The America COMPETES Act and the FY2009 Budget

name redacted
Specialist in Science and Technology Policy

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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 science, technology, engineering, and mathematics (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 increases in funding 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 agencies over seven years. Within DOE, the act would establish the Advanced Research Projects Agency – Energy (ARPA-E), designed to support transformational energy technology research projects with the goal of enhancing the economic and energy security of the United States. 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.

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 program 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 content and teaching skills. The act also authorizes a new program at NSF that would provide grants to institutions of higher education 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, so new programs established by the act will not be initiated, and increases in the authorization of appropriation level of existing programs may not occur, unless funded through subsequent appropriations. An issue for Congress was whether to fund America COMPETES Act programs at authorized funding levels. The 111th Congress passed the Omnibus Appropriations Act, 2009 (P.L. 111-8) and the American Recovery and Reinvestment Act (P.L. 111-5) to supplement FY2009 funds. While some America COMPETES Act programs were funded at authorized levels, others were not. The following activities were funded at or above authorized levels: NIST Scientific & Technical Research and Services; NIST Construction & Maintenance; DOE Office of Science; NSF and its Research & Related Activities; Major Research Instrumentation; Major Research Equipment and Facilities Construction; and its Professional Science Master's; Robert Noyce Teacher Scholarship; and Graduate Research Fellowship programs. Other programs were funded either below authorized levels or not funded. The acts provide funding to establish DOE's ARPA-E and NSF's PSM program.

Contents

Tables

Contacts

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 invest in science and engineering research, and science, technology, engineering, and mathematics (STEM) education today so that the United States can enhance its potential to be more competitive with other nations in the future.

When the act passed Congress, much of the FY2008 appropriations debate had already taken place. As a consequence, FY2008 appropriations largely failed to address the new priorities enacted in the America COMPETES Act. The FY2009 budget cycle is the first time Congress debated funding for America COMPETES Act programs from the beginning of the appropriations process.

The purpose of this report is to compare the President's FY2009 budget request to the FY2009 authorized levels provided by the America COMPETES Act, and discuss Congressional budget and appropriation activities. For more general information on the America COMPETES Act, see CRS Report RL34328, *America COMPETES Act: Programs, Funding, and Selected Issues*, by (name redacted).

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. The act mainly addresses concerns about insufficient investment in science and engineering research; STEM education; and STEM workforce development.

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 for the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST) laboratories, and the Department of Energy (DOE) Office of Science through FY2010. The act also authorizes the establishment of the Advanced Research Projects Agency-Energy (ARPA-E)[1] and Discovery Science and Engineering Innovation Institutes at DOE. The act also established new STEM education programs at DOE and the Department of Education (ED), and enhances the authorization level for 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 appropriations. Similarly, increases in the authorization level of existing programs may or may not translate into increased 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 FY2009 budget submission.[2] The FY2009 request information is based on the Bush

[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 (name redacted).

[2] For information on the Bush Administration's FY2009 budget, see CRS Report RL34448, *Federal Research and* (continued...)

Administration FY2009 Congressional Budget Request documents from the DOE[3] and the NSF.[4] The ED FY2009 request information is based on the its Budget Summary.[5] The NIST FY2009 request information is from the *Fiscal Year 2009 Budget of the U.S. Government* and a series of amendments to that budget submitted by President Bush on June 6, 2008.[6]

National Institute of Standards and Technology

The mission of NIST, a laboratory of the Department of Commerce, is to increase the competitiveness of U.S. companies by supporting industrial development of precompetitive, generic technologies, diffusing government-developed technological advances, and providing measurement, calibration, and quality assurance techniques.[7]

The America COMPETES Act authorizes funding for NIST's Scientific and Technical Research and Services (STRS) and Industrial Technology Services (ITS) programs. The ITS includes the existing Hollings Manufacturing Extension Partnership (MEP) and a new Technology Innovation Program (TIP), which replaced a program with similar goals, the repealed Advanced Technology Program (ATP).[8]

The act authorizes $541.9 million for STRS in FY2009; the Bush Administration's FY2009 budget proposed $535.0 million.[9] The act authorizes $131.5 million for TIP in FY2009, but the Bush Administration's FY2009 budget proposed eliminating TIP, so its proposed budget was zero. For MEP, the act authorizes $122.0 million in FY2009, while the President's FY2009 budget proposed $2.0 million to end federal support for the program.

