America COMPETES Act and the FY2010 Budget

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April 13, 2009

Congressional Research Service
7-5700
www.crs.gov
R40519

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

The America COMPETES Act (P.L. 110-69) became law on August 9, 2007. The act responds to concerns that the United States may not be able to compete economically with other nations in the future due to insufficient investment today in science and technology research and science, technology, engineering, and mathematics (STEM) education and workforce development. The America COMPETES Act is intended to increase the nation's investment in science and engineering research and in STEM education from kindergarten to graduate school and postdoctoral education. It 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.

The act authorizes funding increases for the National Science Foundation (NSF), National Institute of Standards and Technology (NIST) laboratories, and the Department of Energy (DOE) Office of Science over FY2008-FY2010. If maintained, the increases would double the budgets of those entities over seven years. The act establishes the Advanced Research Projects Agency – Energy (ARPA-E) within DOE, designed to support transformational energy technology research projects with the goal of enhancing U.S. economic and energy security. A new program, Discovery Science and Engineering Innovation Institutes, would establish multidisciplinary institutes at DOE National Laboratories to "apply fundamental science and engineering discoveries to technological innovations," according to the act.

Among the act's education activities, many of which are focused on high-need school districts, are programs to recruit new K-12 STEM teachers, enhance existing STEM teacher skills, and provide more STEM education opportunities for students. The new Department of Education (ED) Teachers for a Competitive Tomorrow and existing NSF Robert Noyce Teacher Scholarship programs provide opportunities, through institutional grants, for students pursuing STEM degrees and STEM professionals to gain teaching skills and teacher certification, and for current STEM teachers to enhance their teaching skills and understanding of STEM content. The act also authorizes a new program at NSF that would provide grants to create or improve professional science master's degree (PSM) programs that emphasize practical training and preparation for the workforce in high-need fields.

The America COMPETES Act is an authorization act. New programs established by the act will not be initiated and authorized increases in appropriations for existing programs will not occur unless funded through subsequent appropriation acts. The 110th Congress provided FY2008 appropriations to establish ED's Teachers for a Competitive Tomorrow program, and NIST's Technology Improvement Program (TIP), which replaced the existing Advanced Technology Program. The 111th Congress provided FY2009 appropriations to establish DOE's ARPA-E and NSF's PSM program. Although some America COMPETES Act research and STEM education programs received appropriations at authorized levels in FY2009, others did not.

As Congress deliberates the FY2010 budget, an issue for Congress is what level, if any, will it provide America COMPETES Act programs an appropriation, and whether or not the President's budget request will propose to do so. Several programs newly authorized in the act have never been appropriated funds. An issue for these programs is whether or not they will receive the funding necessary to establish them. The America COMPETES Act provides authorization levels only through FY2010.

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Congress passed the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (P.L. 110-69), known as the America COMPETES Act, in August 2007. In response to concerns about U.S. competitiveness, the act provides for investments in science and engineering research and science, technology, engineering, and mathematics (STEM) education in the present so that the United States can enhance its potential to be more competitive with other nations in the future.

The purpose of this report is to provide information on the President's FY2010 budget request and the status of Congressional budget and appropriation activities regarding that budget relative to the America COMPETES Act. For more general information on the America COMPETES Act, see CRS Report RL34328, *America COMPETES Act: Programs, Funding, and Selected Issues*, by Deborah D. Stine, and for information on the FY2009 budget, see CRS Report RL34396, *The America COMPETES Act and the FY2009 Budget*, by Deborah D. Stine.

Overview of the America COMPETES Act

The America COMPETES Act was a response to concerns that the United States may not be able to compete economically with other nations in the future. Many believe that investments in science and engineering research; science, technology, engineering, and mathematics (STEM) education; and STEM workforce development will enhance U.S. competitiveness. As a result, the act mainly addresses concerns about insufficient investment in those areas.

The America COMPETES Act authorizes an increase in federal science and engineering research funding and support for kindergarten through postdoctoral education. The act authorizes funding increases through FY2010 for the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST) laboratories, and the Department of Energy (DOE) Office of Science. The act also authorizes within DOE the establishment of the Advanced Research Projects Agency-Energy (ARPA-E)[1] and Discovery Science and Engineering Innovation Institutes. In addition, the act authorizes new STEM education programs at DOE, the Department of Education (ED), and NSF, and increases the authorization level for several existing NSF STEM education programs.

The America COMPETES Act is an authorization act. New programs established by the act will not be initiated unless funded through subsequent federal appropriations. Similarly, increases in the authorization level of existing programs may or may not translate into increased federal funding.

Agency Programs and the America COMPETES Act

The following section discusses some of the America COMPETES Act programs in relation to the President's FY2010 budget and the FY2010 authorization levels. In February 2009, the Obama Administration released its budget outline.[2] This outline along with agency-specific fact sheets

[1] For more information on ARPA-E, see CRS Report RL34497, *Advanced Research Projects Agency - Energy (ARPA-E): Background, Status, and Selected Issues for Congress*, by Deborah D. Stine.

