SECTION BY SECTION
AMERICA COMPETES REAUTHORIZATION ACT OF 2015

Sec. 1. Short Title; Table of Contents.
This section establishes the short title of the bill as the "America COMPETES Reauthorization Act of 2015."

Sec. 2. Definitions.
This section defines STEM, STEM Education and Committee on STEM Education.

TITLE I – NATIONAL SCIENCE FOUNDATION

Sec. 101. Authorization of Appropriations.
This section authorizes appropriations for fiscal years 2016 and 2017 for NSF. This includes specific allocations of $6,186,300,000 for research and related activities, $834,800,000 for the Biological Science Directorate, $1,050,000,000 for the Computer and Information Science and Engineering Directorate, $1,034,000,000 for the Engineering Directorate, $1,200,000,000 for the Geosciences Directorate, $1,500,000,000 for the Mathematical and Physical Science Directorate, $150,000,000 for the Social, Behavioral, and Economics Directorate, of which $50,000,000 is for the National Center for Science and Engineering Statistics, $38,520,000 for the Office of International Science and Engineering, $377,500,000 for Integrative Activities, and $1,480,000 for the United States Arctic Commission. Further, $866,000,000 will be allocated for education and human resources, $200,310,000 for major research equipment and facilities construction, $325,000,000 for agency operations and award management, $3,870,000 for the Office of the National Science Board, and $15,660,000 for the Office of the Inspector General.

Sec. 102. Findings.
This section contains findings regarding the importance of the research and education activities supported by the NSF, the importance of accountability and transparency in federal research funding, and notes that NSF-sponsored research should serve the national interest.

Sec. 103. Policy Objectives.
States the policy objectives that the NSF should follow when allocating resources. These include: renewing and maintaining the Nation's international leadership in science and technology through specified activities; increasing overall workforce skills; and strengthening innovation by expanding the focus of competitiveness and innovation policy at the regional and local level.

Sec 104. Definitions.
This section provides relevant definitions within Title I.

Sec 105. Accountability and Transparency.
Section 105 states that it the sense of Congress that: sustained, predictable Federal funding is essential to U.S. leadership in science and technology; building understanding of and confidence in investments in basic research are essential to support for Federal funding; and NSF should

commit itself to transparency and accountability as well as clear public communication regarding the national interest for every NSF-awarded grant and cooperative agreement.

Sec. 106. Greater Accountability in Federal Funding for Research.
This section states that NSF will award funding for new grants or cooperative agreements only if a determination is made and written justification is published by NSF affirming that said grant or agreement is worthy of Federal funding and is in the national interest consistent with the law establishing the NSF in 1950, and further determined by meeting specified criteria. States that nothing in this section alters the Foundation's intellectual merit or broader impacts criteria for evaluating grants.

Sec. 107. Obligation of Major Research Equipment and Facilities Construction Funds.
This section states that no funds may be used for an NSF construction project until at least 30 days after the report required under section 14 (a)(2) of the National Science Foundation Authorization Act of 2002 is transmitted to Congress.

Sec. 108. Management and Oversight of Large Facilities.
This section requires the Director to maintain within the Office of the Director a Large Facilities Office that will support all research directorates in the development, implementation and evaluation of major research facilities. Further, the Director must appoint a senior agency official within the Office of the Director whose primary responsibility is oversight of major research facilities. This section also establishes new requirements and procedures for fiscal management and oversight of construction of major multi-user research facilities, including auditing requirements. This section further allows contingency fees only for events the occurrence of which are foreseeable with certainty as to time, intensity, or the assurance of them happening, and are supported by verifiable cost data. Requires the Foundation to estimate costs associated with unforeseen events that could occur, and retain the funds allocated for such purposes only to be released when the awardee demonstrates a bona fide need for the funds. This section also defines and sets restrictions on the use of "management fees," including a prohibition on certain unallowable expenses including: alcoholic beverages, tickets to concerts or sporting events, vacation or other travel for non-business purposes, charitable contributions, social or sporting club memberships, meals for non-business purposes, luxury or personal items, and lobbying.

Sec. 109. Whistleblower Education.
Section 109 states that the NSF must provide education and training for Foundation managers and staff on Section 4712 in the US Code, the *Pilot Program for Enhancement of Contractor Employee Whistleblower Protections.* This information must also be transmitted to all NSF grantees, contractors, and employees.

Sec. 110. Graduate Student Support.
This section conveys the sense of Congress that essential elements of the NSF Research Traineeship, formerly the Integrative Graduate Education and Research Traineeship, shall be maintained. This section instructs the Director to enter into an agreement with the National Research Council to convene a workshop to examine models of Federal support for STEM

graduate students. The purpose of the workshop shall be to compare and evaluate the extent to which each model helps to prepare graduate students for diverse careers utilizing STEM degrees.