(...continued)

Development Funding: FY2009, coordinated by (name redacted)

[3] The DOE budget request is available at http://www.cfo.doe.gov/budget/09budget/Start.htm. Relevant detailed budget justification addressing science is available in volume 4 at http://www.cfo.doe.gov/budget/09budget/Content/Volumes/Volume4.pdf. The detailed budget justification addressing the nuclear energy educational programs that are part of the act is available in volume 3, p. 621 at http://www.cfo.doe.gov/budget/09budget/Content/Volumes/Volume3a.pdf.

[4] The NSF budget request is available at http://www.nsf.gov/about/budget/fy2009/toc.jsp.

[5] The ED Budget Summary is available at http://www.ed.gov/about/overview/budget/budget09/summary/index.html. The relevant sections are on elementary and secondary education at http://www.ed.gov/about/overview/budget/budget09/summary/edlite-section2a.html, higher education programs at http://www.ed.gov/about/overview/budget/budget09/summary/edlite-section2e.html, and programs proposed for elimination at http://www.ed.gov/about/overview/budget/budget09/summary/edlite-section3.html.

[6] See the NIST budget information in the Appendix on p. 228 at http://www.whitehouse.gov/omb/budget/fy2009/pdf/appendix/com.pdf.

[7] For more information on NIST, see CRS Report 95-30, *The National Institute of Standards and Technology: An Appropriations Overview*, by (name redacted).

[8] For additional information on ATP and TIP, see CRS Report 95-36, *The Advanced Technology Program* and CRS Report RS22815, *The Technology Innovation Program*, both by (name redacted). The report describes the similarities and differences between the two programs.

[9] This includes almost $9 million for the Baldridge National Quality Award Program. According to NIST, "The Baldrige Award is given by the President of the United States to businesses—manufacturing and service, small and large—and to education, health care and nonprofit organizations that apply and are judged to be outstanding in seven areas: leadership; strategic planning; customer and market focus; measurement, analysis, and knowledge management; human resource focus; process management; and results." For more information, see http://www.nist.gov/public_affairs/factsheet/baldfaqs.htm.

Department of Energy

The mission of DOE is to "advance the national, economic, and energy security of the United States; to promote scientific and technological innovation in support of that mission; and to ensure the environmental cleanup of the national nuclear weapons complex."[10] The DOE is the largest federal government supporter of basic physical sciences research. This research is conducted at its national laboratories as well as through its support of investigator-initiated, merit-reviewed, competitively selected awards, conducted primarily at universities.[11]

The America COMPETES Act authorizes the establishment of the ARPA-E and the Discovery Science and Engineering Innovation Institutes within DOE. Based on the Defense Advanced Research Projects Agency (DARPA) model, ARPA-E is designed to support transformational energy technology research projects with the goal of enhancing the nation's economic and energy security.[12] Discovery Science and Engineering Innovation Institutes would be multidisciplinary research institutes located at DOE national laboratories that would apply fundamental science and engineering discoveries to technological innovations. Up to three institutes may be created each fiscal year. The DOE FY2009 budget request did not propose funding for either ARPA-E or the Discovery Science and Engineering Innovation Institutes.

Rather than create ARPA-E or the Discovery Science and Engineering Innovation Institutes, the Bush Administration Secretary of Energy issued a policy on technology transfer,[13] and proposed establishing 25-30 multi-investigator Energy Frontier Research Centers (EFRCs)[14] at universities or other nonprofit organizations. As a result of the technology transfer policy, DOE now reportedly pools funds from the Office of Science and other programs to fund six collaborations that integrate basic and applied research. Funding for these collaborations are reportedly based on congressional language that required DOE to set aside 0.9% of its applied energy research and development budget for technology transfer.[15] The goal of EFRCs would be to focus on

[10] Department of Energy, "About DOE," at http://www.energy.gov/about/index.htm.

[11] Department of Energy, "Science and Technology," at http://www.energy.gov/sciencetech/index.htm.

[12] 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 (name redacted).

[13] See the press release at http://www.doe.gov/print/5977.htm and the policy statement at http://www.doe.gov/media/Policy_Statement_on_Technology_Transfer.pdf. The technology transfer policy states "This Policy Statement builds upon the stimulus provided by the technology transfer provisions contained in the Energy Policy Act of 2005 and other recent legislative actions such as the 'America COMPETES Act' that seek to improve the transfer of energy technologies from the Department's Facilities to products and applications that address public and private needs."

