

**Legislative Bulletin.....May 12, 2010**

**Contents:**

**H.R. 5116**—America COMPETES Reauthorization Act of 2010

---

---

***Conservative Concerns to H.R. 5116***

- ***Overspending:*** The legislation authorizes \$85.6 billion, a 31% increase above the FY 2010 baseline budget. This does not take into account the billions more spent under the “stimulus.” Conservatives have expressed concern that this substantial increase is unwise at a time when we are running \$1.5 trillion annual deficits. Congress should show fiscal restraint at this time and not simply throw money at a problem.
- ***Bloated Bureaucracy:*** The 2007 COMPETES Act enacted approximately forty new programs; H.R. 5116 creates at least another seven. It can be argued that these programs duplicate the objective of various other federal programs to make the U.S. more globally competitive in STEM education results.
- ***Costly Clusters:*** H.R. 5016 contains a loosely defined regional innovation cluster program to facilitate market development through marketing and brand-building. This could amount to a billion dollars worth of taxpayer subsidized advertising and business development for any sort of industry “cluster”— Wall Street, Hollywood, summer and winter vacation destinations, Silicon Valley, even oil and gas clusters.
- ***Further Federal Involvement in Education:*** Some conservatives may argue the COMPETES Act is overreaching. Washington D.C. should reduce its involvement in issues involving primary and secondary education. In the last half-century federal involvement in education has dramatically increased. Meanwhile our academic standing has declined in comparison to many of our international rivals.

***For more details on these conservative concerns on H.R. 5116, see below.***

---

---

**H.R. 5116—America COMPETES Reauthorization Act  
(Gordon, D-TN)**

**Order of Business:** The bill is scheduled to be considered on Wednesday, May 12, 2010 under an *expected* structured rule that will provide for one hour of debate equally divided and controlled by the majority and minority, waive all points of order against consideration of the bill except

those arising under clause 9 or 10 of rule XXI (earmarks & “pay-go”), provide for consideration of *several* amendments, and provide one motion to recommit with or without instructions.

**Summary:** Totaling \$85.6 billion in authorizations, H.R. 5116 would reauthorize the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act or the America COMPETES Act originally signed into law in 2007. Final passage of the America COMPETES Act had passed the House by a vote of [367 – 57](#) and the Senate by unanimous consent.

The original program was intended to increase federal involvement in science and engineering research, and in science, technology, engineering, and mathematics (STEM) education from kindergarten to graduate school and postdoctoral education. According to CRS, “the act is designed to focus on two perceived concerns believed to influence future U.S. competitiveness: inadequate research and development funding to generate sufficient technological progress, and inadequate numbers of American students proficient in science and mathematics or interested in science and engineering careers relative to international competitors.”

Primarily, the COMPETES Act involves funding and instituting a number of programs for research and development activities at the National Science Foundation (NSF), National Institute of Standards and Technology (NIST), and the Energy Department’s Office of Science. ***H.R. 5116 would extend the authorization length of the COMPETES Act from three years to five. Additionally, the bill would provide a 31% increase in authorization levels above the FY 2010 baseline budget for the original Act. The bill would also enact at least seven new programs.*** Some of the highlights of H.R. 5116 include the following:

#### ***TITLE I - SCIENCE AND TECHNOLOGY POLICY***

The bill would expand upon the Nanotechnology Amendments Act to encourage and support interdisciplinary research and development in nanotechnology and propose research in areas of “national importance.” The National Nanotechnology Coordination Office will be required to develop and maintain a database accessible by the public of projects funded under the Environmental, Health, and Safety, the Education and Societal Dimensions, and the Nanomanufacturing program component.

The bill also requires the Director of the National Science Foundation to make grants available for creating partnerships with businesses engaged in the production of nanoscale products with the purpose to recruit and help prepare secondary school students to pursue postsecondary level courses of instruction in nanotechnology. The bill also requires the Director to introduce to efforts to promote nanoscale science into undergraduate science and engineering education through a variety of interdisciplinary approaches including the development of courses of instruction or modules to existing courses, faculty professional development, and the acquisition of equipment and instrumentation suitable for undergraduate education and research in nanotechnology.

The bill requires the National Science and Technology Council to create a strategic plan to foster the transfer of research and development results into new technologies and applications for the benefit of society, including through cooperation and collaborations with networking and information technology research, development, and technology transition initiatives supported by the States, encourage mechanisms for interdisciplinary research and development in networking and information technology with industry, federal laboratories, and international organizations.