[2] U.S. Office of Management and Budget, *A New Era of Responsibility: Renewing America's Promise*, at http://www.whitehouse.gov/omb/assets/fy2010_new_era/A_New_Era_of_Responsibility2.pdf.

provides an overview of the FY2010 budget.[3] In most cases, budgets for programs are not yet provided; however, the budget outline may provide an indication of the Administration's budgetary priorities. Full details will probably not be known until the release of the full budget reportedly expected in May 2009.[4]

According to the budget outline, the Obama Administration plans to propose action on research and STEM education activities. The American Recovery and Reinvestment Act (ARRA or "Recovery Act") signed into law by President Obama on February 17, 2009, provided support for a number of America COMPETES Act programs as a supplemental to the FY2009 appropriation. The outline takes those appropriations into account when discussing its plans for the FY2010 research activities in the budget outline, stating its budget will:

> **Invest in the Sciences.** Investments in science and technology foster economic growth; create millions of high-tech, high-wage jobs that allow American workers to lead the global economy; improve the quality of life for all Americans; and strengthen our national security. The Recovery Act included a $5 billion investment in key science programs, which is by itself an almost 50-percent increase for these programs over 2008 and represents a significant down-payment toward the President's plan to double the funding for these agencies over 10 years. Under the President's doubling plan, the Budget provides a 16-percent increase over 2008 funding levels for the National Science Foundation and similarly large increases for the Department of Energy's Office of Science and the Department of Commerce's National Institute of Standards and Technology. The Budget also increases support for promising, but exploratory and high-risk research proposals that could fundamentally improve our understanding of climate, revolutionize fields of science, and lead to radically new technologies.[5]

and about STEM education:

> **Triple the Number of Graduate Fellowships in Science to Help Spur the Next Generation of Home-Grown Scientific Innovation**. The industries of tomorrow will begin with ideas dreamed up in the classrooms and laboratories of today. Without investments in human capital today, we will not be able to reap the benefits of scientific innovation. That is why the Administration provided in the Recovery Act funds to be used as a down-payment toward the goal of tripling the number of graduate fellows in science.[6]

The remainder of this section provides an agency specific overview and compares the budget outline to America COMPETES Act FY2010 authorization levels. **Table 1** (located at the end of this report) provides FY2008 and FY2009 appropriations and FY2010 authorization levels for America COMPETES Act programs.

[3] The Obama Administration's FY2010 budget documents at http://www.whitehouse.gov/omb/budget/.

[4] "White House officials have been saying that Obama's full, detailed budget will be sent to Capitol Hill in late April or early May - with early May now being frequently mentioned as the likely timeline by many folks on the Hill." Chuck Conlon and Kerry Young, "Possible Lag for Appropriations?," *Congressional Quarterly*, April 13, 2009.

[5] U.S. Office of Management and Budget, *A New Era of Responsibility: Renewing America's Promise*, at http://www.whitehouse.gov/omb/assets/fy2010_new_era/A_New_Era_of_Responsibility2.pdf.

[6] Ibid.

National Institute of Standards and Technology (NIST)

The budget outline indicates the following for NIST in FY2010:

> **Invests in America's Competitiveness.** The Budget supports the Nation's technology infrastructure by funding advanced measurement and standards development at the National Institute of Standards and Technology (NIST). These activities will build upon the Recovery Act, which includes $240 million for NIST's scientific research activities and lab equipment and $180 million for construction of NIST facilities. The 2010 Budget also provides $70 million for the Technology Innovation Program, which invests in high-impact research that will address critical national needs and advance innovation. The Hollings Manufacturing Extension Partnership will receive $125 million to enhance the competitiveness of the Nation's manufacturers by facilitating the adoption of more efficient manufacturing processes. [7]

The America COMPETES Act authorizes $548.8 million for NIST's Scientific and Technical Research Services (STRS) and $49.7 million for its construction and maintenance activities in FY2010. Although both programs are noted above, no specific FY2010 budget levels are yet proposed by the Obama Administration. The act authorizes $140.5 million for the Technology Innovation Program (TIP), while the Obama Administration indicates it will propose approximately half that level - $70 million. The Manufacturing Extension Program (MEP), authorized at $131.8 million is proposed for $125 million.

Department of Energy (DOE)

At DOE, the Obama Administration indicates that the proposed budget "Provides significant increases in funding for basic research and world-leading scientific user facilities to support transformational discoveries and accelerate solutions to our Nation's most pressing problems – including the development of clean energy."[8] Specifically, the DOE budget outline states the following:

> **Invests in the Sciences.** As part of the President's plan to double Federal investment in the basic sciences, the 2010 Budget, along with the $1.6 billion provided in the Recovery Act for the Department of Energy's basic science programs, provides substantially increased support for the Office of Science. The Budget increases funding for improving our understanding of climate science and continues the United States' commitment to international science and energy experiments. The Budget also expands graduate fellowship programs that will train students in critical energy-related fields.[9]

As yet, no specific budgets are proposed for DOE programs supporting these goals. The America COMPETES Act authorized funding levels for some possibly related programs. These include $5,814 million for the DOE Office of Science, and $20 million for the Protecting America's Competitive Edge (PACE) Graduate Fellowship Program. It is possible ARPA-E, authorized in the America COMPETES Act and established through FY2009 appropriations, might be included

[7] U.S. Office of Management and Budget, *Department of Commerce*, fact sheet at http://www.whitehouse.gov/omb/assets/fy2010_new_era/Department_of_Commerce.pdf.