Sec 111. Permissible Support.
This section allows the Directorate for Education and Human Resources to support informal education grants for the participation of underrepresented students in nonprofit competitions, out-of-school activities, and field experience related to STEM subjects and allows support to broaden secondary school students' access to and interest in careers that require academic preparation in STEM subjects.

Sec. 112. Expanding STEM Opportunities.
Section 112 states that within the Directorate for Education and Human Resources, under existing programs targeting broadening participation, the Director may provide grants on a merit-reviewed, competitive basis for research on programming that engages underrepresented students in grades K-8 in order to better educate these students in STEM subjects. Grants awarded under this section can be used for providing before-school, after-school, out-of-school, or summer activities, and specifies permitted activities under these grants. This section specifies that in awarding grants, the Director shall give priority to applicants that include or partner with a non-profit, nongovernmental organization that has experience and expertise in increasing the participation of underrepresented students in STEM. It also requires that no later than 5 years after the date of enactment, the Director shall evaluate the program established under this Act, and provide a report to Congress on the evaluation and make the report widely available. Specifies that the Director must consult, cooperate, and coordinate with relevant Federal agencies to enhance program effectiveness and avoid duplication.

Sec. 113. Review of Education Programs.
Requires the Director to review NSF's education programs to determine whether there is any duplication in these programs and how these programs are being evaluated and assessed for outcome-oriented effectiveness. The Director must complete a report, submit the report to Congress and make it publicly available.

Sec. 114. Recompetition of Awards.
Section 114 includes findings that state that the merit-review process and recompetition of awards is the best way to ensure effective stewardship of NSF funds. This section requires the Director to ensure that the system for recompetition of multi-user research facilities is fair, consistent, and transparent and allows for renewal of grants and awards in a timely manner. It also requires that the Director periodically evaluate whether the criteria are being applied in a manner that is transparent, reliable, and valid.

Sec. 115. Sense of the Congress Regarding Industry Investment in STEM Education.
States that it is the sense of Congress that: many industry sectors are becoming involved in STEM at K-12, undergraduate, and graduate levels to bolster the future workforce; partnerships with education providers, STEM-focused competitions, and other opportunities are important pieces of private sector efforts to strengthen the STEM workforce; understanding the private sector's efforts in STEM will inform the Federal Government's role in STEM education; and NSF should support successful private sector STEM initiatives.

Sec. 116. Misrepresentation of Research Results.
Section 116 states that falsification, fabrication, plagiarism or other misrepresentation of research results obtained while working under an NSF grant is prohibited under the NSF's Research Misconduct Regulation. Within 30 days of the final administrative action of the Foundation, a finding of research misconduct must be made publicly available, including the name of the principal investigator.

Sec. 117. Research Reproducibility and Replication
This section states that it is the sense of Congress that the gold standard of good science is the ability of a researcher or lab to reproduce a method and finding; there is growing concern that significant amount of published research findings cannot be reproduced or replicated; there are a complex set of factors affecting reproducibility and replication; and the increasing interdisciplinary nature and complexity of scientific research may be a contributing factor to issues with research reproducibility and replication. Directs the Director to enter into an agreement with the NRC to provide a report assessing these issues and make recommendations.

Sec. 118. Research Grant Conditions.
Section 118 requires NSF to establish procedures to ensure that: a research grant awarded by NSF to a PI does not duplicate the aims and scope of any grants being directly funded by another agency; a PI includes in a grant application to the NSF a list of all Federal funding received by the PI and any outstanding funding requests; unpublished results used to support a proposal made to NSF do not contain knowing misrepresentations of data; PIs that receive NSF funding under more than one grant at a time have sufficient resources to conduct the proposed research under each grant request; and barriers to early career and new PIs are addressed to take into account the potential of the investigator as well as potential impact of the project.

Sec. 119. Computing Resources Study.
This section requires the Comptroller General to transmit to Congress a report on the results of a study on efficient use – through sharing, where possible – of computing resources funded by NSF at institutions of higher education.

Sec. 120. Scientific Breakthrough Prizes.
This section requires the Director of NSF to place a high priority on designing and administering pilot programs for scientific breakthrough prizes that are consistent with Office of Science and Technology Policy guidelines and are of strategic importance to the national interest.

Sec. 121. Rotating Personnel.
To help control costs, this section requires the Deputy Director to provide written justification and waiver for each instance in which maximum rate of pay for members of the Senior Executive Service is exceeded; a detailed written justification and waiver must be provided by the Director in each instance in which the annual salary rate of the Vice President of the United States is exceeded; and the National Science Board shall provide an annual report to Congress on the costs to the Foundation of employing such individuals.

Sec. 122. Sense of Congress Regarding Innovation Corps.
This section contains a sense of Congress stating that: NSF's Innovation Corps (I-Corps) was established to foster a national innovation ecosystem; the I-Corps includes investment in entrepreneurship and commercialization education, training, and mentoring that should lead to the practical deployment of technologies, products, processes, and services that improve the Nation's competitiveness, promote economic growth, and benefit society; and by building networks of entrepreneurs, mentors, institutions, and collaborations, and supporting specialized education and training, the I-Corps is at the leading edge of a strong, lasting foundation for an American innovation ecosystem.

