AMERICA COMPETES REAUTHORIZATION ACT OF 2010
AMENDMENT IN THE NATURE OF A SUBSTITUTE
SECTION BY SECTION

TITLE I—SCIENCE AND TECHNOLOGY POLICY

SUBTITLE A—NATIONAL NANOTECHNOLOGY INITIATIVE AMENDMENTS

SEC. 101. SHORT TITLE.- "National Nanotechnology Initiative Amendments Act of 2010."

SEC. 102. NATIONAL NANOTECHNOLOGY PROGRAM AMENDMENTS.- Modifies the NNI strategic plan to include the specification of: (1) near and long term objectives, (2) the timeframe for achieving near term objectives, (3) the metrics for measuring progress toward objectives, and (4) multi-agency funded projects in areas of significant economic and societal impacts authorized under section 105. Requires the National Nanotechnology Coordination Office (NNCO) to (1) develop a public database for projects funded under the Environmental, Health and Safety (EHS), Education and Societal Dimensions, and Nanomanufacturing program component areas; (2) develop, maintain and publicize information about NNI supported nanotechnology facilities available for use by academia and industry; (3) to report annually on its current and future budget requirements. Revises the charge to the National Academy of Sciences' National Research Council for the content and scope of the triennial reviews of the NNI Program.

SEC. 103. SOCIETAL DIMENSIONS OF NANOTECHNOLOGY.- Requires an OSTP associate director to fulfill the role of coordinator for the societal dimensions component of NNI, and assigns specific responsibilities and duties to such coordinator. Requires the Program to support formal and informal nanotechnology science education, including support for course development, and faculty professional development. Requires formation of an Education Working Group to coordinate, prioritize, and plan the educational activities funded under the NNI.

SEC. 104. TECHNOLOGY TRANSFER.- Requires agencies supporting nanotechnology research facilities under the NNI to allow, and encourage, use of these facilities to assist companies in developing prototype products, devices, or processes for determining proof of concept. Requires agencies to encourage applications for support of nanotechnology projects under the SBIR, STTR, and TIP programs. Encourages the creation of industry liaison groups in all relevant industry sectors to foster technology transfer and to help guide the NNI research agenda.

SEC. 105. RESEARCH IN AREAS OF NATIONAL IMPORTANCE.- Requires the NNI to include support for large-scale nanotechnology research and development activities in application areas with potential for significant contributions to national economic competitiveness or other important societal benefits.

SEC. 106. NANOMANUFACTURING RESEARCH.- Specifies specific areas of research and development under the Nanomanufacturing program component area. Requires the NNI

Advisory Panel to review the adequacy of the funding level for the Nanomanufacturing program component area and its relevance to industry needs.

SEC. 107. DEFINITIONS.- Defines terms used in the subtitle.

SUBTITLE B—NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT

SEC. 111. SHORT TITLE.- "Networking and Information Technology Research and Development Act of 2010".

SEC. 112. PROGRAM PLANNING AND COORDINATION.- Requires the NITRD agencies to periodically assess the program contents and funding levels and to update the program accordingly. Requires the NITRD agencies to develop and periodically update (at 3-year intervals) a strategic plan for the program and requires an annual update on how the program activities planned and underway relate to the objectives specified in the strategic plan.

SEC. 113. LARGE-SCALE RESEARCH IN AREAS OF NATIONAL IMPORTANCE.- Authorizes the NITRD agencies to support large-scale, long-term, interdisciplinary research with the potential to make significant contributions to society and U.S. economic competitiveness and to encourage collaboration between at least two agencies as well as cost-sharing from non-Federal sources.

SEC. 114. CYBER-PHYSICAL SYSTEMS AND INFORMATION MANAGEMENT. - Requires the program to support research and development in cyber-physical systems; human-computer interactions, visualization, and information management. Requires the NCO Director to convene a university/industry task force to explore mechanisms for carrying out collaborative research and development activities for cyber-physical systems.

SEC. 115. NATIONAL COORDINATION OFFICE.- Formally establishes the NCO; delineates the office's responsibilities; mandates annual operating budgets; specifies the source of funding for the office (consistent with current practice); and stresses the role of the NCO in developing the strategic plan and in public outreach and communication with outside communities of interest.

SEC. 116. IMPROVING NETWORKING AND INFORMATION TECHNOLOGY EDUCATION.- Requires NSF use their programs to improve the teaching and learning of networking and information technology and encourage the participation of women and underrepresented minorities.

SEC. 117. CONFORMING AND TECHNICAL AMENDMENTS- Makes conforming and technical changes to the High-Performance Computing Act of 1991.

SUBTITLE C—OTHER OSTP PROVISIONS

SEC. 121. FEDERAL SCIENTIFIC COLLECTIONS.- Requires the Office of Science and Technology Policy (OSTP), in consultation with relevant Federal agencies, to develop formal policies for the management and use of Federal scientific collections, including policies for the disposal of collections, and to create an online clearinghouse for information on the contents of and access to Federal scientific collections.