[14] A footnote to Attachment 4 of Dr. Marburger's testimony to the House Committee on Science and Technology Policy states that "[T]otal Budget funding for DoE research center partnerships similar to those in Section 5008 [the Discovery Science and Engineering Innovation Institutes]—Energy Frontier Research Centers, Bioenergy Research Centers, and SciDAC Institutes [Science Discovery Through Advanced Computing]—is $183 million." Testimony of Dr. John Marburger, III, Director, Office of Science and Technology Policy, House Committee on Science and Technology, *Funding for the America COMPETES Act in the FY2009 Administration Budget Request*, hearing, 110th Congress, 2nd session, February 14, 2008, at http://democrats.science.house.gov/Media/File/Commdocs/hearings/2008/Full/14feb/Marburger_Testimony.pdf. In additional e-mail correspondence on October 14, 2008, between CRS, OMB, and OSTP, OMB contends that the three organizations specified above respond to the authorization of the Discovery Science and Engineering Innovation Institutes in the act.

[15] This may be a reference to the following provision in the Title X, Section 1001 of the Energy Policy Act (P.L. 109-58): "TECHNOLOGY COMMERCIALIZATION FUND.—The Secretary shall establish an Energy Technology Commercialization Fund, using 0.9 percent of the amount made available to the Department for applied energy research, development, demonstration, and commercial application for each fiscal year, to be used to provide matching funds with private partners to promote promising energy technologies for commercial purposes."

transformative research.[16] The requested FY2009 EFRC budget was approximately $100.0 million, with initial five-year awards of $2.0-5.0 million annually per center. In contrast, each of the three Discovery Science and Engineering Innovation Institutes is authorized at $10.0 million annually for a maximum of three years.

The act also authorizes the establishment of several new STEM education programs at the K-12 and post-secondary level within DOE. These activities include K-12 student and teacher programs such as specialty high schools for science and mathematics pilot program, experiential based learning opportunities (e.g., summer internships) for middle and high school students, and summer institutes for teachers. Post-secondary programs include a nuclear science talent expansion program and a hydrocarbon systems science talent expansion program to enhance existing and create new educational programs in nuclear science and hydrocarbon systems. In addition, the act establishes a new position within DOE to direct STEM education programs across the department, and a Science, Engineering, and Mathematics Education Fund, that is to include not less than 0.3% of DOE's research, development, and commercial application funding.

Although the relevant sections in the FY2009 DOE budget submission note the authorization of the America COMPETES Act, DOE did not make clear what specific educational programs within the act to which the request was responding.[17] For example, the FY2009 request for the Office of Nuclear Energy referenced the America COMPETES Act and stated it would designate 20% of its research funds for university research activities as a way to increase support for U.S. nuclear science and engineering education, but it did not cite the act's nuclear science talent expansion program.

In the section entitled "Workforce Development for Teachers and Scientists" in the Office of Science budget justification, DOE noted the America COMPETES Act and mentioned many DOE STEM educational programs, but it did not identify any of them as either new America COMPETES Act initiatives or specify if some of the existing programs have been modified to accommodate the act. In addition, the DOE Office of Science did not mention the Early Career Awards for Science, Engineering, and Mathematics Researchers program.

In congressional testimony, however, the Bush Administration identified two DOE STEM education programs and the early career researcher program in the act as included in the FY2009 budget request.[18] The Bush Administration OMB contended that the following DOE programs correspond to programs authorized by the America COMPETES Act:

- Summer Institutes (§5003) to the pre-existing DOE Academies Creating Teacher Scientists program (DOE ACTS);

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[16] For more details, see the FY2009 DOE Budget submission section entitled "FY 2009 Budget Request to Congress Errata sheet" at http://www.er.doe.gov/obp/FY_09_Budget/Errata%20Sheet.pdf, and the DOE Energy Frontier Research Centers webpage at http://www.sc.doe.gov/bes/EFRC.html.

[17] Relevant DOE detailed budget justification addressing science is available on pp. 453-472 of volume 4 at http://www.cfo.doe.gov/budget/09budget/Content/Volumes/Volume4.
pdf and the nuclear energy educational programs on pp. 621-626 of volume 3 at http://www.cfo.doe.gov/budget/09budget/Content/Volumes/Volume3a.pdf.

