

Department of Energy Research and Development Act of 2014

Section-by-Section Analysis

Section 1. Short Title; Table of Contents.

This section establishes the short title of the Act as the “Department of Energy Research and Development Act of 2014.”

TITLE I – EINSTEIN

Section 101. Short Title.

Section 101 establishes the short title of Title I as “Enabling Innovation for Science, Technology, and Energy in America Act of 2014” or the “EINSTEIN Act.”

SUBTITLE A – OFFICE OF SCIENCE

Section 111. 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.

Section 112. Basic Energy Sciences.

Section 112 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 112 also requires the Director to carry out the development, construction, operation, and maintenance of national user facilities, including x-ray light sources, neutron sources, electron beam microcharacterization centers, nanoscale science research centers, and other facilities the Director considers appropriate. This section authorizes the establishment of a light source leadership initiative to sustain and advance global leadership of light source user facilities and continues the Experimental Program to Stimulate Competitive Research (EPSCoR).

Section 113. Advanced Scientific Computing Research.

Section 113 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.

Section 114. 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.

Section 115. 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 and requires the GAO to identify duplicative climate science initiatives across the federal government. Section 115 limits the Director from approving new climate science-related initiatives unless the Director makes a determination that such work is unique and not duplicative of work by other federal agencies. This section also requires the Director to cease all climate science-related initiatives identified as duplicative in the GAO assessment unless the Director determines such work to be critical to achieving American energy independence.

Section 116. Fusion Energy.

Section 116 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. It requires the Director to submit a plan, within one year of enactment, to carry out the program and subsequently requires the DOE Fusion Energy Science Advisory Committee to provide recommendations to improve the plan. This section also instructs the GAO to make an assessment of the financial and management risks associated with the International Thermonuclear Experimental Reactor (ITER)

Section 117. Nuclear Physics.

Section 117 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.

Section 118. Science Laboratories Infrastructure Program.

Section 118 requires the Director to carry out a program to improve safety, efficiency, and mission readiness of infrastructure at Office of Science laboratories.

Section 119. Authorization of Appropriations.

This section authorizes appropriations for fiscal year 2014 and 2015 for the Office of Science, which includes Basic Energy Sciences, Advanced Scientific Computing Research, High Energy Physics, Biological and Environmental Research, Fusion Energy Sciences, and Nuclear Physics.

For fiscal year 2014, it authorizes funding levels consistent with the 2014 Omnibus Appropriations law.

SUBTITLE B – MISCELLANEOUS

Section 121. Transparency.

Section 121 requires the Secretary to make public certain information within 30 days of approving a cost-share waiver for research, development, demonstration or commercial application activities under Section 988 of the Energy Policy Act of 2005. It requires the Secretary to make public within 30 days basic, nonproprietary information related to technology transfer agreements between national laboratories and third-party entities and to make public within 30 days certain information regarding all grants, agreements, and related activities.

Section 122. National Energy Technology Laboratory.

This section directs the National Academy of Public Administration to assess the management operations of the National Energy Technology Laboratory, which remains the only government-operated national laboratory in contrast to the other 16 contractor-operated laboratories. The assessment shall compare management of the government-operated model to the contractor-operated model, provide a cost-benefit analysis, and identify a strategy for potential transition from a government-operated lab to a contractor-operated lab.

Section 123. Savings Clause.

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

Section 124. Under Secretary for Science and Energy.

Section 124 codifies the consolidation of the Under Secretary for Energy and Under Secretary for Science positions into one Under Secretary for Science and Energy.

Section 125. National Laboratories Operations and Performance Management.

This section requires the Secretary to develop a strategy to optimize market transfer of national laboratory research and development and best practices for management and related activities across the laboratories.

Section 126. Sense of Congress of an Integrated Strategy for National Laboratories in the 21st Century.

Section 126 provides a sense of Congress that the Commission to Review the Effectiveness of the National Energy Laboratories, established pursuant to the Consolidated Appropriations Act of 2014, represents an important step towards accomplishing a coordinated strategy for the national laboratories.

Section 127. Agreements for Commercializing Technology Pilot Program.

This section requires the Secretary to continue for two years 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, indemnification, payment structures, performance guarantees, and multiparty collaborations.

Section 128. Technology Transfer.

This section delegates to the national laboratories signature authority for certain agreements with third-party entities for a notional amount of less than \$500,000.

Section 129. Inclusion of Early-Stage Technology Demonstration in Authorized Technology Transfer Activities.

Section 129 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.

Section 130. Funding Competitiveness for Institutions of Higher Education and Other Nonprofit 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.

Section 131. Report by Government Accountability Office.

Section 132 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 127, 128, and 129.

Section 132. Definitions.