Sec. 123. Brain Research through Advancing Innovative Neurotechnologies Initiative.
Section 123 encourages the NSF to support the funding of research activities related to the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative and through cooperation with the Interagency Working Group on Neuroscience.

Sec. 124. Noyce Scholarship Program Amendments.
This section amends the NSF Noyce Master Teaching Fellowship program to allow participants with a bachelor's degree working toward a Master's to participate in the program. This section adds computer science to current definitions in the Noyce Teacher Scholarship Program.

Sec. 125. Informal STEM Education.
This section states that the Directorate for Education and Human Resources will continue to award competitive, merit-reviewed grants to support research and development of out-of-school STEM learning environments. Funds used for these activities may be used for research and development that improves understanding of the learning process, and design and testing of learning models and programs for K-12 students, K-12 teachers, and the general public.

TITLE II – SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHETMATICS

Sec. 201. Findings; Sense of Congress.
This section includes findings stating the continued need for STEM education in the U.S. Additionally, this section states that more effective coordination and adoption of performance measurements is needed for federally supported STEM programs; that leveraging private and non-profit investment in STEM is essential to strengthening the Federal STEM portfolio; that strengthening the Federal STEM portfolio may require program consolidations and terminations, but only as evidence and stakeholder input warrants; coordinating STEM programs and activities across the Federal Government in order to limit duplication and engage stakeholders will strengthen the results of the U.S.'s Federal STEM education programs and activities and in turn strengthen the United States economy.

Sec. 202. STEM Education Advisory Panel.
This section instructs the President to establish or designate a STEM Education Advisory Panel incorporating key stakeholders from the education and industry sectors within the President's Council of Advisors on Science and Technology. The panel will assess and develop

recommendations on: progress made in implementing the STEM Education Strategic Plan; the management, coordination and implementation of federal STEM education programs and activities; the appropriateness of criteria used by Federal agencies to evaluate the effectiveness of Federal STEM Education programs and activities; ways to leverage private and non-profit STEM investments and encourage public-private partnerships to build the STEM workforce pipeline; ways to incorporate workforce needs into Federal STEM education programs, particularly in areas experiencing high unemployment rates; ways to better integrate Federal STEM programs and activities from pre-K through graduate study and the workforce, and from in-school to out-of-school in order to improve transitions in the STEM pipeline; whether societal and workforce concerns are adequately addressed by current Federal STEM education programs and activities; the extent to which Federal STEM education programs and activities are contributing to recruitment and retention of women and underrepresented students in the STEM education and workforce pipeline; and ways to encourage geographic diversity in STEM education and the workforce pipeline. The panel must report to Congress and President on the aforementioned assessments every three years. This section allows travel expenses for panel members.

Sec. 203. Committee on STEM Education.
This section amends language from the 2010 COMPETES Act that established a Committee on STEM Education (CoSTEM) under the National Science and Technology Council. The amendments require CoSTEM to collaborate with external stakeholders and review the evaluation measures used for federal STEM education programs. This section also amends CoSTEM's role in the inventory of federal STEM programs.

Sec. 204. STEM Education Coordinating Office.
Section 204 requires the Director of NSF to establish a STEM Education Coordinating Office within the Directorate for Education and Human Resources that is responsible for coordinating STEM education activities among departments of the Federal Government. The Coordinating office will serve as a point of contact on Federal STEM education activities and periodically update and maintain an inventory of federally sponsored STEM education programs. It also requires the Director of the Coordinating Office to submit an annual report to Congress containing: a description of STEM education programs across the Federal Government; recommendations and explanations for consolidation or termination of programs; a description of any significant new STEM Education public/private partnerships; and a description of the progress made in carrying out the three year strategic plan. Requires the Director of NSF to encourage and monitor the efforts of the Coordinating Office.

TITLE III – OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Sec. 301. Authorization of Appropriations.
This section authorizes $4,550,000 for fiscal year 2016 and $4,550,000 for fiscal year 2017 for the Office of Science and Technology Policy.

Sec. 302. Regulatory Efficiency.
This section requires the Director of OSTP to establish a working group, which will include the Office of Management and Budget, to review federal regulations affecting research and research

universities and make recommendations on how to harmonize, streamline, and eliminate duplicative regulations and reporting requirements and minimize the regulatory burden on institutions of higher education performing federally funded research. The Director must submit an annual report to Congress on what steps have been taken to carry out the recommendations of the working group.