[18] Attachment 4 in Testimony of Dr. John Marburger, III, Director, Office of Science and Technology Policy, House Committee on Science and Technology, *Funding for the America COMPETES Act in the FY2009 Administration Budget Request*, hearing, 110th Congress, 2nd session, February 14, 2008 at http://democrats.science.house.gov/Media/File/Commdocs/hearings/2008/Full/14feb/Marburger_Testimony.pdf.

- Early Career Awards for Science, Engineering, and Mathematics Researchers (§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
- Protecting America's Competitive Edge (PACE) Graduate 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.[19]

The DOE Summer Institutes authorization in the act was $20 million in FY2009. Based on the information provided in DOE's budget request for the programs identified above, funding for these institutes was requested for $6 million in FY2009. The Early Career Awards program is authorized for $25 million in FY2009; the testimony states that FY2009 funding of $10 million was requested for the programs specified above. For the PACE fellowships, DOE requested $19 million, above the act authorization level of $12 million in FY2009, based on the programs listed above and the DOE budget request.[20]

Some of the COMPETES Act programs have additional requirements that may be beyond that of existing programs. For example, the America COMPETES Act's DOE summer institutes programs has prioritization criteria focused on teachers from a wide range of school districts, high-need school districts, and underrepresented groups; coordination and consultation requirements with DOE and NSF; and mentoring program, evaluation, and accountability plan requirements, which may or may not be an element of the existing DOE ACTS program. The FY2009 budget request did not mention either establishing a DOE STEM Education fund or appointing a DOE STEM education program director.

Department of Education

The ED's mission is to "promote student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access."[21] Among its activities, ED establishes policies on and distributes and monitors federal financial aid for education.[22]

The America COMPETES Act authorizes the establishment of several new STEM education programs, including Teachers for a Competitive Tomorrow, the Advanced Placement and

[19] Email communication between CRS and the Office of Management and Budget and the Office of Science and Technology Policy received on October 14, 2008. According to OMB, the reason that the information above is not included in DOE's FY2009 budget request is that DOE did not reorganize its budget structure to match the America COMPETES Act categories.

[20] Ibid.

[21] U.S. Department of Education, "About ED," at http://www.ed.gov/about/landing.jhtml?src=gu.

[22] For more information on STEM Education activities, see CRS Report 98-871, *Science, Engineering, and Mathematics Education: Status and Issues*, by (name redacted) and CRS Report RL33434, *Science, Technology, Engineering, and Mathematics (STEM) Education: Background, Federal Policy, and Legislative Action*, by (name redacted).

International Baccalaureate Program, Math Now, and the Advancing America Through Foreign Language Partnership Program.

Congress appropriated FY2008 funding for the Teachers for a Competitive Tomorrow program, which supports the development and implementation of higher education programs including a STEM baccalaureate degree with concurrent teacher certification, a part-time master's degrees in STEM or critical foreign languages for current teachers, and programs for professional scientists and engineers to pursue master's degrees that enable teacher certification. The FY2009 ED budget summary proposed to eliminate this program, indicating that these "activities can be funded under other Federal programs."[23]

The FY2009 ED budget summary indicated that the America COMPETES Act's Advanced Placement and International Baccalaureate Program would provide a new vision for the existing ED Advanced Placement Incentive Program (API) authorized under Title I, Part G, of the Elementary and Secondary Education Act (ESEA). This new direction included increasing access to classes and tests for low-income students, preparation of teachers in high-need schools, and non-federal organizations contributing funds to the program. The America COMPETES Act authorizes $75.0 million for the Advanced Placement and International Baccalaureate Program in FY2009. The President's FY2009 budget requested $70.0 million. Of this, approximately $22.0 million would have supported previously existing API activities, while approximately $47.0 million would have supported America COMPETES Act activities.

The ED FY2009 budget summary proposes funding Math Now at its full authorization level, $95 million. The Advancing America Through Foreign Language Partnership Program funds partnerships between higher education institutions and school districts to enhance postsecondary level language learning.[24] For this program, the act authorizes $28.0 million in FY2008 and such sums as may be necessary for FY2009. The President's FY2009 budget requested $24.0 million to support 24 new awards in languages such as Arabic, Chinese, Indic, Iranian, and Turkic. This program supports the President's National Security Language Initiative.