[8] U.S. Office of Management and Budget, *Department of Energy*, fact sheet at http://www.whitehouse.gov/omb/assets/fy2010_new_era/Department_of_Energy.pdf.

[9] Ibid.

as a high-risk research activity as noted in the general outline, but it is not provided in the DOE fact sheet.[10] The FY2010 authorization level for ARPA-E is such sums as are necessary for future years.

Department of Education (ED)

Neither the budget outline nor the accompanying ED fact sheet discuss STEM education at ED. The ED fact sheet does state that the Administration "Supports high Standards and Rigorous Assessments Aligned with the demands of the Global Economy."[11] As part of its overall principles, the outline proposes preparing and rewarding teachers, funding education research, and evaluating federal education programs. Some America COMPETES Act. STEM education programs support similar principles. It is not clear, which, if any, America COMPETES Act programs might relate to these general initiatives, however, given the limited information available to date.

National Science Foundation (NSF)

The budget outline identifies the following priorities for NSF's budget:

- Provides $7 billion for the National Science Foundation, a 16-percent increase over the 2008 level, as part of the President's Plan for Science and Innovation.
- Increases support for graduate research fellowships and for early-career researchers.
- Increases support for the education of technicians in the high-technology fields that drive the Nation's economy.
- Encourages more novel high-risk, high-reward research proposals.[12]

NSF's FY2010 authorization level is $8.1 billion compared to $7.0 billion requested in the Obama Administration's budget outline. No specific funding levels are identified for NSF programs mentioned in the budget outline. The America COMPETES Act FY2010 authorized levels for the NSF programs mentioned above are $203.8 million for the Faculty Early Career Development (CAREER) program, $64.0 million for the Advanced Technological Education (ATE) program, and $119.0 million for the Graduate Research Fellowship (GRF) program.

Congressional Activities

Following the Obama Administration's release of its FY2010 budget outline, Congress developed a budget resolution that sets the budgetary spending amounts for each functional category of the

[10] For more information on ARPA-E, see CRS Report RL34497, *Advanced Research Projects Agency - Energy (ARPA-E): Background, Status, and Selected Issues for Congress*, by Deborah D. Stine.

[11] U.S. Office of Management and Budget, *Department of Education*, fact sheet at http://www.whitehouse.gov/omb/assets/fy2010_new_era/Department_of_Eduction.pdf.

[12] U.S. Office of Management and Budget, *National Science Foundation*, fact sheet at http://www.whitehouse.gov/omb/assets/fy2010_new_era/National_Science_Foundation1.pdf.

budget.[13] The budget resolution does not allocate funds among specific programs or accounts. Major program assumptions underlying the functional amounts, however, are often discussed in the reports accompanying the resolution. These program assumptions and budget functions are not binding, although congressional action has been taken.[14]

In April 2009, the House and Senate of the 111th Congress each approved a Budget Resolution for FY2010. The Senate resolution (S.Con.Res. 13) does not mention the America COMPETES Act. The House resolution (H.Con.Res. 85) states the following:

> SEC. 603. SENSE OF THE HOUSE ON PROMOTING AMERICAN INNOVATION AND ECONOMIC COMPETITIVENESS.
>
> It is the sense of the House that—
>
> (1) the House should provide sufficient investments to enable our Nation to continue to be the world leader in education, innovation, and economic growth as envisioned in the goals of the America COMPETES Act;
>
> (2) this resolution builds on significant funding provided in the American Recovery and Reinvestment Act for scientific research and education in Function 250 (General Science, Space and Technology), Function 270 (Energy), Function 300 (Natural Resources and Environment), Function 500 (Education, Training, Employment, and Social Services), and Function 550 (Health);
>
> (3) the House also should pursue policies designed to ensure that American students, teachers, businesses, and workers are prepared to continue leading the world in innovation, research, and technology well into the future; and
>
> (4) this resolution recognizes the importance of the extension of investments and tax policies that promote research and development and encourage innovation and future technologies that will ensure American economic competitiveness.

The next step is for a conference committee to negotiate the terms of a possible conference report, which provides the amount of discretionary budget for FY2010. The conference committee may also decide whether or not to include Section 603 of the House bill.