Sec. 303. Coordination of International Science and Technology Partnerships.
Establishes a body co-chaired by OSTP and the State Department to identify and coordinate international science and technology cooperation that can strengthen the American science and technology enterprise, improve economic and national security, and support our Nation's foreign policy goals. This section requires the Director of OSTP to submit a report to Congress every two years describing the work of the body, the ongoing and new partnerships established since the last report, the means by which stakeholder input was received as well as summary views of that input, and the issues influencing U.S. scientists' abilities to collaborate with foreign counterparts. This section also requires OSTP to submit an additional report to Congress 60 days after enactment and annually thereafter, on foreign travel conducted by OSTP personnel.

Sec. 304. Alternative Research Funding Models.
Provides science agencies, in consultation with OSTP, the authority to conduct pilot programs to validate alternative research funding models including scientific breakthrough prize programs and novel mechanisms of funding such as crowd-sourced funding. This section also establishes parameters for judging prize competitions and requires prize competitions to be widely advertised. Finally, it requires an annual report to Congress on the programs identified and conducted, and separately, 30 days after enactment, OSTP must transmit to Congress a non-disclosure/conflict of interest document that individuals who serve as judges who are not federal employees will be required to sign.

Sec. 305. Amendments to Prize Competitions.
Amends the Stevenson-Wydler Technology Innovation Act of 1980 (15 USC 3719) to require notices of prize competitions to be published online. Also amends language to explicitly allow prize funding to come from for profit or nonprofit entities in the private sector as well as Federal agencies; this section notes specifically that the head of an agency may not give any special consideration to a private sector for-profit or nonprofit entity in return for a donation. This section also adds to the annual report a requirement that it include a description of crosscutting topical areas and agency-specific mission needs that may be the strongest opportunities for prize competitions over the next two fiscal years.

Sec. 306. United States Chief Technology Officer.
Amends Title II of the National Science and Technology Policy, Organization, and Priorities Act of 1976 by adding a section that designates the Presidentially-appointed U.S. Chief Technology Officer (USCTO) to be one of the Associate Directors of OSTP. In addition to functions the President and OSTP Director may assign to the USCTO, this section identifies various duties assigned to the USCTO, including that the individual promote transparency and accountability across the federal government for all technological implementation by working with agencies to ensure that each arm of the federal government, including the executive branch, makes its records open and accessible. The USCTO is also required to promote security and privacy

protection policies for all federal information technology systems. Additionally, this section requires the USCTO to submit an annual report to the President, OSTP and Congress, in consultation with the Office of Management and Budget, on the current state of information systems of all federal agencies, including a review of websites with third-party embedded tools, and the amount of money being spent on various technologies.

Sec. 307. National Research Council Study on Technology for Emergency Notifications on University Campuses.
This section directs the Director of OSTP to enter into an agreement with the National Research Council to conduct a study to identify and review technologies employed at institutions of higher education to provide notifications to students, faculty, and other personnel during emergency situations in accordance with the requirements of existing law.

TITLE IV – NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

Sec. 401. Authorization of Appropriations.
For fiscal years 2016 and 2017, this section authorizes $933,700,000 for the National Institute of Standards and Technology. For each fiscal year, this section specifies that $744,700,000 shall be for scientific technical research and services laboratory activities, $59,000,000 shall be for the construction and maintenance of facilities, and $130,000,000 shall be for industrial technology services activities of which $125,000,000 shall be used for the Manufacturing Extension Partnership program and $5,000,000 shall be for the Network for Manufacturing Innovation program.

Sec. 402. Standards and Conformity Assessment.
Amends Section 2 of the National Institute of Standards and Technology Act by adding language stating that the Director of NIST is authorized to serve "as the President's principal adviser on standards policy pertaining to the Nation's technological competitiveness and innovation ability"; replacing standards language to read: "facilitate standards-related information sharing and cooperation between Federal agencies''; and enabling more seamless technical standards related information sharing. This section would also add language authorizing the Director of NIST to participate in and support scientific conferences and perform pre-competitive measurement science and technology research in partnership with higher education and industry to promote U.S. competitiveness.

Sec. 403. Visiting Committee on Advanced Technology.
Amends Section 10 of the National Institute of Standards and Technology Act by changing the size of the Committee from 15 members to "not fewer than 11 members" and revising proportions of membership requirements accordingly. This section would also permit consultation with the National Research Council in making recommendations for policy.

Sec. 404. Police and Security Authority.
Amends Section 15 of the National Institute of Standards and Technology Act to authorize the Secretary of Commerce to undertake activities for the protection of NIST buildings and other facilities.

Sec. 405. Education and Outreach.
Amends Section 18, 19, and 19A of the National Institute of Standards and Technology Act. It codifies NIST's authority to provide stipends directly to college students and teachers participating in NIST summer education programs and to United States citizens performing research and technical activities relevant to NIST. It also allows the Director to establish and conduct a post-doctoral fellowship program that shall include no fewer than 20 fellows per fiscal year.

Sec. 406. Programmatic Planning Report.
This section requires NIST's three year planning document to describe how the Director is addressing recommendations from the Visiting Committee on Advanced Technology.