No funding was mentioned in the ED budget summary for the following America COMPETES Act authorized programs: the Summer Term Education Program, 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, or the Mathematics and Science Partnership Bonus Grants. As noted previously, this may or may not mean that the programs will be funded, as some are below the organizational level specified in the budget documents.

National Science Foundation

The NSF supports science and engineering in general and funds basic research across many disciplines by supporting investigator-initiated, merit-reviewed, competitively selected awards,

[23] ED FY2009 Budget Summary, section on programs proposed for elimination at http://www.ed.gov/about/overview/budget/budget09/summary/edlite-section3.html.

[24] The title for this program in the America COMPETES Act is the Foreign Language Partnership Program. The report 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.

state-of-the-art tools, and instrumentation and facilities, primarily at U.S. colleges and universities.[25]

The America COMPETES Act authorizes $5,742.0 million for NSF's research and related activities (R&RA) account. The President's FY2009 budget requested funding of $5,594.0 million. In some cases, such as the Major Research Instrumentation (MRI) and Faculty Early Career Development (CAREER) programs, the requested levels are close to those authorized in the act. Funding for other R&RA programs was requested at amounts below that authorized, including the Experimental Programs to Stimulate Competitive Research (EPSCoR), which the President's budget requested funding at $113.5 million rather than the authorized level of $133.2 million, and the Integrative Graduate Education and Research Traineeship (IGERT), for which the request was$38.8 million rather than authorized level of $52.5 million.

In the Education and Human Resources (EHR) directorate, the America COMPETES Act authorization is $995.0 million, while the President's FY2009 budget requested $790.0 million. Programs with Bush Administration requested funding well below that authorized include the Robert Noyce Teacher Scholarship program[26] (at $11.6 million compared with an authorization of $115.0 million) and the Mathematics and Science Education Partnership[27] (at $51.0 million compared with an authorization of $111.0 million). In contrast, the Graduate Research Fellowship (GRF) program was proposed for $116.7 million, more than the authorization of $107.2 million.

The Bush Administration did not request funding for the two new NSF programs authorized in the America COMPETES Act: the Professional Science Master's Degree Program and the Laboratory Science Pilot Program.

Congressional Activities

Table 1 summarizes FY2009 appropriations for America COMPETES Act programs for which the act provided an authorization of appropriation.[28]

Budget Resolution

The initial response of the 110th Congress to the Bush Administration's FY2009 budget request was to develop a budget resolution that sets the budget spending amounts for each functional

[25] For more information on NSF, see CRS Report 95-307, *U.S. National Science Foundation: An Overview*, by (name redacted).

[26] The Robert Noyce Teacher Scholarship program encourages science, technology, engineering, and mathematics majors and professionals to become K-12 mathematics and science teachers by providing funds to institutions of higher education to support scholarships, stipends, and programs for students who commit to teaching in high-need K-12 school districts.

[27] The Math and Science Partnership program provides grants to teams composed of institutions of higher education, local K-12 school systems, and their supporting partners to develop and implement pioneering ways of advancing mathematics and science education for students.

[28] Not all the programs addressed by the America COMPETES Act had an enumerated authorization of appropriation level. Further, not all of the authorized programs will necessarily be at a sufficient programmatic level to have a line item within their agency's budget in the Bush Administration's request, the appropriations bills, or the agency budgets. Therefore, a lack of an enumerated appropriation does not necessarily mean that a given program is not funded.

category of the budget.[29] 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.[30]

In June 2008, the House and Senate of the 110th Congress approved the Conference Report on S.Con.Res. 70, The Concurrent Budget Resolution for 2009. Section 522 of the report provided a sense of the 110th Congress on the Innovation Agenda and the America COMPETES Act, stating "the Congress should provide sufficient funding so that our Nation may continue to be the world leader in education, innovation and economic growth." The resolution "supports the efforts authorized in the America COMPETES Act, providing substantially increased funding above the President's requested level for 2009, and increased amounts after 2009 in Function 250 (General Science, Space and Technology) and other functions." The resolution also states that "additional increases for scientific research and education are included in Function 270 (Energy), Function 300 (Environment and Natural Resources), Function 500 (Education, Employment, Training and Social Services), and Function 550 (Health), all of which receive more funding than the President's budget provides."