Following the budget resolution, the House Committee on Appropriations and the Senate Committee on Appropriations subdivides the budget allocations among the appropriations committees' 12 subcommittees.[15] The committee's jurisdictions[16] for the federal agencies that have programs authorized by the America COMPETES Act programs are divided among at least three Appropriations subcommittees:

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[13] CRS Report 97-684, *The Congressional Appropriations Process: An Introduction*, by Sandy Streeter.

[14] CRS Report 98-721, *Introduction to the Federal Budget Process*, by Robert Keith. This process is set forth in the Congressional Budget Act, Titles I-IX of the Congressional Budget and Impoundment Control Act of 1974 (P.L. 93-344; July 12, 1974; 88 Stat. 297-339), as amended and codified at 2 U.S.C. 621-692.

[15] These allocations for FY2009 are available at http://www.cbo.gov/budget/approps/approps.pdf. For additional information on the appropriations process, see CRS Report 97-684, *The Congressional Appropriations Process: An Introduction*, by Sandy Streeter.

[16] It is important to note that the House and Senate Parliamentarians are the sole definitive authorities on questions relating to the jurisdiction of congressional committees and should be consulted for a formal opinion on any specific jurisdictional question.

- Commerce, Justice, Science, and Related Agencies (CJS): NSF, NIST, NASA, and OSTP;
- Energy and Water Development (Energy-Water): DOE;
- Labor, Health and Human Services, Education, and Related Agencies (Labor-HHS-Education): ED.

Issues for Congress

As noted earlier, the America COMPETES Act is an authorization act. New programs established by the act would not be initiated, and authorized increases in appropriations for existing programs would not occur unless funded through subsequent appropriation acts. The 110th Congress provided FY2008 appropriations to establish ED's Teachers for a Competitive Tomorrow program, and NIST's Technology Improvement Program (TIP), which replaced the existing Advanced Technology Program. The 111th Congress provided FY2009 appropriations to establish DOE's ARPA-E and NSF's PSM program. In addition, portions of the P-16 Alignment of Secondary School Graduate Requirements with the Demands of 21st Century Postsecondary Endeavors and Support for P-16 Education Data Systems was funded through the ARRA.[17] Although some America COMPETES Act research and STEM education programs received appropriations at authorized levels in FY2009, others did not, as described below.

As Congress deliberates the FY2010 budget, an issue for Congress is what level, if any, will it provide America COMPETES Act programs an appropriation, and whether or not the President's budget request will propose to do so. Several programs newly authorized in the act have never been appropriated funds. An issue for these programs is whether or not they will receive the funding necessary to establish them. The America COMPETES Act provides authorization levels only through FY2010.

[17] P.L. 111-5 indicates that part of the funding provided to States for Institutions of Higher Education as part of the State Fiscal Stabilization Fund (Title XIV) should be used for "IMPROVING COLLECTION AND USE OF DATA.—The State will establish a longitudinal data system that includes the elements described in section 6401(e)(2)(D) of the America COMPETES Act (20 U.S.C. 9871)." In addition, the State "will take steps to improve State academic content standards and student academic achievement standards consistent with 6401(e)(1)(A)(ii) of the America COMPETES Act." No specific appropriation is noted for either purpose. Section 6401 of the America COMPETES Act addresses the "Alignment of secondary school graduate requirements with the demands of 21st century postsecondary endeavors and support for P-16 education systems." With that Section, subsection (e)(2)(D) provides required elements of a statewide P-16 education data system such as demographic information, yearly test records, teacher identification information, and student-level transcripts and college readiness test scores. Section (e)(1)(A)(ii) discusses the use of grant funds for "identifying and making changes that need to be made to the State's secondary school graduation requirements, academic content standards, academic achievement standards, and assessments preceding graduation from secondary school in order to align requirements, standards, and assessments with the knowledge and skills necessary for success in academic credit-bearing coursework in postsecondary education, in the 21st century workforce, and in the Armed Forces without the need for remediation."

Science, Technology, Engineering, and Mathematics (STEM) Education

One issue is whether or not new STEM education programs authorized in the act that have not received funding in previous years will be appropriated funds for the first time in FY2010. Or alternatively, whether or not the Obama Administration will state clearly that existing STEM education programs will be modified so that they meet the requirements in the America COMPETES Act.

This is particularly the case with the act's DOE STEM education programs; the Secretary of DOE has not thus far appointed an individual to the position of Director of Science, Engineering, and Mathematics Education newly authorized by the act. Since DOE's FY2009 proposed budget did not align with that in the America COMPETES Act, determining the status of these programs is challenging.[18] If the Obama Administration does align its existing programs with the America COMPETES Act, the situation regarding DOE STEM education activities may be clearer. At ED, several of the new STEM Education programs were proposed for funding by the Bush Administration; however, Congress choose not to appropriate funds for them. In addition, as at DOE, there are some existing programs that could possibly be modified to comply with requirements in the America COMPETES Act. At NSF, the Bush Administration did not propose funding for either of the new STEM education programs.