SEC. 122. COORDINATION OF MANUFACTURING RESEARCH AND DEVELOPMENT.- Establishes an interagency committee under the National Science and Technology Council (NSTC) with responsibilities to plan and coordinate Federal programs and activities in manufacturing research and development and to develop of a strategic plan.

SEC. 123. INTERAGENCY PUBLIC ACCESS COMMITTEE.- Establishes a working group under the NSTC to coordinate Federal science agency research and policies related to the dissemination and long-term stewardship of the results of Federally supported unclassified research, including digital data and peer-reviewed scholarly publications.

TITLE II—NATIONAL SCIENCE FOUNDATION

SEC. 201. SHORT TITLE.- The National Science Foundation Authorization Act of 2010

SUBTITLE A—GENERAL PROVISIONS

SEC. 211. DEFINITIONS.- Provides definitions for terms used in this title.

SEC. 212. AUTHORIZATION OF APPROPRIATIONS.- Authorizes $47.5 billion for the National Science Foundation (NSF) for fiscal years 2011 – 2015, including $38 billion for research and related activities (R&RA), $6.4 billion for education and human resources (EHR), and $1.2 billion for major research equipment and facilities construction (MREFC).

SEC. 213. NATIONAL SCIENCE BOARD ADMINISTRATIVE AMENDMENTS.- Eliminates the cap on the number of professional staff for the National Science Board ("the Board"). Changes the date on which the Board's biennial Science and Engineering Indicators is due to the President and Congress. Modifies the scope of reports the Board may submit to the President and Congress. Modifies audit requirement for Board adherence to the Sunshine Act.

SEC. 214. BROADER IMPACTS REVIEW CRITERION. – Clarifies the intent of the Foundation's Broader Impacts Review Criterion. Requires the Director to develop and implement a Foundation-wide policy that: includes a plan to educate Foundation staff, merit review panels, and grant applicants on the goals of the broader impacts review criterion; encourages colleges, universities and other organizations such as science museums to help NSF-funded investigators achieve the goals of the broader impacts review criterion through existing evidence-based programs and activities; and requires grant applicants to provide evidence of such institutional support for the portion of their proposal intended to satisfy the broader impact review criterion.

SEC. 215. NATIONAL CENTER FOR SCIENCE AND ENGINEERING STATISTICS. – Establishes the Foundation's Division of Science Resource Statistics as the National Center for

Science and Engineering Statistics and codifies its function as the central federal clearinghouse for objective data on the scientific and engineering enterprise and the state of STEM education.

SUBTITLE B—RESEARCH AND INNOVATION

SEC. 221. SUPPORT FOR POTENTIALLY TRANSFORMATIVE RESEARCH. –Requires the Director to apply at least 5 percent of the agency's research toward high-risk, high-reward basic research. Provide a definition for "high-risk, high-reward" and examples for how the Director may meet the 5 percent requirement.

SEC. 222. FACILITATING INTERDISCIPLINARY COLLABORATIONS FOR NATIONAL NEEDS. –Requires the Director to provide awards for interdisciplinary research collaborations that are designed to address critical challenges to national security, competitiveness, and societal well-being.

SEC. 223. NATIONAL SCIENCE FOUNDATION MANUFACTURING RESEARCH. – Requires the Director to carry out a program to award competitive grants for manufacturing research.

SEC. 224. STRENGTHENING INSTITUTIONAL RESEARCH PARTNERSHIPS. – In cases where a research grant involves a partnership of colleges and universities, including a minority-serving institution or a predominately undergraduate institution, the Director is required to award funds to at least two of the institutions directly, including at least one minority-serving or predominately undergraduate institution.

SEC. 225. NATIONAL SCIENCE BOARD REPORT ON MID-SCALE INSTRUMENTATION. – Requires the Board to evaluate the need for mid-scale research instrumentation (instrumentation that falls between the Major Research Instrumentation program and the Major Research Equipment and Facilities Construction program), and provide recommendations regarding how the Foundation can best address those needs.

SEC. 226. SENSE OF CONGRESS ON OVERALL SUPPORT FOR RESEARCH INFRASTRUCTURE AT THE FOUNDATION. – Expresses the sense of Congress that the Foundation should strive to keep the percentage of the Foundation budget devoted to research infrastructure in the range of 24 to 27 percent, as recommended in the 2003 National Science Board report, "Science and Engineering Infrastructure for the 21st Century."

SEC. 227. PARTNERSHIPS FOR INNOVATION. - Requires the Director to carry out a program to support partnerships between institutions of higher education and private sector entities in order to promote innovation and increase the economic and social impact of the research. Gives priority to partnerships that involve one of the top 100 research institutions and either a minority-serving institution, a primarily undergraduate institution, or a community college.

SEC. 228. PRIZE AWARDS. – Requires the Director to establish a 3-year pilot program to award innovation inducement cash prizes in research areas supported by the Foundation.

SUBTITLE C—STEM EDUCATION AND WORKFORCE TRAINING

SEC. 241. GRADUATE STUDENT SUPPORT. – Requires the Director to increase or decrease funding for the Integrative Graduate Education and Research Traineeship (IGERT) program at the same rate as the Graduate Research Fellowship (GRF) program. Requires that at least half of the total funds for IGERT and GRF come from the R&RA account. Requires the Director to increase the current cost of education allowance for awards made through the GRF program by $1,500.