Sec. 407. Assessments by the National Research Council.
This section requires NIST to contract with the National Academy of Sciences to conduct a comprehensive review of all of NIST's laboratory programs within six months. This section would also amend Section 24 of the National Institute of Standards and Technology act to require NIST to contract with NAS to perform reviews of each laboratory every three years. This section describes additional process requirements for these assessments.

Sec. 408. Hollings Manufacturing Extension Partnership.
This section would amend Section 25 of the National Institute of Standards and Technology Act. It requires the Director to provide assistance for U.S. manufacturing through the creation and support of Hollings Manufacturing Extension Centers. In order to enhance competitiveness, productivity and technological performance, Centers help manufacturers with adoption of advanced production technologies, transfer and dissemination of research findings, and other improvements. Centers are selected by the Director through a competitive, merit-based process; nonprofit institutions or consortia or state or local governments may apply. This section states that the Secretary may not provide more than 50 percent of the capital and annual operating and maintenance funds for a Center. This section would require Center applicants to provide assurances and, if selected, enter into legal agreements, that non-federal assets will meet not less than 50 percent of the costs incurred for the first three years. Section 409 would require each MEP to be evaluated in its third year of operation by a panel of private experts: a Center receiving positive evaluation may receive funding through the sixth year; a Center not receiving a positive evaluation is to be placed on probation. After the sixth year, a Center may receive additional support if it has received another positive evaluation. This section also would require a Center to undergo an independent eight year review. If a Center has received funding for 10 years the Director shall conduct a new competition. NIST is required to submit a report on the plan for conducting reviews, assessment and reapplication, and independent assessment of the reapplication competition process, as well as a report that assesses the effects of higher federal contributions to newly selected Centers on services provided to small manufacturing companies. Chapter 18 or title 35 and Section 552 or title 5 shall apply. Each Center is required

to have a Board of Directors and an Advisory Board. Center Advisory Boards must institute conflict of interest policies to be approved by the Director and Board Members may not serve as a vendor or provide services to the Center. Centers may accept funds from other federal agencies; the Director will determine whether those funds count toward the federal share. Funds from the private sector may not be considered towards the federal share. This section establishes the MEP Advisory Board, to consist of not fewer than ten members serving three year terms, at least two on or from Center Advisory Boards and at least five from U.S. small manufacturing businesses. This section also sets other policies for the MEP Advisory Board and requires it to report to Congress on the status of the program within 30 days of the President's annual budget request. This section establishes a competitive grant program within the Hollings Manufacturing Extension Partnership in order to address new or emerging manufacturing problems determined by the Director. Centers or consortia of Centers may participate under the application and selection process described in this section. Grant recipients are not required to provide matching contributions. The Director may take into consideration whether an application has significant potential to enhance competitiveness of small and medium manufacturers. Grants shall not last more than 3 years. The Director is required to evaluate obstacles unique to small manufacturers. This section also provides definitions for area career and technical education schools and community colleges.

Sec. 409. Elimination of Obsolete Reports.
This section eliminates the report required by the Enterprise Integration Act of 2002 and the annual report on the Technology Innovation Program.

Sec. 410. Modifications to Grants and Cooperative Agreements.
Amends section 8(a) of the Stevenson-Wydler Technology Innovation Act of 1980 so that the total amount of any grant or cooperative agreement may not exceed 75 percent of the total cost of the program.

Sec. 411. Information Systems Standards Consultation.
Amends the National Institute of Standards and Technology Act to remove the National Security Agency from the list of the entities consulted during the development of information systems standards and guidelines.

Sec. 412. United States-Israeli Cooperation.
This section expresses the sense of Congress that partnerships that facilitate basic scientific research between the U.S. and Israel advance technology development, innovation, and commercialization leading to growth in various sectors, including manufacturing, benefiting both nations; joint research and development agreements carried out through government organizations like NIST support these efforts; partnerships between the U.S. and Israel that further the basic scientific enterprise should be encouraged; and NIST should continue its role as facilitator of scientific collaborations between Israel and U.S. cities, States, businesses, academic institutions, and scientific foundations.

TITLE V – DEPARTMENT OF ENERGY SCIENCE

Sec. 501. Mission.
This section directs the Secretary to deliver scientific discoveries, capabilities, and major scientific tools to advance the national interest in energy and the corresponding fundamental scientific understanding. It also instructs the Secretary to support this mission through programs on basic energy sciences, advanced scientific computing research, high energy physics, biological and environmental research, fusion energy sciences, and nuclear physics.

Sec. 502. Basic Energy Sciences.
This section directs the Director of the Office of Science to carry out a program in basic energy sciences, including materials sciences and engineering, chemical sciences, physical biosciences, and geosciences for the purpose of providing the scientific foundations for new energy technologies. Section 502 requires the Director to carry out the development, construction, operation, and maintenance of national user facilities, including x-ray light sources, neutron sources, nanoscale science research centers, and other facilities the Director considers appropriate. This section also authorizes the establishment of a light source leadership initiative to sustain and advance global leadership of light source user facilities.