At this time, there is insufficient evidence that the following new America COMPETES Act programs were appropriated funds in FY2009, and a policy question for Congress is whether or not they will be funded or proposed for FY2010:

DOE

- Pilot Program of Grants to Specialty Schools for Science and Mathematics
- Experiential Based Learning Opportunities
- Summer Institutes
- National Energy Education Development
- Nuclear Science Talent Expansion Program
- Hydrocarbon Systems Science Talent Expansion Program
- Early Career Awards for Science, Engineering, and Mathematics Researchers

[18] According to an email communication between CRS and the Bush Administration OMB and OSTP received on October 14, 2008, OMB contends that the following DOE programs correspond to programs authorized by the America COMPETES Act: DOE Summer Institutes (§5003) to the pre-existing DOE Academies Creating Teacher Scientists program (DOE ACTS); and the Protecting America's Competitive Edge (PACE) Fellowship program (§5009) to pre-existing Computer Science Graduate Fellowships; Graduate Research Environmental Fellowships; American Meteorological Society/Industry/Government Graduate Fellowships; Spallation Neutron Source Instrumentation Fellowships, and the Fusion Energy Sciences Graduate Fellowships. Note that the information above is not included in DOE's FY2009 budget request as, according to OMB, DOE did not reorganize its budget structure to match the America COMPETES Act categories. It is unknown the degree to which the Obama Administration agrees with the views of the Bush Administration on this issue.

- Protecting America's Competitive Edge Graduate Fellowship Program

ED

- Advanced Placement & International Baccalaureate Program
- Math Now
- Summer Term Education Program
- Math Skills for Secondary Skill Students
- Advancing America Through Foreign Language Partnership Program
- Mathematics and Science Partnership Bonus Grants

NSF

- Laboratory Science Pilot Program

Research

In the case of research funding, the programs that are the focus of the act's provisions—NIST's STRS and construction activities, the DOE Office of Science, ARPA-E, and NSF—received FY2009 appropriations above authorized levels in FY2009, due to the combination of both the Omnibus Appropriations Act (P.L. 111-8) and the supplemental appropriation in the American Recovery and Reinvestment Act (ARRA; P.L. 111-5).

A policy issue for many congressional policymakers is the degree to which this increased FY2009 funding will influence FY2010 appropriations. This issue is heightened for ARPA-E, whose funding in the supplemental, $400 million, is greater than the $15 million in the regular FY2009 appropriation. In response to questions following congressional testimony, Secretary of Energy Steven Chu indicated that DOE staff had told him that it would take a year to establish ARPA-E. Although he was attempting to advance that timeline, he was unsure when it would be established.[19]

The issue is similar for NSF. Although funded above the authorization level in FY2009 due to the Omnibus and the supplemental, the Obama Administration's budget outline states that it proposes to fund NSF below the authorization level in FY2010. The same may be true for other America COMPETES Act research program for which the proposed budget is not yet known.

Another issue for Congress is whether or not it will appropriate funds for DOE's Discovery Science and Engineering Innovation Institutes, which have never received funding. Further, as is the case with STEM Education, an issue for Congress is whether or not DOE will propose to

[19] Congressional Quarterly Congressional Transcripts, " House Committee on Science And Technology Holds a Hearing On New Directions For Energy Research And Development At Energy Department," March 17, 2009. In response to a question from the Chair, House Committee on Science and Technology, Secretary of Energy Steven Chu stated the following: "So I met with those—a team of people that were trying to see what the structure should be like. I think it's very consistent with this committee's views. I did ask specifically how long it would take. I didn't like the answer. The answer was, quite frankly the first pass answer was one year, and so I instruct them go back and I want to see exactly the timeline of why it would take so long. There might be regulations, things like that, and I have not gotten back the answer to that. So I hope it would take much shorter than one year."

clearly establish new or modify existing early career researcher and distinguished scientist programs to align with the America COMPETES Act Early Career Awards for Science, Engineering, and Mathematics Researchers; and Distinguished Scientist programs. [20]

[20] According to an email communication between CRS and the Bush Administration OMB and OSTP received on October 14, 2008, OMB contends that the following DOE programs correspond to programs authorized by the America COMPETES Act: DOE Early Career Awards (§5006) to pre-existing High Energy Physics Outstanding Junior Investigator, Nuclear Physics Outstanding Junior Investigator, Fusion Energy Sciences Plasma Physics Junior Faculty Development; Advanced Scientific Computing Research Early Career Principle Investigator; and the Office of Science Early Career Scientist and Engineer Award programs; and Discovery Science and Engineering Innovation Institutes §5008) with pre-existing Bioenergy Research Centers, SciDAC Institutes, and the proposed Energy Frontier Research Centers. Note that the information above is not included in DOE's FY2009 budget request as, according to OMB, DOE did not reorganize its budget structure to match the America COMPETES Act categories. It is unknown the degree to which the Obama Administration agrees with the views of the Bush Administration on this issue.