SEC. 242. POSTDOCTORAL FELLOWSHIP IN STEM EDUCATION RESEARCH. – Requires the Director to establish a postdoctoral fellowship program to encourage recent doctoral degree graduates in the STEM fields to pursue STEM education research and become leaders in STEM education reform.

SEC. 243. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM. – Amends current law to remove the requirement that the service obligation of scholarship recipients be performed in a high-need local education agency, and instead provides a 1 year reduction of the service obligation for scholarship recipients who choose to perform their service in a high-need local education agency. Requires the Director to maintain a clearinghouse of information on teaching opportunities available in high-need local education agencies. Lowers the required amount of institutional matching for Noyce grants under Section 10A (master teachers and STEM professionals) from 50 to 30 percent.

SEC. 244. INSTITUTIONS SERVING PERSONS WITH DISABILITIES. – Ensures that institutions of higher education that are chartered to serve students with disabilities can benefit from STEM bridge programs and from research partnerships with major research universities funded by NSF. Clarifies that nothing in this section shall be construed to amend or otherwise affect any of the current statutory definitions for minority-serving institutions.

SEC. 245. INSTITUTIONAL INTEGRATION. - Requires the Director to award grants to colleges and universities for the integration of Foundation funded projects at those institutions in order to increase collaboration across funded projects and expand the impact of such projects.

SEC. 246. POSTDOCTORAL RESEARCH FELLOWSHIPS. – Requires the Director to establish a Foundation-wide postdoctoral research fellowship program, with priority given to proposals for interdisciplinary research and high-risk, high-reward research.

SEC. 247. BROADENING PARTICIPATION TRAINING AND OUTREACH. – Requires the Director to provide education and training to Foundation staff and review panels on effective tools for increasing participation in STEM by underrepresented groups.

SEC. 248. TRANSFORMING UNDERGRADUATE EDUCATION IN STEM. - Requires the Director to award grants to colleges and universities to reform undergraduate STEM education in their institutions, and specifies that proposals must include evidence of institutional support for, and commitment to, the proposed reform effort.

SEC. 249. 21ST CENTURY GRADUATE EDUCATION. – Requires the Director to award grants to institutions of higher education for the implementation or expansion of reforms in graduate STEM education that emphasize preparation for diverse STEM careers.

SEC. 250. UNDERGRADUATE BROADENING PARTICIPATION PROGRAM. - Prohibits the Foundation from consolidating the Historically Black Colleges and Universities Undergraduate Program, the Louis Stokes Alliances for Minority Participation program, and the Tribal Colleges and Universities Program into a single program in fiscal year 2011 (as proposed in the agency's budget request). Requires the Director to develop and submit a plan to Congress clarifying the objectives and rationale prior to any consolidation of the programs.

SEC. 251. GRAND CHALLENGES IN EDUCATION RESEARCH. - Requires NSF and the Department of Education (ED) to identify and prioritize grand challenges in research and development for pre- K-12 STEM education, and carry out and disseminate the results of such R&D. NSF and ED must issue a report to Congress outlining the grand challenges, the role of each agency in addressing the challenges, metrics for assessing progress toward meeting the challenges, how the agencies will disseminate the results of the research, and how the agencies will support the implementation of best practices.

SEC. 252. RESEARCH EXPERIENCES FOR UNDERGRADUATES. – Requires the Director to award grants to institutions of higher education, nonprofit organizations, or consortia of such institutions and organizations, for sites designated to provide research experiences for 10 or more undergraduate STEM students. Requires that research grant recipients planning to include undergraduate students in carrying out their research request support for the undergraduate students as part of the research proposal itself rather than as a supplement to the research proposal.

SEC. 253. LABORATORY SCIENCE PILOT PROGRAM. – Strikes the sunset clause for the Laboratory Science Pilot Program authorized in the 2007 COMPETES Act.

TITLE III—STEM EDUCATION

SEC. 301. COORDINATION OF FEDERAL STEM EDUCATION.- Establishes an interagency committee to coordinate Federal programs and activities in support of STEM education. Requires this committee to develop a STEM education strategic plan to inform program and budget planning for agencies and to establish and maintain an inventory of federally sponsored STEM education activities, including documentation on program assessments. Requires the Director of OSTP to submit an annual report to Congress including a description and level of funding of the STEM education programs and activities of each participating Federal agency for the previous and current fiscal years.

SEC. 302. ADVISORY COMMITTEE ON STEM EDUCATION.- Requires the President to establish an advisory committee on STEM education responsible for soliciting input from a variety of stakeholder groups in order to offer guidance to the President on how to better align Federal programs with the needs of States and school districts, and to improve connectivity

between public and private STEM education efforts.