The budget resolution also included agreeing to an allocation to the House Committee on Appropriations and the Senate Committee on Appropriations. These committees then subdivided the amounts they received from the House and Senate Budget committees among the appropriations committees' 12 subcommittees.[31] The committee's jurisdictions[32] for the federal agencies that have programs authorized by the America COMPETES Act programs are divided among at least three Appropriations subcommittees:

- 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.

Committee on Appropriations

During the 110th Congress, the House Appropriations Committee reported the CJS and Energy-Water bills to the House, but did not report the Labor-HHS-Education bill. The Senate Appropriations Committee reported all of these bills to the Senate. The following are highlights of House and Senate Committee on Appropriations actions during the 110th Congress FY2009 appropriations process:

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[29] CRS Report 97-684, *The Congressional Appropriations Process: An Introduction*, by (name redacted).

[30] CRS Report 98-721, *Introduction to the Federal Budget Process*, by (name redacted). 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.

[31] 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 (name redacted).

[32] 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.

National Institute of Standards and Technology

- Both the Senate and House Appropriation Committees included funding for TIP and MEP proposed for elimination by the Bush Administration. Reported funding for TIP is approximately half that authorized ($65 million reported; $131.5 million authorized), while MEP is close to that that authorized ($122 million reported in House; $110 million reported in Senate; $122 million authorized).
- While STRS is authorized at $541.9 million, the Senate committee approved $489.5 million and the House committee $500.7 million.

Department of Energy

- The DOE Office of Science authorized level is $5.2 billion. The House committee approved $4.9 billion, and the Senate committee $4.6 billion.
- The House committee recommended $15 million for ARPA-E, while the Senate committee did not include any funding.

Department of Education

- The Senate committee reported $2 million for the Teachers for a Competitive Tomorrow program, while the House subcommittee did not provide any funding. The authorized level is $125 million.
- The Senate committee approved $43.5 million for the new Advanced Placement and International Baccalaureate (AP/IB) program authorized by the America COMPETES Act, while the House subcommittee did not provide any funding stating that the "2 to 1 match from non-Federal sources would preclude low-income schools from participating."
- Both the Senate and House committee recommend Congress not fund two new programs authorized by the act: Math Now and the Advancing America Through Foreign Language Partnership Program.

National Science Foundation

- Both the Senate and House committees recommended funding for NSF at the level requested by the Bush Administration, $6.9 billion. The authorized level is $7.3 billion.
- The Senate committee reported $55 million for the Robert Noyce Teacher Scholarship program, and the House committee $50 million.

Continuing Resolution

For FY2009, the 110th Congress then funded federal government programs related to the America COMPETES Act from October 1, 2008 until March 6, 2009 through an interim continuing resolution (P.L. 110-329) that became law on September 30, 2008.[33] The resolution funded these programs at the FY2008 level, but did not include funding from the Supplemental Appropriations

[33] For more information, see CRS Report RL34700, *Interim Continuing Resolutions (CRs): Potential Impacts on Agency Operations*, by (name redacted).

Act, 2008 (P.L. 110-252) in determining the level of funding during this time for the America COMPETES Act programs.[34]

American Recovery and Reinvestment Act

The 111th Congress passed the American Recovery and Reinvestment Act (P.L. 111-5), signed into law by President Obama on February 17, 2009, which supplements FY2009 funds (if any are provided). These funds are available for obligation until September 30, 2010. The act includes funding for NIST's research and construction activities, NSF, ARPA-E, and DOE's Office of Science.

At NIST, funding is specified for its Scientific and Technical Research and Services ($220 million) and Construction of Research Facilities ($360 million) activities; no funding is provided for the MEP or TIP programs. DOE's Office of Science is funded at $1,600 million. The $400 million of funding provided for ARPA-E is the first it has received, and would establish the agency within DOE.

At NSF, funding is provided for its Research and Related Directorate ($2,500 million); Education and Human Resources Directorate ($100 million); and the Major Research Equipment and Facilities Construction ($400 million) activity. Congress specified the following funding for these America COMPETES Act programs: Major Research Instrumentation ($300 million), Robert Noyce Scholarship Program ($60 million), Math and Science Partnerships ($25 million), and the Professional Science Master's Programs ($15 million). This is the first funding provided for the Professional Science Master's program and would establish that activity within NSF.

Extension of Continuing Resolution

An extension of the continuing resolution discussed in the earlier section was signed into law on March 6, 2009 (P.L. 111-6). This bill amended the Continuing Appropriations Resolution, 2009 (Division A of P.L. 110-329) to extend until March 11, 2009.