Table 1. America COMPETES Act Programs and Appropriations Status

(in millions of dollars)

Programs with Specific Authorized Budgets in the America COMPETES Act	FY2008 Consolidated Appropriations Act, 2008 (P.L. 110-161); Supplemental Appropriations Act, 2008 (P.L. 110-252))	FY2009 Omnibus Appropriations Act, 2009 (P.L. 111-8); American Recovery and Reinvestment Act (ARRA; P.L. 111-5)	FY2010 America COMPETES Act (P.L. 110-69) Authorization of Appropriation
Department of Commerce			
National Institute of Standards and Technology (Sec. 3001)			
—Scientific & Technical Research and Services (STRS) (Sec. 3001)	$440.5	$692.0 (472.0 omnibus + 220.0 ARRA)	$584.8
—Construction & Maintenance (Sec. 3001)	160.5	532.0 (172.0 omnibus +360.0 ARRA)	49.7
—Technology Innovation Program (TIP) (Sec. 3001/3012) [NEW]	65.2[a]	65.0	140.5
—Manufacturing Extension Partnership (MEP) (Sec. 3001/3003)	89.6	110.0	131.8
Department of Energy			
DOE Science, Engineering and Mathematics Programs (Sec. 5003)			
—Pilot Program of Grants to Specialty Schools for Science and Mathematics (Sec. 5003) [NEW]	Not Included	Not Included	30.0
—Experiential Based Learning Opportunities (Sec. 5003) [NEW]	Not Included	Not Included	7.5
—Summer Institutes (Sec. 5003) [NEW]	Not Included	Not Included	25.0

Programs with Specific Authorized Budgets in the America COMPETES Act	FY2008 Consolidated Appropriations Act, 2008 (P.L. 110-161); Supplemental Appropriations Act, 2008 (P.L. 110-252))	FY2009 Omnibus Appropriations Act, 2009 (P.L. 111-8); American Recovery and Reinvestment Act (ARRA; P.L. 111-5)	FY2010 America COMPETES Act (P.L. 110-69) Authorization of Appropriation
—National Energy Education Development (Sec. 5003) [NEW]	Not Included	Not Included	Such sums as necessary
Nuclear Science Talent Expansion Program (Sec. 5004)			
—Nuclear Science Program Expansion Grants for Institutions of Higher Education (Sec. 5004) [NEW]	Not Included	Not Included	9.5
—Nuclear Science Competitiveness Grants for Institutions of Higher Education (Sec. 5004) [NEW]	Not Included	Not Included	8.0
Hydrocarbon Systems Science Talent Expansion Program (Sec. 5005)			
—Hydrocarbon Systems Science Program Expansion Grants for Institutions of Higher Education (Sec. 5005) [NEW]	Not Included	Not Included	9.5
—Hydrocarbon Systems Science Competitiveness Grants for Institutions of Higher Education (Sec. 5005) [NEW]	Not Included	Not Included	8.0
Office of Science (Sec. 5007) (as act amends the Energy Policy Act of 2005 for FY2010)	4,035.6 (3,973.1 consolidated +62.5 supplemental)	6,357.6 4,757.6[b] omnibus +1,600.0 ARRA	5,814.0

Programs with Specific Authorized Budgets in the America COMPETES Act	FY2008 Consolidated Appropriations Act, 2008 (P.L. 110-161); Supplemental Appropriations Act, 2008 (P.L. 110-252))	FY2009 Omnibus Appropriations Act, 2009 (P.L. 111-8); American Recovery and Reinvestment Act (ARRA; P.L. 111-5)	FY2010 America COMPETES Act (P.L. 110-69) Authorization of Appropriation
—Early Career Awards for Science, Engineering, and Mathematics Researchers (Sec. 5006)[NEW]	Not Included	Not Included	25.0
Discovery Science and Engineering Innovation Institutes (Sec. 5008) [NEW]	Not Included	Not Included	10.0-30.0[c]
Protecting America's Competitive Edge (PACE) Graduate Fellowship Program (Sec. 5009)[NEW]	Not Included	Not Included	20.0
Distinguished Scientist Program (Sec. 5011) [NEW]	Not Included	Not Included	30.0
Advanced Research Projects Agency—Energy [ARPA-E] (Sec. 5012) [NEW]	Not Included	*415.0 (15.0 Omnibus + 400.0 ARRA)	Such sums as are necessary
Department of Education			
Teachers for a Competitive Tomorrow: Baccalaureate Degrees (Sec. 6113, 6115, 6116) [NEW]	*0.98	*1.1	151.2
Teachers for a Competitive Tomorrow: Master's Degrees (Sec. 6114-6116) [NEW]	*0.98	*1.1	125.0
Advanced Placement and International Baccalaureate Programs (Sec. 6121-6123) [NEW]	Not Included	*0.0	Such sums as may be necessary
Math Now (Sec. 6201) [NEW]	*0.0	*0.0	Such sums as may be necessary
Summer Term Education Programs (Sec. 6202) [NEW]	Not Included	Not Included	Such sums as may be necessary
Math Skills for Secondary School Students (Sec. 6203) [NEW]	Not Included	Not Included	95.0