SEC. 303. STEM EDUCATION AT THE DEPARTMENT OF ENERGY.- Clarifies the role of the Department in contributing to STEM education, including energy systems science and engineering education, at all levels. Specifies the kinds of STEM education programs and activities that the Department is authorized to carry out. Requires the Secretary to appoint or designate a Director of STEM education with responsibility to oversee and coordinate all STEM education programs and activities across the Department. Requires the Director to develop, implement, and update a STEM education strategic plan for the Department, and maintain an online inventory of STEM education programs at the Department. Requires the Secretary to consult and partner with the Department of Education and the National Science Foundation on STEM education activities, when appropriate. Requires the Secretary to award grants to colleges and universities to develop or expand the energy systems science and engineering education capabilities of the institution and provide support to graduate students pursuing such courses of study.

TITLE IV-NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

SEC. 401. SHORT TITLE.- National Institute of Standards and Technology Authorization Act of 2010

SEC. 402. AUTHORIZATION OF APPROPRIATIONS.- Authorizes a total of $5.628 billion for the National Institute of Standards and Technology (NIST) for FY 2011 through FY 2015. The total consists of authorization levels of $1.012 billion in FY 2011, $1.035 billion in FY 2012, $1.137 billion in FY 2013, $1.188 billion in FY 2014, and $1.256 billion in FY 2015. Includes within the total authorization a total of $3.495 billion for NIST labs for FY 2011 through FY 2015. The total for NIST labs consists of authorization levels of $620.0 million in FY 2011, $657.2 million in FY 2012, $696.7 million in FY 2013, $738.5 million in FY 2014, and $782.8 million in FY 2015. Includes within the total authorization a total of $589 million for construction and maintenance of facilities for FY 2011 through FY 2015. The total for construction and maintenance consists of authorization levels of $125 million for FY 2011, $85 million for FY 2012, $122 million for FY 2013, $124 million for FY 2014, and $133 million for FY 2015. Includes within the total authorization $1.545 billion for industrial technology services for FY 2011 through FY 2015, which includes a total of $681 million for the Technology Innovation Program (TIP), a total of $811.2 million for the Manufacturing Extension Partnership (MEP) program, and a total of $53.1 million for the Malcolm Baldrige National Quality Award program. The total for TIP consists of authorization levels of $116 million for FY 2011, $132 million for FY 2012, $147 million for FY 2013, $142 million for FY 2014, and $144 million for FY 2015. The total for MEP consists of authorization levels of $141.1 million for FY 2011, $150.9 million for FY 2012, $161.5 million for FY 2013, $172.8 million for FY 2014, and $184.9 million for FY 2015. The total for the Malcolm Baldrige National Quality Award program includes authorization levels for $10 million for FY 2011, $10.3 million for FY 2012, $10.6 million for FY 2013, $10.9 million for FY 2014, and $11.3 million for FY 2015.

SEC. 403. UNDER SECRETARY OF COMMERCE FOR STANDARDS AND TECHNOLOGY.- Creates the position of the Under Secretary of Commerce for Standards and Technology. The current Director of NIST would become the Under Secretary until a successor is appointed. (This is the same structure as at the National Oceanic and Atmospheric Administration (NOAA))

SEC. 404. REORGANIZATION OF NIST LABORATORIES.-

Organizes the NIST laboratories into the following operational units:

1) The Physical Measurement Lab, whose mission is to develop and maintain the national standards for length, mass, time, frequency, electricity, temperature, force, radiation, and developing standards policy;
2) The Information Technology Lab, whose mission and focus is developing standards and testing for interoperability, security, usability, and reliability of information technologies (IT) and communications technologies;
3) The Engineering Lab, whose mission is to develop and disseminate advance manufacturing and construction technologies, including performance metrics and technical standards for green infrastructure and energy efficiency, to the U.S. manufacturing and construction industries;
4) The Material Measurement Lab, whose mission is to serve as the national reference lab in biological, chemical, and material sciences and engineering;
5) The Center for Nanoscale Science and Technology, a nationally shared facility for use by industry, institutions of higher education, and federal agencies (including NIST), whose mission is to develop innovative nanoscale measurement and fabrication capabilities; and
6) The NIST Center for Neutron Research, a nationally shared facility for use by industry, institutions of higher education, and federal agencies (including NIST), whose mission is to provide neutron-based measurement capabilities for materials research, non-destructive evaluation, neutron imaging, chemical analysis, neutron standards, dosimetry, and radiation metrology.

Allows the Director to make future changes to the NIST laboratory structure, provided he submit a report to Congress before implementing such change.

SEC. 405. FEDERAL GOVERNMENT STANDARDS AND CONFORMITY ASSESSMENT COORDINATION.- Assigns the Director of NIST the responsibility of convening federal departments and agencies to coordinate Federal Government policy goals and engagement on international technical standards and conformity assessment-related activities, working with industry and standards development organizations. Requires the Director to submit a report to

Congress which addresses current and anticipated international standards issues with the potential to impact U.S. competitiveness and innovation capabilities, actions taken by the Federal Government to address these issues, and any action the Director is taking, or will take, to ensure effective Federal Government engagement on technical standards and conformity assessment-related issues.