Sec. 503. Advanced Scientific Computing Research.
Section 503 directs the Director to carry out a program to advance computational and network capabilities to analyze, model, simulate, and predict complex phenomena relevant to the development of new energy technologies and the competitiveness of the United States, including the development of world-class computing and network facilities and a program to develop exascale computing systems.

Sec. 504. High Energy Physics.
This section directs the Director to carry out a research program on the elementary constituents of matter and energy and the nature of space and time. It requires the Director to create, preserve, and maintain United States facilities essential to underground research, and to carry out research and development in advanced accelerator concepts and technologies.

Sec. 505. Biological and Environmental Research.
This section directs the Director to carry out a program on biological systems science prioritizing fundamental research on biological systems and genomics science. Section 505 requires the Director to carry out a research program on low dose radiation, the purpose of which is to enhance scientific understanding of and reduce uncertainties associated with the effects of human exposure to low dose radiation in order to inform improved risk management methods.

Sec. 506. Fusion Energy.
This section directs the Director to carry out a fusion energy sciences research program to expand the fundamental understanding of plasmas and matter at very high temperatures and densities and to build the scientific foundation necessary to enable fusion power.

Sec. 507. Nuclear Physics.
This section directs the Director to carry out a program to discover, explore, and understand all forms of nuclear matter, including a program for the production of isotopes that the Secretary determines are needed for research purposes.

Sec. 508. Science Laboratories Infrastructure Program.
Section 508 requires the Director to carry out a program to improve safety, efficiency, and mission readiness of infrastructure at Office of Science laboratories.

Sec. 509. Authorization of Appropriations
This section authorizes appropriations for fiscal year 2016 and 2017 for the Office of Science at $5,339,800,000, which includes Basic Energy Sciences at $1,850,000,000; Advanced Scientific Computing Research at $621,000,000; High Energy Physics at $788,000,000; Biological and Environmental Research at $550,000,000; Fusion Energy Sciences at $488,000,000; Nuclear Physics at $624,700,000; Science Laboratory Infrastructure at $113,600,000; Science Program Direction at $181,000,000; Safeguards and Security at $103,000,000; and Workforce Development for Teachers and Scientists at $20,500,000.

Sec. 510. Definitions
This section provides relevant definitions for Title V.

TITLE VI – DEPARTMENT OF ENERGY APPLIED RESEARCH AND DEVELOPMENT

SUBTITLE A – Crosscutting Research and Development

Sec. 601. Crosscutting Research and Development.
This section contains findings regarding the need for critical energy research and development, and directs the Secretary to promote crosscutting research and development advancing the state of the energy-water-land nexus; improving energy transmission and distribution system security and resiliency; utilizing supercritical carbon dioxide in power generation; and innovating technologies for subsurface engineering, exascale computing, cybersecurity, and other critical challenges identified though comprehensive energy studies, evaluations, and reviews.

It directs the Secretary to consolidate and coordinate activities throughout the Department to avoid duplication, identify opportunities for public-private partnerships, prioritize activities promoting the utilization of all affordable domestic resources, develop long-term planning insulated from political influence, and identify programs that may be more effectively left to the States, industry nongovernmental organizations, institutes of higher education, or other stakeholders.

Sec. 602. Strategic Research Portfolio Analysis and Coordination Plan.
Section 602 amends the requirements of the Strategic Research Portfolio Analysis and Coordination Plan to include, in addition to other plan contents, the identification of ongoing programs that have experienced multiple years of poor performance and activities that may be more effectively left to states or other stakeholders.

Sec. 603. Strategy for Facilities and Infrastructure.
This section directs the Secretary to prepare a report describing the long-term strategy developed and implemented for research and development facilities and infrastructure within the Department. This report shall be submitted along with the President's budget request for fiscal year 2018.

SUBTITLE B – Electricity Delivery and Energy Reliability Research and Development

Sec. 611. Distributed Energy and Electric Energy Systems.
This section directs the Secretary to carry out programs of research and development on distributed systems reliability and efficiency, including advanced energy technologies and systems and advanced grid security, resiliency, and reliability technologies. The Secretary is further directed to leverage existing programs, consolidate and coordinate activities throughout the Department to facilitate a crosscutting approach, and identify programs that may be more effectively left to the states or other stakeholders.

Sec. 612. Electric Transmission and Distribution Research and Development.
This section directs the Secretary to undertake electric transmission and distribution research, development, and demonstration activities. This section also directs the Secretary to identify opportunities for public-private partnerships, leverage existing programs, consolidate activities to prevent duplication and promote crosscutting approaches, and identify activities that may be more effectively left to the states or other stakeholders.