Programs with Specific Authorized Budgets in the America COMPETES Act	FY2008 Consolidated Appropriations Act, 2008 (P.L. 110-161); Supplemental Appropriations Act, 2008 (P.L. 110-252))	FY2009 Omnibus Appropriations Act, 2009 (P.L. 111-8); American Recovery and Reinvestment Act (ARRA; P.L. 111-5)	FY2010 America COMPETES Act (P.L. 110-69) Authorization of Appropriation
Advancing America Through Foreign Language Partnership Program[d] (Sec. 6301-6304) [NEW]	Not Included	*0.0	Such sums as may be necessary
P-16 Alignment of Secondary School Graduate Requirements with the Demands of 21st Century Postsecondary Endeavors and Support for P-16 Education Data Systems (Sec. 6401) [NEW]	Not Included	Not Included[e]	Such sums as may be necessary
Mathematics and Science Partnership Bonus Grants (Sec. 6501) [NEW]	Not Included	Not Included	Such sums as may be necessary
National Science Foundation (Sec. 7002)	6,127.5 (6,065.0 consolidated +62.5 supplemental)	9,492.4 (6,490.4 omnibus +3,002.0 ARRA)	8,132.0
Research and Related Activities (R&RA)	4,844.0[f] (4,821.5 consolidated +22.5 supplemental)	7,683.1 (5,183.1 omnibus +2,500.0 ARRA)	6,401.0
—Major Research Instrumentation (MRI) (Sec. 7002/Sec. 7036)	Not Included	*300.0 (Not Included omnibus +300.0 ARRA)	131.7
—Faculty Early Career Development (CAREER) (Sec.7002)	Not Included	Not Included	203.8
—Research Experiences for Undergraduates (REU) (Sec.7002)	Not Included	Not Included	75.9

Programs with Specific Authorized Budgets in the America COMPETES Act	FY2008 Consolidated Appropriations Act, 2008 (P.L. 110-161); Supplemental Appropriations Act, 2008 (P.L. 110-252))	FY2009 Omnibus Appropriations Act, 2009 (P.L. 111-8); American Recovery and Reinvestment Act (ARRA; P.L. 111-5)	FY2010 America COMPETES Act (P.L. 110-69) Authorization of Appropriation
—Experimental Programs to Stimulate Competitive Research (EPSCoR) (Sec.7002)	*120.0 (115.0 consolidated +5.0[g] supplemental)	133.0	147.8
—Integrative Graduate Education and Research Traineeship/R&RA (IGERT) (Sec.7002)[i]	Not Included	Not Included	58.3
—Graduate Research Fellowship/R&RA (GRF) (Sec.7002)	Not Included	Not Included	11.1
—Professional Science Master's Degree Program (Sec. 7002/7034) [NEW]	Not Included	15.0[i] (Not Included omnibus +15.0 ARRA)	15.0
Education and Human Resources (EHR)	765.6 (725.6 consolidated +40.0 supplemental)	945.3 (845.3 omnibus +100.0 ARRA)	1,104.0
—Mathematics and Science Education Partnership (MSP) (Sec.7002/7028)	Not Included	86.0 (*61.0 omnibus +*25.0 ARRA)	123.2
—Robert Noyce Teacher Scholarship Program (Sec.7002/7030)	*55.0 (15.0 consolidated +40.0[k] supplemental)	115.0 (55.0[h] omnibus +*60.0 ARRA)	140.5
—Science, Mathematics, Engineering, and Technology Talent Expansion (Sec.7002/7025)	Not Included	Not Included	55.0
—Advanced Technological Education (ATE) (Sec.7002)	Not Included	Not Included	64.0
—Integrative Graduate Education and Research Traineeship/EHR (IGERT) (Sec.7002)[i]	Not Included	Not Included	33.4
—Graduate Research Fellowship/EHR (GRF) (Sec.7002)	Not Included	*107.0	119.0

Programs with Specific Authorized Budgets in the America COMPETES Act	FY2008 Consolidated Appropriations Act, 2008 (P.L. 110-161); Supplemental Appropriations Act, 2008 (P.L. 110-252))	FY2009 Omnibus Appropriations Act, 2009 (P.L. 111-8); American Recovery and Reinvestment Act (ARRA; P.L. 111-5)	FY2010 America COMPETES Act (P.L. 110-69) Authorization of Appropriation
Major Research Equipment and Facilities Construction (Sec.7002)	220.7	552.0 (152.0 omnibus +400.0 ARRA)	280.0
Agency Operations and Award Management (Sec.7002)	281.8	294.0	329.5
National Science Board (Sec.7002)	4.0	4.0	4.3
Inspector General (Sec.7002)	11.4	14.0 (12.0 omnibus +2.0 ARRA)	13.2
Laboratory Science Pilot Program (Sec. 7026) [NEW]	Not Included	Not Included	Such sums as may be necessary

Source: America COMPETES Act (P.L. 110-69); Omnibus Appropriations Act, 2009 (P.L. 111-8) and explanatory statement; American Recovery and Reinvestment Act of 2009 (P.L. 111-5); H.Conf.Rept. 111-16 and joint explanatory statement. For FY2008, information is from the Consolidated Appropriations Act, 2008 (P.L. 110-161) and joint explanatory statement; Congressional Record, December 17, 2007; Supplemental Appropriations Act, 2008 (P.L. 110-252); H.Rept. 110-240; S.Rept. 110-124; H.Rept. 110-231; and S.Rept. 110-107.