FY2009 Appropriation

Funding for all of FY2009 for America COMPETES Act programs is included in the Omnibus Appropriations Act, 2009 (P.L. 111-8). The House passed the measure February 25, 2009, by a vote of 245-178. It was passed by the Senate without amendment on March 10, 2009, following a cloture vote of 62-35. President Obama signed the bill on March 11, 2009. As discussed in the earlier section, these funds, are supplemented by those provided in the American Recovery and Reinvestment Act (P.L. 111-5).

[34] For additional details, see Office of Management and Budget, *Apportionment of the Continuing Resolution(s) for Fiscal Year 2009*, OMB Bulletin No. 08-02, September 30, 2008 at http://www.whitehouse.gov/omb/bulletins/fy2008/b08-02.pdf.

The following are highlights of the Omnibus Act:

National Institute of Standards and Technology

- The act provides STRS funding of $472.0 million – less than that recommended by either the Senate ($489.5 million) or House ($500.7 million) Committee on Appropriations.
- Construction and maintenance are funded at $172.0 million – above that recommended by the Senate ($149.0) and House ($129.0) committees.
- Funding for TIP ($65.0) and MEP ($110.0) are the same as that recommended by the Senate Committee on Appropriations. The House Appropriations committee level is similar for TIP, and slightly higher ($122.0) for MEP.

Department of Energy

- The act provides the DOE Office of Science $4.8 billion. This is about midway between that proposed by the House ($4.9) and Senate ($4.6) Committee on Appropriations.
- ARPA-E receives funding of $15 million, the same as recommended by the House Committee. The Senate Committee did not include any funding.

Department of Education

- The act provides $2 million for a new Teachers for a Competitive Tomorrow program, similar to that recommended by the Senate committee. The House committee did not provide any funding.
- No funding is provided for a new Advanced Placement and International Baccalaureate (AP/IB) program. The Senate Committee on Appropriations recommended $43.5 million. The House Committee on Appropriations recommended not funding the program.

National Science Foundation

- NSF funding ($6.5 billion) is less that that recommended by both the Senate and House committees ($6.9 billion).
- Funding for the Experimental Programs to Stimulate Competitive Research (EPSCoR) is $133.0 million. This is the same as that reported by the House Committee on Appropriations, and slightly above that recommended by the Senate Committee ($125.0 million).
- The Robert Noyce Teacher Scholarship program would receive funding of $55.0 million, the same as that reported by the Senate committee, and slightly above that reported by the House committee ($50 million).

Table 1 summarizes the congressional activities for each of the America COMPETES Act programs.

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.

Programs Funded at Authorized Levels

A review of **Table 1** finds that the combined funding provided by the Omnibus Appropriation Act (Omnibus) and the American Investment and Recovery Act (ARRA) led to funding of several America COMPETES Act programs at the authorized level (see **Table 2**). Other programs were either funded below authorized levels, or not funded.

Table 2. America COMPETES Act Programs With Appropriated FY2009 Funds Equal or Above Authorized Levels

Program	Authorization	Appropriation
NIST Scientific & Technical Research and Services	$541.9	$692.0
NIST Construction & Maintenance	86.4	532.0
DOE Office of Science	5,200.0	6,357.6
NSF	7,326.0	9,492.4
NSF Research & Related Activities	5,742.3	7,683.1
NSF Major Research Instrumentation	123.1	300.0
NSF Professional Science Master's Degree Program	12.0	15.0
NSF Robert Noyce Teacher Scholarship Program	115.0	115.0
NSF Graduate Research Fellowship Program	107.2	107.0
NSF Major Research Equipment and Facilities Construction	262.0	552.0

Source: Congressional Research Service

Notes: For more details, see **Table 1**. The FY2009 appropriation is a total of that provided by the Omnibus Appropriations Act, 2009 (P.L. 111-8) and the American Recovery and Reinvestment Act (P.L. 111-5), which supplements that funding.

In the case of ARPA-E, the FY2008 authorization was $300.0 million and the FY2009 authorization is for "such sum as are necessary." The FY2009 appropriation is $415.0 million.

One issue for the future is whether or not these funding levels will be maintained at the authorization level when there may or may not be a supplemental for those funds as was the case in FY2009. If not, this may pose challenges for institutions and individuals sponsored by some programs, particularly those related to research or education.