SUTBTITLE C – Nuclear Energy Research and Development

Sec. 621. Objectives.
Section 221 directs the Secretary to carry out a program for civilian nuclear energy research, development, demonstration, and commercial application.

Sec. 622. Program Objectives Study.
This section instructs the GAO to assess federal and state requirements and standards, including moratoria, which delay or impede development and commercialization of nuclear power and provide recommendation as to how DOE can assist in overcoming such delays or impediments.

Sec. 623. Nuclear Energy Research and Development Programs.
This section directs the Secretary to carry out a research and development program related to advanced reactor concepts and currently deployed systems.

Sec. 624. Small Modular Reactor Program.
Section 624 directs the Secretary to carry out a research and development program for small modular reactors.

Sec. 625. Fuel Cycle Research and Development.
Section 625 directs the Secretary to carry out a research and development program related to alternative fuel cycles, which may, among other things, increase fuel utilization, reduce nuclear waste products, improve safety, and minimize proliferation risk.

Sec. 626. Nuclear Energy Enabling Technologies Program.
This section directs the Secretary to carry out a broad research and development program for crosscutting nuclear energy concepts including radiation mitigation, sensory and instrumentation, manufacturing methods, and high performance computation modeling.

Sec. 627. Technical Standards Collaboration.
This section requires the Director of the National Institute of Standards and Technology (NIST) to establish a nuclear energy standards committee, which shall include representatives from appropriate federal agencies and the private sector.

Sec. 628. Available Facilities Database.
This section directs the Secretary to prepare a publicly accessible database of nonfederal user facilities receiving federal funds that may be used for unclassified nuclear energy research.

Sec. 629. Nuclear Waste Disposal.
This section designates that DOE shall remain responsible for disposal of high-level radioactive waste and spent nuclear fuel.

SUBTITLE D – Energy Efficiency and Renewable Energy Research and Development

Sec. 641. Energy Efficiency.
This section directs the Secretary to carry out programs of research and development for energy efficiency, including programs of research, development, demonstration, and commercial application of technology to improve the energy efficiency and environmental performance of vehicles, buildings, energy-intensive and waste-intensive industries, and appliances and mechanical systems of buildings.

Sec. 642. Next Generation Lighting Initiative.
Section 642 repeals the Next Generation Lighting Initiative research and development program.

Sec. 643. Building Standards.
This section repeals the grant program supporting additional building standards within the broader Building Standards research and development program.

Sec. 644. Secondary Electric Vehicle Battery Use Program.
Section 644 repeals the Secondary Electric Vehicle Battery Use research and development program.

Sec. 645. Network for Manufacturing Innovation Program.
As provided for by appropriations Acts, the Secretary of Energy may transfer up to $150 million between FY15 and FY17 for advanced manufacturing research and development to the National Institute of Standards and Technology to carry out the Network for Manufacturing Innovation Program.

Sec. 646. Advanced Energy Technology Transfer Centers.
This section directs the Secretary to carry out a cost-sharing program for a geographically dispersed network of Advanced Energy Technology Transfer Centers. Funds awarded under this program may not be used for the deployment of otherwise commercially available technologies.

Sec. 647. Renewable Energy.
Section 647 directs the Secretary to carry out programs of research and development for renewable energy. Programs include solar energy, wind energy, geothermal, hydropower, and other miscellaneous projects. Miscellaneous projects include research and development of technologies facilitating the combined use of renewable and fossil energy resources.

In carrying out rural demonstration projects, this section directs the Secretary to give priority to rural and remote locations.

To guide budget and program decisions, this section directs the Secretary to evaluate renewable energy potential, program performance, and market drivers. This analysis shall be submitted to Congress annually, at least 30 days prior to the submission of the President's budget request.

Sec. 648. Bioenergy Program.
This section directs the Secretary to carry out a program of research and development for bioenergy, including biopower energy systems, biofuels, bioproducts, integrated biorefineries, and cross-cutting research and development in feedstocks. Programs include public-private partnerships to develop advanced bioenergy processes and retrofit technologies. This section also prohibits funding under this section for being used for commercial biofuel production for defense purposes.

Sec. 649. Concentrating Solar Power Research Program.
Section 649 repeals the Concentrating Solar Power Research Program.

Sec. 650. Renewable Energy in Public Buildings.
Section 650 repeals the Renewable Energy in Public Buildings Demonstration Program.

SUBTITLE E – Fossil Energy Research and Development

Sec. 661. Fossil Energy.
This section directs the Secretary to carry out a program of research, development, demonstration, and commercial application for fossil energy.

This section also includes direction that not less than 20 percent of the funds appropriated for the research and development of mining technologies shall be dedicated to research and development carried out by institutions of higher education.

Sec. 662. Coal Research, Development, Demonstration, and Commercial Application Programs.

This section directs the Secretary to carry out a program of research and development for advanced clean coal technologies. It expands the program to include water use and reuse; high temperature materials; and transformational technologies.