Notes: Section numbers refer to the America COMPETES Act. "[NEW]" means a program that was not authorized prior to the America COMPETES Act. "Not Included" means that these programs were not specifically identified in the budget request, bill, act, or report. * = as reported. All other appropriations are numbers from bill language.

a. The following statement is in the Consolidated Appropriations Act joint explanatory statement: "Of the amounts provided to ITS [Industrial Technology Services], $65,200,000 is for the Technology Innovation Program as authorized by P.L. 110-69 [the America COMPETES Act]. TIP is structured to fund high-risk, high reward research focused on broad national needs such as advanced automotive batteries, aquaculture, novel lightweight materials, and other emerging technologies. The funding provided for TIP will address mortgage obligations relating to projects created under the Advanced Technology Program (ATP). The amended bill also includes language to allow the TIP immediate access to an additional $5,000,000 from deobligations and prior-year recoveries from ATP."

b. The P.L. 111-8 explanatory statement provides $4,772.6 million for science at DOE with $15.0 million of that total for the organizationally separate Advanced Research Projects Agency – Energy (ARPA-E) and the remainder for DOE Office of Science Activities.

c. The Secretary of Energy can decide to establish up to three institutes per fiscal year. Each institute could receive $10 million per year for three fiscal years.

d. The title for this program in the America COMPETES Act is the Foreign Language Partnership Program. The table uses the title for this program from the ED FY2009 congressional budget justification to help distinguish it from other ED foreign language programs such as the existing Foreign Language Assistance program.

e. P.L. 111-5 indicates that part of the funding provided to States for Institutions of Higher Education as part of the State Fiscal Stabilization Fund (Title XIV) should be used for "IMPROVING COLLECTION AND USE OF DATA.—The State will establish a longitudinal data system that includes the elements described in section

6401(e)(2)(D) of the America COMPETES Act (20 U.S.C. 9871)." In addition, the State "will take steps to improve State academic content standards and student academic achievement standards consistent with 6401(e)(1)(A)(ii) of the America COMPETES Act." No specific appropriation is noted for either purpose. Section 6401 of the America COMPETES Act addresses the "Alignment of secondary school graduate requirements with the demands of 21st century postsecondary endeavors and support for P-16 education systems." With that Section, subsection (e)(2)(D) provides required elements of a statewide P-16 education data system such as demographic information, yearly test records, teacher identification information, and student-level transcripts and college readiness test scores. Section (e)(1)(A)(ii) discusses the use of grant funds for "identifying and making changes that need to be made to the State's secondary school graduation requirements, academic content standards, academic achievement standards, and assessments preceding graduation from secondary school in order to align requirements, standards, and assessments with the knowledge and skills necessary for success in academic credit-bearing coursework in postsecondary education, in the 21st century workforce, and in the Armed Forces without the need for remediation."

f. The following statement is in the Consolidated Appropriations Act joint explanatory statement: "The Appropriations Committees strongly support increases for the math and physical sciences, computer sciences, and engineering directorates in fiscal year 2008 for research and related activities (R&RA). However, the Committees also believe the Foundation should maintain comparable growth in fiscal year 2008, to the extent possible, for the biological sciences and social, behavioral and economic sciences directorates. Each of the science disciplines is valuable in maintaining U.S. competitiveness. The Committees urge NSF to provide each directorate with funding levels that are consistent with the goals of the America COMPETES Act and look forward to the Foundation's operating plan in addressing these concerns."

g. Although included in the FY2008 supplemental appropriation, the act specifies a section in the America COMPETES Act authorizing funding for the FY2009 EPSCoR program.

h. The explanatory statement indicates that "The increase provided in the bill for the Noyce Program is for the purpose of expanding participation in the grants program established in section10 and section 10A of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n-1) as amended by the America COMPETES Act."

i. Two directorates of the NSF manage the Integrative Graduate Education and Research Traineeship (IGERT) program—the Education and Human Resources Directorate (EHR) and the Research and Related Activities (R&RA) directorate. The America COMPETES Act and the NSF budget request both identify the allocations for each directorate.

j. The America COMPETES Act provides the authorization amount within R&RA; however, the explanatory language for P.L. 111-5 places the program within EHR.

k. Of this $40 million, $20 million is for the general Robert Noyce Teacher Scholarship Program, and $20 million is for the NSF Teaching Fellowships and Master Teaching Fellowships that are part of the Noyce program.

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