Programs Presumably Not Funded

As mentioned earlier, a lack of an enumerated appropriation does not necessarily mean that a given program is not funded. At DOE, in particular, the budget proposed in the Bush Administration did not align with that in the America COMPETES Act making it challenging to determine the status of these programs. If the Obama Administration does align its existing programs with the America COMPETES Act, the situation regarding these activities may be clearer. However, at this time, there is insufficient evidence that the following new America COMPETES Act programs are funded:

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
- Discovery Science and Engineering Innovation Institutes
- Protecting America's Competitive Edge Graduate Fellowship Program
- Distinguished Scientist 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

Obama Administration Implementation of Programs Funded by FY2009 Appropriation

This section discusses several aspects of the implementation of programs funded by the FY2009 appropriations by federal agencies that members of Congress might wish to monitor. The primary challenge federal agency funds face regarding FY2009 funding is the speed with which they will be able to obligate those funds. This is particularly true for funds provided through the ARRA.

At DOE, the Acting Director of the Office of Science (SC) indicates that the following actions will be taken with ARRA funds:

- Facility Construction –Funds accelerate completion of a number of ongoing construction projects for major scientific user facilities, major items of equipment for those facilities, and laboratory infrastructure. General Plant Projects (GPP) update laboratory infrastructure and establish new laboratory research space, renovate existing

laboratory space, demolish inadequate facilities, and improve utility systems across SC labs.

- Facility Operations/Infrastructure –Funds increase operations, experimental support, and infrastructure improvements at scientific user facilities across SC.
- Research –Funds support selected research programs across SC and are chosen to minimize out-year mortgages. Energy Frontier Research Centers are included.
- Computing –Funds support advanced networking; mid-range distributed computing; and computation partnerships in areas important to DOE energy missions.
- Fellowships –A program to support graduate students and early career scientists was proposed by SC and is under discussion within DOE.[35]

Within the Office of Science is the Workforce Development for Teachers and Scientists office. Although this office is funded at the level requested by the Bush Administration, neither the ARRA nor the explanatory statement specify any funding for specific America COMPETES Act activities within this program. At this point, the degree to which the Obama Administration will agree with the Bush Administration regarding how these funds are implemented for specific America COMPETES Act authorized STEM education programs at DOE is unknown.

Also at DOE, ARPA-E faces a unique challenge, as this new organization received its first funding prior to the appointment of a director, or hiring of any staff. Special steps may need to be taken to assure these funds are spent appropriately, and to achieve the desired outcomes. Possible policy options to respond to this concern are discussed further in CRS Report RL34497, *Advanced Research Projects Agency - Energy (ARPA-E): Background, Status, and Selected Issues for Congress*, by (name redacted).

News report indicate that NSF plans to make the bulk of the new awards from its existing pool of applicants.[36] NIST indicated that it is drafting a spending plan.[37] At ED, states must take actions to improve the collection and use of data in order to receive additional funding from ARRA funds.[38]

The Obama Administration has set up a website, http://www.recovery.gov. The agencies whose America COMPETES Act activities that received ARRA funds have launched subsidiary websites. These websites are:

[35] Patricia Dehmer, Deputy Director for Science Programs & Acting Director, Office of Science, DOE, "News from the Office of Science: High Energy Physics Advisory Panel," February 24, 2009, at http://www.science.doe.gov/hep/files/pdfs/HEPAP_PDehmer_022409.pdf.

[36] Jeffrey Mervis, "Amid the Gloom, Researchers Prepare for a Boom in Funding," *Science* 323 (5919):1274 -1275, March 6 2009.

[37] NIST, "Qs and As on Recovery Act Funding to NIST," webpage at http://www.nist.gov/recovery/recov_qs_and_as.html.

[38] Department of Education, "Education Department to Distribute $44 Billion in Stimulus Funds in 30 to 45 Days, $49 Billon More to Be Available within 6 months," press release, March 7, 2009, at http://www.ed.gov/news/pressreleases/2009/03/03072009.html.

- NIST: http://www.nist.gov/recovery/
- DOE: http://www.energy.gov/recovery/science_technology.htm
- NSF: http://www.nsf.gov/recovery/

Author Contact Information

(name redacted)
Specialist in Science and Technology Policy
[redacted]@crs.loc.gov, 7-....