The bill also requires the Director to convene a task force to explore mechanisms for carrying out collaborative research and development activities for cyber-physical systems comprised of individuals from institutions of higher education and from industry with knowledge and expertise in cyber-physical systems.

The bill establishes a National Coordination Office to facilitate these programs to be a primary point of contact on Federal networking and information technology activities for government organizations, academia, industry, professional societies, State computing and networking technology programs, interested citizen groups, and others to exchange technical and programmatic information.

Additionally, this section requires the Director of the Office of Science and Technology Policy to develop a uniform policy for all federal science agencies to create a program of workshops that educate program officers, members of grant review panels, institution of higher education STEM department chairs, and other federally funded researchers about methods that minimize the effects of gender bias in evaluation of Federal research grants and in the related academic advancement of actual and potential recipients of these grants, including hiring, tenure, promotion, and selection for any honor based in part on the recipient's research record.

Finally, this section contains a *Fulfilling the Potential of Women in Academic Science provision that includes support for workshops to enhance gender equity.* Some conservatives have expressed concern this provision is jamming in political correctness measure into science and math education efforts. As the [American Enterprise Institute's](#) Rick Moran notes: this is the “same nonsense liberal academics have tried before and it has its roots in the notion that there is no such thing as physics or chemistry, but rather there exists ‘Women's physics’ or ‘African American chemistry.’”

## ***TITLE II - NATIONAL SCIENCE FOUNDATION***

The total authorizations for the programs conducted by the NSF are \$44.98 billion over the FY 2010 – 2015 period. This is an increase of over \$9.6 billion (28 percent) above the FY 2010 baseline budget. H.R. 5116 expands upon a number of programs with an emphasis on undergraduate and graduate education.

The bill creates a National Center for Science and Engineering Statistics to be a clearinghouse for the collection, interpretation, analysis, and dissemination of objective data on science, engineering, technology, and research and development. The bill requires this center to use at least 5 percent of its research budget to fund high-risk, high-reward basic research proposals. The activities are defined as those that have the potential to radically change our understanding of an important existing scientific or engineering concept, or leading to the creation of a new paradigm or field of science or engineering, and that is characterized by its challenge to current understanding or its pathway to new frontiers.

The bill authorizes the Director to conduct several merit-reviewed, competitive grants to institutions of higher education to establish partnerships that promote innovation and increase the economic and social impact of research by developing tools and resources to connect new scientific discoveries to practical uses.

The bill establishes a new pilot program to award cash prizes ranging from \$1 million to \$3 million for any area of research the center supports. The NSF Director recently testified that the NSF is not the appropriate agency for this type of prize competition.

The bill changes the federal matching requirements for qualifies of the Robert Noyce Teacher Scholarship program from 50% to 30%.

The bill identifies institutions of higher education chartered to serve students with disabilities (i.e. Gallaudet) and grants them equal consideration as institutions serving historically minority populations to ensure equal access to STEM bridge programs and also research partnerships with major research universities.

Finally, the bill requires the, Director of NSF and the Secretary of Education to collaborate on “identifying, prioritizing, and developing strategies to address grand challenges in R&D on the teaching and learning of STEM at the pre-K-12 level.”

### ***TITLE III - STEM EDUCATION***

This title of H.R. 5116 establishes a committee under the National Science and Technology Council with the responsibility to coordinate federal programs and activities in support of STEM. Additionally, the bill requires the President to establish an advisory committee on STEM activities.

The bill requires the Secretary of Energy to develop and coordinate educational activities to contribute to improving STEM education at all levels. The bill allows the Secretary to provide grants to institutions of higher education to implement or expand energy systems science, and engineering education, and to provide support for master's and doctoral level students pursuing courses of study and research in energy systems sciences and engineering.

Finally, this section authorizes higher education curriculum development and graduate training in advanced energy and green building technologies. The bill authorizes total of \$176 million over five years to carry out this title of H.R. 5116.

### ***TITLE IV - NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY***

According to CBO, H.R. 5116 would authorize the appropriation of \$5.38 billion over the 2011-2015 period for programs administered by the National Institute of Standards and Technology. This is an increase of over \$1.1 billion (26 percent) above the current baseline for FY 2010.

The bill restructures the NIST laboratory system by reducing the current labs from ten to the following six; the Physical Measurement Laboratory, the Information Technology Laboratory, the Engineering Laboratory, the Material Measurement Laboratory, Center for Nanoscale Science and Technology, and the NIST Center for Neutron Research.