SEC. 406. MANUFACTURING EXTENSION PARTNERSHIP.-

Updates the MEP program:

1) Requires MEP Centers to inform local and regional community colleges of the skill sets local manufacturers need in their workplace;
2) Creates an innovation services initiative to assist small and medium-sized manufacturers to reduce their energy usage and environmental waste and to accelerate the domestic commercialization of new product technologies (including components of renewable energy systems). It also requires centers perform market analysis to ensure there is market demand for these new product technologies;
3) Requires NIST to assess its administration of the MEP program using the criteria of the Malcolm Baldrige National Quality Award;
4) Reduces the required cost share of all MEP Centers for fiscal years 2011 through 2015 and requires a report from the Under Secretary four years after enactment, with his recommendations on cost-share provisions; and
5) Exempts the MEP Advisory Board from Section 14 of the Federal Advisory Committee Act (FACA), 'Termination of advisory committees; renewal; continuation.'

SEC. 407. BIOSCIENCE RESEARCH PROGRAM.- Establishes a Bioscience Research Program at NIST to support the development of standard reference materials and measurements to advance biologic drug research and development, molecular diagnostics, medical imaging technology, and personalized medicine. Requires that at least one fellow from the postdoctoral fellowship program be assigned to the bioscience research program.

Allows the Director to establish University Research Centers through a competitive application process to conduct research that furthers the objectives of the bioscience research program. It requires that, not later than three years after any University Research Center is established, the Director evaluate each center for its contribution to the bioscience research program. If multiple university research centers are established, the Director shall convene an annual meeting among the researchers at such centers and NIST to foster collaboration.

Under the competitive application process, the institution must describe its research and instructional capacity in biosciences; research projects that will be undertaken; the extent to which any research program will include industry partners; the distribution of research results; and how the projects to be undertaken at the University Research Center will further the objectives of the bioscience research program. The competitive application process would also require the Director to give special consideration to minority-serving institutions, as defined in 7 U.S.C. §7061 and 20 U.S.C. § 1059 *et. seq.*

Allows the Director to establish a user facility for industry, institutions of higher education, nonprofit organizations, and government agencies in order to perform research and testing, and provide access to advanced or unique equipment, services, materials, and other resources.

Changes the number of NIST's Visiting Committee on Advanced Technology members to vary between 15 and 20 and requiring at least 13 of those members to be from U.S. industry; requires the Director to include the bioscience research program in the programmatic planning document transmitted to Congress.

SEC. 408. EMERGENCY COMMUNICATION AND TRACKING TECHNOLOGIES RESEARCH INITIATIVE.- Requires the Director to establish an initiative to support the development of technical standards and conformance architecture to improve the operation and reliability of emergency communication and tracking technologies used in confined spaces, such as underground mines, and shielded environments, such as high-rise buildings and collapsed structures; requires the Director, as part of this initiative, to perform an assessment of the measurement, technical standards, and conformity assessment needs for these types of technologies and to submit a report on this needs assessment to Congress 18 months after enactment.

SEC. 409. TIP ADVISORY BOARD.- Exempts the TIP Advisory Board from Section 14 of FACA.

SEC. 410. UNDERREPRESENTED MINORITIES.- Requires the Director to give consideration to the goal of promoting underrepresented minorities in evaluating applications for NIST fellowships for university students and post-doctoral researchers. Also requires the Director to give special consideration for applications received from teachers at high-needs schools for the NIST teacher science and technology enhancement program.

SEC. 411. CYBERSECURITY STANDARDS AND GUIDELINES.- Clarifies that the use of cybersecurity standards and guidelines developed by NIST for industry and public would not be mandatory.

SEC. 412. DEFINITIONS.- Defines the terms 'Director' and 'Federal Agency.'

TITLE V-INNOVATION

SEC. 501. OFFICE OF INNOVATION AND ENTREPRENEURSHIP.- Requires the Secretary of Commerce to establish an Office of Innovation and Entrepreneurship to foster innovation and the commercialization of new technologies, products, processes, and services; specifies the duties to be carried out by the Office.

Establishes an Advisory Council on Innovation and Entrepreneurship to provide advice to the Secretary.

SEC. 502. FEDERAL LOAN GUARANTEES FOR INNOVATIVE TECHNOLOGIES IN MANUFACTURING.- Requires the Secretary of Commerce to establish a program to provide loan guarantees to small- and medium-sized manufacturers; defines eligible projects as projects to reequip, expand, or establish manufacturing facilities in the United States to use an innovative technology or an innovative process in manufacturing, or to manufacture an innovative technology product or an integral component of such product.

Limits the amount of a loan guarantee to an amount equal to 80 percent of the loan; sets out specific limitations on the authority to make loan guarantees; lays out requirements and limitations in the case of default; permits the Secretary to pay principal and interest to lenders or other holders of the loan in specified circumstances; sets out terms and conditions for loan guarantees and requires that the Secretary consult with the Secretary of the Treasury in establishing terms and conditions for loan guarantees.

Requires the Secretary to charge and collect fees for loan guarantees; mandates that borrowers, lenders, and other appropriate parties keep pertinent records and documents to facilitate an effective audit; provides for the full faith and credit of the United States for the payment of loan guarantees; requires the Secretary to issue final regulations before making any loan guarantees and specifies specific items that must be included in the final regulations.

