national policies that support innovation.