The bill makes various changes to the Manufacturing Extension Partnership (MEP) program, including increasing the federal cost share of up to 50% to address the funding issues resulting from a lack of state revenue and the difficulty and appropriateness of a fee-based service for small and medium-sized manufacturers. Additionally, the MEP will focus to help reduce small and

medium-sized manufacturers energy usage and environmental waste and to accelerate the domestic commercialization of new product technologies.

The bill creates a new Bioscience Research Program at NIST to support the development of standard reference materials and measurements to advance biologic drug research and development, molecular diagnostics, medical imaging technology, and personalized medicine.

The bill sets cyber security standards and guidelines developed by NIST for industry and the public. The legislation clarifies the guidelines would not be mandatory.

#### ***TITLE V - INNOVATION***

This title creates a new Office of Innovation and Entrepreneurship to foster innovation and the commercialization of new technologies, products, processes, and services and establishes an Advisory Council on Innovation and Entrepreneurship to provide advice to the Secretary.

The bill creates a \$250 million dollar new loan guarantee program for small- and medium-size manufacturers to “re-equip, expand, or establish manufacturing facilities.” A loan guarantee can equal up to 80 percent of the obligation. This loan program is arguably redundant with several existing loan guarantee programs (SBA, USDA) which already provide funding to manufacturers.

The bill authorizes “such sums” to require the Secretary to create a new regional innovation program to support the development of regional innovation strategies, including regional innovation clusters. The program authorizes the Secretary to award grants to states, tribes, local governments, nonprofit organizations, and institutions of higher education, public-private partnerships, or economic development organizations for activities relating to the formation and development of regional innovation clusters.

The term “regional innovation cluster” means a geographically bounded network of similar industry sectors engaged in, or with, a particular industry sector.

#### ***TITLE VI - DEPARTMENT OF ENERGY OFFICE OF SCIENCE***

According to CBO, H.R. 5116 would authorize the appropriation of about \$35 billion over the 2011-2015 period for the Department of Energy to carry out various activities to support scientific research and education.

The bill requires the Director of the Office of Science to create a new program in basic energy sciences, including materials sciences and engineering, chemical sciences, biosciences, and geosciences, for the purpose of providing the scientific foundations for new energy technologies. The focus of these programs in accordance with the bill are to be basic energy sciences, biological and environmental research, advanced scientific computing research, fusion energy, high energy physics, nuclear physics program, and a science laboratories infrastructure program.

The bill reauthorizes the DOE Advanced Research Projects Agency program aimed at supporting high-risk, high-reward research at \$3.1 billion over five years. Some conservatives have expressed concern this program duplicates many R&D programs that could be supported by the private sector without taxpayer assistance. Also, some believe the program acts like a government-run venture capital-enhancer which places taxpayers at enormous risk and usually on the short end of investments.

The section of the bill directs the Secretary to create Energy Innovation Hubs to conduct and support research, development, demonstration and commercial application of advanced energy technologies. A consortium must meet at least two qualifying requirements and reach a binding agreement documenting the partnership agreement, measures to ensure cost-effective implementation, a proposed budget, conflict of interest procedures, an accounting structure, and an external advisory committee. The bill authorizes \$650 million over five years for the Hubs program.

#### ***TITLE VII – MISCELLANEOUS***

The provisions under this title were added by Republican members at committee mark-up and include a provision that provides special consideration at institutions of higher education that serve individuals with disabilities, including disabled veterans. In addition, the bill requires institution of higher education to provide special preference to applications for veterans and service members for any scholarships or fellowships awarded under H.R. 5116.

**Background Information:** The [American COMPETES Act of 2007](#) was signed into law by former President George W. Bush in August of 2007 and is set to expire on September 30, 2010. The America COMPETES Act organizes programs recommended by the [National Academies](#) and the [Council on Competitiveness](#) to promote education in science, technology, engineering, and mathematics from elementary to graduate school and postdoctoral education. The program increases research investment in certain science and math related areas.

Although the COMPETES Act had bipartisan support when it passed Congress in 2007, [several programs](#) already existed to promote STEM education and advancement, many of which were not effective. For FY 2004, 13 agencies had 207 education programs to promote essentially the same goals as the America COMPETES Act. Studies conducted for the programs showed that the programs had multiple goals and strived to accomplish multiple advancements. In addition, the Academic Competitiveness Counsel (ACC) conducted a study to determine the effectiveness of the STEM programs. The [report](#) stated that of 115 total evaluations, 10 impact evaluations were scientifically rigorous. Four concluded that the educational activity evaluated had a meaningful positive impact. Based on the 115 evaluations, the ACC's review revealed that, despite decades of significant federal investment in science and math education, there is a general dearth of evidence of effective practices and activities in STEM education. The 10 evaluations that worked would need further improvements before any significant advancement were made by the STEM programs.