Requires the Secretary to enter into an arrangement with an independent auditor for annual evaluations of the program and requires the Comptroller General to conduct an annual review of the Secretary’s execution of the program; mandates a report to Congress containing a summary of all activities carried out under the program.

Requires that the Secretary ensure that activities carried out under the program are coordinated with, and do not duplicate the efforts of, other loan guarantee programs within the Federal Government.

Authorizes the Secretary to use centers established under Manufacturing Extension Partnership (MEP) program to provide information about the program and to conduct outreach to potential borrowers.

Defines “cost”, “innovative process”, “innovative technology”, “loan guarantee”, “obligation”, and “program”.

Provides an authorization of $50 million for each of Fiscal Year 2011 through Fiscal year 2015 for the cost of loan guarantees; provides an authorization of such sums as are necessary for the Secretary to make payments of principal and interest under subsection (g).

SEC. 503. REGIONAL INNOVATION PROGRAM.- Requires the Secretary of Commerce to establish a regional innovation program to encourage and support the development of regional innovation strategies, including regional innovation clusters.

Authorizes the Secretary to award grants on a competitive basis to States, tribes, local governments, nonprofit organizations, institutions of higher education, public-private partnerships, or economic development organizations for activities relating to the formation and development of regional innovation clusters; specifies activities for which grants may be used; defines eligible recipient; establishes requirements for grant applications; limits the amount of any project that the Secretary can provide to 50 percent; requires that the Secretary ensure that activities funded use and apply research, best practices, and metrics developed under the innovation research and information program.

Establishes a regional innovation research and information program; specifies the activities of the research and information program; permits the Secretary to award research grants to support and further the goals of the program; requires that the Secretary make data and analysis compiled under the research and information program available to other Federal agencies, State and local governments, and nonprofit and for-profit entities; requires that the Secretary incorporate data and analysis relating to any regional innovation cluster supported by a grant under subsection (b) into the research and information program.

Requires that the Secretary ensure that activities are coordinated with, and do not duplicate the efforts of, other programs at the Department of Commerce and other Federal agencies; requires the Secretary to explore and pursue ways to collaborate with other Federal agencies, including through multiagency funding opportunities, on regional innovation strategies.

Requires that the Secretary, within 4 years of enactment, enter into a contract with an independent entity, such as the National Academy of Sciences, to conduct an evaluation of the program, including a recommendation as to whether the program should be continued or terminated.

Defines “regional innovation cluster”

Authorizes such sums as are necessary for each of fiscal years 2011 through 2015 to carry out the program.

TITLE VI- DEPARTMENT OF ENERGY

SUBTITLE A – OFFICE OF SCIENCE

SEC. 601. SHORT TITLE.- Gives title of the bill as the “DOE Office of Science Authorization Act of 2010”

SEC. 602. DEFINITIONS.- Provides definitions for “DEPARTMENT”, “DIRECTOR”, “OFFICE OF SCIENCE”, and “SECRETARY”

SEC. 603. OFFICE OF SCIENCE ACTIVITIES.- Directs the Secretary of Energy to carry out research activities in science supporting the missions of the Department, including programs on basic energy sciences, biological and environmental research, advanced scientific computing research, fusion energy sciences, high energy physics, and nuclear physics.

Instructs the Department’s Under Secretary for Science to ensure the coordination with the other activities of the Department, and support joint activities among the Department’s programs.

SEC. 604.- BASIC ENERGY SCIENCES PROGRAM.- Directs the Director of the Office of Science to carry out a program in basic energy sciences, including materials sciences and engineering, chemical sciences, biosciences, and geosciences, for the purpose of providing the scientific foundations for new energy technologies.

As part of this program, the Director is instructed to support: construction and operation of the program’s major user facilities; competitively awarded energy frontier research centers; and relevant accelerator research and development activities, in coordination with the Office of Science’s High Energy Physics and Nuclear Physics programs.

SEC. 605. BIOLOGICAL AND ENVIRONMENTAL RESEARCH PROGRAM.- Authorizes a program of research, development, and demonstration in the areas of biological systems science and climate and environmental science.

The biological systems science research includes activities to: establish a virtual systems biology information framework; support research on computational biology; continue the research of the bioenergy research centers, and expand them to include biobased products; and direct the program to develop a synthetic biology plan.

The climate and environment science research includes activities to: support the research and coordination of the ecosystem observation AmeriFlux Network; develop a next-generation ecosystem-climate change experiment; continue research in regional and global climate modeling; support integrated assessment research.

SEC. 606. ADVANCED SCIENTIFIC COMPUTING RESEARCH PROGRAM.- Directs the Director to carry out a research, development, demonstration, and commercial application program to advance computational and networking capabilities to analyze, model, simulate, and predict complex phenomena relevant to the development of new energy technologies and the competitiveness of the United States.

Instructs the Secretary to produce a plan to integrate and leverage the expertise and capabilities of the program, as well as other relevant computational programs and resources supported by the Federal Government, to advance the missions of the Department's applied energy and energy efficiency programs.