Under this section, the Secretary may enter into cost sharing partnerships to carry out such research and development. This section directs the Secretary to identify cost and performance goals to advance cost-competitive coal-based technologies. It creates an advisory committee appointed by the Secretary to review and report on the progress of the program. The section also requires the Secretary to submit within one year an assessment of the cost and feasibility of a national system of carbon dioxide pipelines.

Sec. 663. High Efficiency Gas Turbines Research and Development.
Section 663 directs the Secretary to carry out a program of research and development for innovative and transformational technologies to maximize the efficiency of gas turbines used in power generation systems.

SUBTITLE F – Advanced Research Projects Agency – Energy

Sec. 671. ARPA–E Amendments.
Section 671 directs the Secretary to carry out the Advanced Research Projects Agency-Energy to overcome the long-term and high-risk technological barriers in the development of energy technologies to enhance the economic and energy security and ensure the technological leadership of the United States. In carrying out activities under this section, the Secretary shall ensure prospective grantees demonstrate sufficient attempts to secure private financing as to indicate that the project is not independently commercially viable.

This section provides for the Secretary to contract with the National Academy of Sciences every 6 years to conduct an evaluation of performance. Categories of sensitive proprietary information obtained by the Secretary shall be protected from public disclosure. Nothing in this section affects the Secretary's obligation to collect such information or to make it available to Congress.

SUBTITLE G – Authorization of Appropriations

Sec. 681. Authorization of Appropriations.
This section authorizes to be appropriated funds for fiscal years 2016 and 2017 for research, development, demonstration, and commercial application activities within the Department of Energy, including the Office of Electricity at $113,000,000; Nuclear Energy at $504,600,000; Energy Efficiency and Renewable Energy $1,198,500,000; Fossil Energy at $605,000,000; and ARPA-E at $140,000,000.

SUBTITLE H – Definitions

Sec. 691. Definitions.
This section provides relevant definitions for Title VI.

TITLE VII - DEPARTMENT OF ENERGY TECHNOLOGY TRANSFER

SUBTITLE A – In General

Sec.701. Definitions.
This section provides relevant definitions for Title VII.

Sec. 702. Savings Clause.
This section states that nothing within the Subtitle shall abrogate or affect the primary responsibilities of a national laboratory.

SUBTITLE B – Innovation Management at Department of Energy

Sec. 711. Under Secretary for Science and Energy.
Section 711 codifies the consolidation of the Under Secretary for Energy and Under Secretary for Science positions into one Under Secretary for Science and Energy.

Sec. 712. Technology Transfer and Transitions Assessment.
This Section requires the Secretary to assess the effectiveness of DOE's Office of Technology Transitions and make recommended departmental policy changes accordingly.

Sec. 713. Sense of Congress.
Section 713 provides a sense of Congress that the Secretary should encourage the national laboratories to inform small businesses of relevant opportunities and resources.

Sec. 714. Nuclear Energy Innovation.
Section 714 requires DOE to assess its capabilities to authorize, host, and oversee privately funded fusion and non-light water reactor prototypes at Department-owned sites.

SUBTITLE C – Cross-Sector Partnerships and Grant Competitiveness

Sec.721. Agreements for Commercializing Technology Pilot Program.
This section authorizes the Secretary to continue until October 31, 2017 a pilot program to institute agreements between national laboratories and third-party entities. These agreements, known as ACT agreements, provide national laboratories with increased authority to negotiate contract terms, including intellectual property rights, payment structures, performance guarantees, and multiparty collaborations. Section 201 also requires the Secretary, in coordination with the laboratory directors, to report on the effectiveness of this pilot program and provide transparency regarding the potential use of funds derived from federal contracts pursuant to this section.

Sec. 722. Public-Private Partnerships for Commercialization.
This section delegates to the national laboratories signature authority for certain agreements with third-party entities for a notional amount of less than $1,000,000.

Sec. 723. Inclusion of Early-Stage Technology Demonstration in Authorized Technology Transfer Activities.
Section 723 delegates to national laboratories authority to use technology transfer funds to carry out early-stage and pre-commercial technology demonstration activities to attract private sector investment for research and technology arising out of the national laboratories.

Sec. 724. Funding Competitiveness for Institutions of Higher Education and other Non-Profit Institutions.
This section exempts for a 6-year trial period universities and nonprofit institutions from the 20 percent cost-share requirement for applied research and development grants.

Sec. 725. Participation in the Innovation Corps Program.
This section allows the Secretary to enter into an agreement with the Director of the National Science Foundation (NSF) to enable researchers funded by DOE to participate in NSF's Innovation Corps program.

SUBTITLE D – Assessment of Impact

Sec. 731. Report by Government Accountability Office.
Section 731 instructs the GAO to submit a report within three years of enactment assessing the impact of the technology transfer activities authorized in this legislation, pursuant to sections 721, 722, and 723. This section also requires an assessment of DOE's efforts to promote technology transfer.