**Conservative Concerns:** Some conservatives have expressed concern that the reauthorization of the COMPETES Act exemplifies the priorities of House Democrats - to quickly move budget busting bills in a partisan manner. Democrats bring to the floor legislation that throws money at ineffective programs and hastily enacts new programs that increase the size and scope of the federal government.

Some conservatives have expressed concern over the cost and dramatic expansion of existing programs authorized compared to the original COMPETES Act. The bill authorizes \$85.6 billion over five years, a 31% increase above the FY 2010 baseline for the program. Conservatives have expressed concern that this substantial increase is unwise to at a time when we are running \$1.5 trillion annual deficits. Additionally, the 2007 COMPETES Act enacted approximately forty new programs; H.R. 5116 enacts at least another seven. It can be argued that these programs duplicate

the objective of various other federal programs to make the U.S. more globally competitive in STEM education results.

Some conservative have expressed concern that H.R. 5116 dramatically expands the federal scope of involvement in education. H.R. 5116 establishes STEM education goals and objectives at the Department of Energy. Some conservatives would argue that the Department of Education has done very little to improve the quality of education and this bill now authorizes a whole new bureaucracy to get involved in this issue.

Some conservatives have also expressed concern over the establishment of Regional Innovation Clusters under Title V because it allows federal funding for activities well beyond research and development (i.e. advertising) with language so broad that nearly any type of industry sector could be awarded a “cluster” grant.

According to the [Brookings Institution](#) which originally conceived this program “clusters” can be organized around traded goods or services anywhere along the supply chain, from final goods and services to intermediate goods, to distribution chains, and research and development centers. In addition, they can develop from a large variety of reasons, ranging from proximity to natural resources to concentrations of ethnic minorities. Some conservatives have expressed concern these definitions are so broad that a cluster could essentially amount to anything, and additionally, the bill allows ‘clusters’ to use taxpayer funds for marketing activities. Most conservatives believe that the thought of publically funding advertisements for firms on Wall Street, Hollywood, Silicon Valley, vacation destinations, colleges, and countless other businesses based in a centrally located area is an extreme waste of taxpayer funding – especially CBO scores the program at \$1 billion over five years.

**Committee Action:** On April 22, 2010, the bill was introduced and referred to the Committee on Science and Technology and Committee on Education and Labor. On May 7, 2010, the Committee on Science and Technology ordered the bill reported, as amended, by a vote of [29-8](#).

**Administration Position:** In a Statement of Administration Policy (SAP), the White House announced it “supports House passage of H.R. 5116, as reported by the House Science and Technology Committee.”

**Cost to Taxpayers:** According to CBO, H.R. 5116 authorizes \$85.6 billion over the FY 2010 - FY 2015 period.

**Does the Bill Expand the Size and Scope of the Federal Government?** Yes, the bill establishes several new programs at the National Science Foundation, National Institute of Science and Technology, and Department of Energy. The bill authorizes a total of \$85.6 billion over five years.

**Does the Bill Contain Any New State-Government, Local-Government, or Private-Sector Mandates?** No.

**Does the Bill Contain Any Federal Encroachment into State or Local Authority in Potential Violation of the 10<sup>th</sup> Amendment?** Yes, the bill reauthorizes several existing spending programs that affect the role of local education agencies to provide primary and secondary education programs. For example, one program redistributes federal funds for the purpose of facility modernization. Another program exists to assist with the acquisition of school supplies.

Additionally, some of the programs authorized under H.R. 5116 could have an impact on the curricula development at local school districts.

**Does the Bill Comply with House Rules Regarding Earmarks/Limited Tax Benefits/Limited Tariff Benefits?** According to Committee Report 111-478, H.R. 5116 does not contain any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9 of Rule XXI.

**Constitutional Authority:** Committee Report 111- 478 cites Article I, section 8, of the Constitution of the United States grants Congress the authority to enact H.R. 5116.

**RSC Staff Contact:** Bruce F. Miller, [bruce.miller@mail.house.gov](mailto:bruce.miller@mail.house.gov), (202)-226-9720.

---

---