Instructs the Secretary to, at least 18 months prior to the initiation of construction or installation of any exascale-class computing facility, produce a plan detailing the proposed facility's cost projections and capabilities to significantly accelerate the development of new energy technologies.

Authorizes research and development activities in applied mathematics, high-end computing software development, and next-generation computing architectures and platforms to support the missions of the Department.

SEC. 607. FUSION ENERGY RESEARCH PROGRAM.- Directs the Director to carry out a fusion energy sciences research and development program on the scientific and engineering challenges to building a cost-competitive fusion power plant and a fusion power industry in the United States.

As part of this program, the Director is instructed to: coordinate and carry out the responsibilities of the United States with respect to the ITER international fusion project; produce a 10-year prioritization plan; support fusion materials research and development activities in coordination with the Assistant Secretary for Nuclear Energy; carry out a computational project to advance the capability of fusion researchers to accurately simulate an entire fusion energy system, in collaboration with the Advanced Scientific Computing Research program.

In addition, the Secretary is instructed to establish a research and development program in inertial fusion for energy applications.

SEC. 608. HIGH ENERGY PHYSICS PROGRAM.- Directs the Director to carry out a research program on the elementary constituents of matter and energy and the nature of space and time.

As part of this program, the Director is instructed to support research in the nature of the neutrino, dark energy, and dark matter.

The Director is also instructed to carry out research and development in advanced accelerator concepts and technologies to reduce the necessary scope and cost for the next generation of particle accelerators.

SEC. 609. NUCLEAR PHYSICS PROGRAM.- Directs the Director to carry out a research program, and support relevant facilities, to discover and understand various forms of nuclear matter.

Director is also instructed to carry out a program for the production of isotopes, including the development of techniques to produce isotopes, for research applications.

SEC. 610. SCIENCE LABORATORIES INFRASTRUCTURE PROGRAM.- Directs the Director to carry out a program to improve the safety, efficiency, and mission readiness of infrastructure at Office of Science laboratories.

Sets the minor construction threshold at Office of Science laboratories at $10 million, to be adjusted by the Secretary in accordance with the Engineering News-Record Construction Cost Index, or an appropriate alternative index as determined by the Secretary, once every five years after the date of enactment of this Act.

SEC. 611. AUTHORIZATION OF APPROPRIATIONS.- Authorizes to be appropriated to the Secretary of Energy for the activities of the Office of Science: $6,221,000,000 for FY 2011; $6,656,000,000 for FY 2012; $7,122,000,000 for FY 2013; $7,621,000,000 for FY 2014; $8,154,000,000 for FY 2015.

SUBTITLE B – ADVANCED RESEARCH PROJECTS AGENCY-ENERGY

SEC. 621. Short Title.- *ARPA-E Reauthorization Act of 2010*

SEC. 622. ARPA-E AMENDMENTS.- Amends section 5012 of the America COMPETES Act of 2007 through the following:

(1) in GOALS

Adds provisions to clarify that ARPA-E will achieve its goals through both fundamental “and applied” science, and through “promoting the commercial application of advanced energy technologies”.

(2) in GOALS

Emphasizes that the R&D on manufacturing processes and technologies should be for the domestic manufacturing of novel energy technologies.

(3) Re-designates subsections (f) as (g), and reorders all subsections thereafter

(4) Inserts new subsection “(f) AWARDS” to clarify that the Director of ARPA-E has the authority to initiate and execute the full range of award instruments of the Department, including grants, contracts, cooperative agreements, cash prizes and other transactions. “Other Transactions Authority” is a flexible contracting authority granted to the Department in Section 1007 of the Energy Policy Act (EPAct) of 2005.

(5) in PERSONNEL

Inserts new paragraph (1) requiring the Director to maintain a staff of qualified and experienced legal counsel, contracting personnel, and program directors to serve solely within ARPA-E, thus further allowing ARPA-E to remain separate and distinct from the other programs within the Department.

Makes changes to clarify that program managers (program directors) can direct more than one program, and that program managers (program directors) are not required to seek the advice of advisory committees or scientific organizations in making award selections.

Adds to the list of program manager (program director) responsibilities identifying cost-sharing opportunities for projects, including through possible exercising of waiver authority by the Secretary under Section 988 of EPAct 2005; and identifying ways to transfer successful energy technology projects to the marketplace.

Clarifies that the term of a program manager (program director) may be “up to” 3 years.

Strikes requirement that ARPA-E have at least 70 and not less than 120 personnel.

Replaces term “program manager” with “program director” to align with current practices of ARPA-E.

Authorizes the Director to select exceptional scientific, legal, business, and technical personnel to serve as limited terms as Fellows.

(6) in REPORTS and ROADMAPS

Shifts deadlines for the Strategic Vision Roadmap from 2008 and 2011, to 2010 and 2013, respectively.

(7) in FEDERAL DEMONSTRATION OF TECHNOLOGIES

Strengthens existing language to require Director to actively seek opportunities to demonstrate ARPA-E technologies through procurement by DOE and other federal agencies.

(8) Inserts new subsection “(k) EVENTS” authorizing the Director to convene events for the purposes of allowing ARPA-E project awardees and finalist to demonstrate technologies to a range of stakeholders, and for other purposes as determined by the Director.

(9) in ARPA-E EVALUATION

Changes from “4 years” to “6 years” the time after establishment at which the National Academies will evaluate the performance of ARPA-E.

(10) in ARPA-E EVALUATION

Adds a requirement that the lessons learned in the National Academies evaluation of ARPA-E shall consider how such lessons may apply to other programs within DOE.

(11) in FUNDING

Extends Authorization of Appropriations for Fiscal Years 2011 through 2015:

(A) $300,000,000 for fiscal year 2011
(B) $500,000,000 for fiscal year 2012
(C) $700,000,000 for fiscal year 2013
(D) $900,000,000 for fiscal year 2014
(E) $1,000,000,000 for fiscal year 2015

And such sums as are necessary for each of fiscal years 2016 through 2020.

(12) in FUNDING

Strikes Limitation which made fiscal year 2008 funding for ARPA-E contingent upon the Office of Science receiving an increase from 2007.

(13) in FUNDING

Increases the amount of funds that shall be used for technology transfer and outreach activities from 2.5 percent to 5 percent of total appropriated funds, consistent with the program's goals of advancing technologies to commercial application.

SUBTITLE C – ENERGY INNOVATION HUBS

SEC 631. SHORT TITLE.- *Energy Innovation Hubs Authorization Act of 2010*

SEC 632. ENERGY INNOVATION HUBS.-

(a) ESTABLISHMENT OF PROGRAM.- Directs the Secretary to carry out a program to create Energy Innovation Hubs that will conduct and support research, development, demonstration and commercial application of advanced energy technologies. Where practicable these activities should occur in a central location. Each Hub created shall be focused on a particular unique advanced energy technology. The Secretary will ensure that the program is coordinated with other DOE research entities so as to avoid duplication and shall convene representatives from the Hubs, DOE, and any other relevant entities the Secretary find appropriate. The Secretary shall also administer each Hub through a DOE program with relevant jurisdiction based on a Hub's technology focus.

(b) CONSORTIA.- Outlines the requirements that must be met by an applicant consortium in order to be eligible to form a Hub. A consortium must be made up of at least two qualifying entities who have created a binding agreement documenting the partnership agreement, measures to ensure cost-effective implementation, a proposed budget, conflict of interest procedures, an

accounting structure, and an external advisory committee. The application made by the consortium to the Secretary will be made by one of the consortium's members as a prime applicant. The application shall describe the consortium agreement and, in the event consortium members will not be in a centralized location shall include a communications plan to ensure integration of the Hub's activities.

(c) SELECTION AND SCHEDULE.- Establishes the process by which the Secretary shall review all consortium applications received. The Secretary shall review all Hub applications received, and consortia grants will be approved through a competitive process. Any grant made to a Hub shall be for a period no longer than five years and may be renewed through a competitive process.

(d) HUB OPERATIONS.- Details that a Hub shall conduct multidisciplinary, collaborative research, development, demonstration, and commercial application of advanced energy technologies. A Hub shall encourage collaboration and communication and, whenever practicable, conduct its activities at one centralized location. In order to provide greater transparency, the Hub shall develop and publish on DOE's website all proposed plans and programs. In addition to a general duty to monitor project implementation and coordination, the Hub shall submit an annual report to the Secretary that summarizes all activities and projects, expenditures, and external advisory committee members.

The external advisory committee each Hub is required to establish under this section will advise Hub management on programs and planned activities, but shall not have decision making authority. The advisory committee membership should have sufficient expertise to provide guidance on scientific, technical, financial, and research management matters.

This section also requires each Hub to establish procedures to address conflicts of interest, consistent with those already established by DOE. The Secretary may disqualify an application or revoke funds if a failure to disclose any conflict of interest is discovered.

(e) PROHIBITION ON CONSTRUCTION.- Prohibits any funds granted by the Secretary to a Hub to be used for construction of a new building or facility for Hub activities. Furthermore, construction of new buildings or facilities shall not be considered as part of the non-Federal share of a Hub cost-sharing agreement. Excluded from this prohibition are any buildings or facilities constructed to serve as a test bed or any renovations to existing buildings or facilities so long as the test bed or renovations are limited to the scope and scale of the research.

(f) OVERSIGHT BOARD.- Requires the Secretary to establish within the Department an Oversight Board to monitor the Hubs and their activities.

(g) DEFINITIONS.- Provides the definitions for terms used within the bill, including: Advanced Energy Technology, Hub, Institution of Higher Education, Qualifying Entity, and Secretary.

(h) AUTHORIZATION OF APPROPRIATIONS.- Provides authorizations for each of the fiscal years 2011 through 2015 as follows:

(1) $110,000,000 for fiscal year 2011;

(2) $135,000,000 for fiscal year 2012;

(3) $195,000,000 for fiscal year 2013;

(4) $210,000,000 for fiscal year 2014; and

(5) $210,000,000 for fiscal year 2015.