This section provides relevant definitions for Title I.

TITLE II – ONE FUTURE

Section 201. Short Title.

This section establishes the short title as “Our Nation’s Energy Future Act of 2014” or “ONE Future”.

SUBTITLE A – CROSSCUTTING RESEARCH AND DEVELOPMENT

Section 211. Crosscutting Research and Development.

Section 211 contains findings regarding the need for a balanced, “all-of-the-above” energy strategy. It directs the Secretary to identify opportunities for collaborative and crosscutting research and development to address critical challenges facing our nation’s energy future and prioritize activities that promote the utilization of all affordable domestic resources.

Specifically, the section 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, and other critical challenges identified through comprehensive energy studies.

It directs the Secretary to consolidate and coordinate activities throughout the Department to avoid duplication, develop long-term planning insulated from political influence, and identify opportunities for public-private partnerships.

Section 212. Strategic Research Portfolio Analysis and Coordination Plan.

Section 212 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.

Section 213. 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.

Section 214. 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.

Section 215. Distributed Energy Technology Coordinating Consortia.

Section 215 amends the Small-scale portable power research and development program to remove the authorization to establish a promotional organization.

Section 216. Electric Transmission and Distribution Research and Development.

This section directs the Secretary, in undertaking electric transmission and distribution research and development activities, 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.

It also directs the Secretary to prepare and submit a 5-year plan to guide Department activities within 1 year.

SUTBTITLE B – NUCLEAR ENERGY RESEARCH AND DEVELOPMENT

Section 221. Objectives.

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

Section 222. 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.

Section 223. 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.

Section 224. Small Modular Reactor Program.

Section 224 directs the Secretary to carry out a research and development program for small modular reactors.

Section 225. Conventional Improvements to Nuclear Power Plants.

This section authorizes the Secretary to use up to \$10 million to carry out research and development related to improvements for existing nuclear power plants.

Section 226. Fuel Cycle Research and Development.

Section 226 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.

Section 227. 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.

Section 228. 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.

Section 229. Evaluation of Long-Term Operating Needs.

Section 229 directs the National Academies to evaluate the scientific and technological challenges for long-term maintenance and safe operation up to and beyond the specified design-life for currently deployed nuclear power reactors.

Section 230. 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.

Section 231. Nuclear Waste Disposal.

Section 231, consistent with current law, affirms that DOE shall remain responsible for disposal of high-level radioactive waste and spent nuclear fuel.

SUBTITLE C – ENERGY EFFICIENCY AND RENEWABLE ENERGY RESEARCH AND DEVELOPMENT

Section 241. Energy Efficiency.

This section directs the Secretary to carry out programs of research and development for energy efficiency.

Section 242. Next Generation Lighting Initiative.

Section 242 repeals the Next Generation Lighting Initiative research and development program.

Section 243. Building Standards.

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

Section 244. Secondary Electric Vehicle Battery Use Program.

Section 244 repeals the Secondary Electric Vehicle Battery Use research and development program.

Section 245. Energy Efficiency Science Initiative.

This section directs the Under Secretary for Science and Energy to manage the Energy Efficiency Science Initiative.

Section 246. 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.

Section 247. Renewable Energy.

Section 247 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.

Section 248. Bioenergy Program.

This section directs the Secretary to carry out a program of research and development for bioenergy. Programs include public-private partnerships to develop advanced bioenergy processes and retrofit technologies.

Section 249. Concentrating Solar Power Research Program.

Section 249 repeals the Concentrating Solar Power Research Program.

Section 250. Renewable Energy in Public Buildings.

This section directs the Secretary to carry out a program for demonstration of innovative renewable technologies in public buildings. No more than 20 percent of the incremental costs of a demonstration shall be from federal funding.

SUBTITLE D – FOSSIL ENERGY RESEARCH AND DEVELOPMENT

Section 261. Fossil Energy.

This section directs the Secretary to carry out a program of research and development for fossil energy.

Not less than 20 percent of the funds appropriated for the National Minerals Partnership and research and development of mining technologies shall be dedicated to research and development carried out by institutions of higher education.

Section 262. Pioneering Energy Research.

Section 262 directs the Secretary to establish a public-private collaborative for research and development of technologies to maximize domestic energy production and maintain global energy leadership. Programs shall include resource exploration, production, consumption, and stewardship technologies; alternative liquid transportation fuels; technologies for testing unconventional resource production; and energy system resiliency and integration.

Through a competitive process, the Secretary shall select a program Consortium to administer the program. The Secretary is further directed to utilize the program to promote coordination and cooperation among program offices throughout the Department, including research supportive of the program carried out by the National Renewable Energy Laboratory and the National Energy Technology Laboratory.

The section requires the Consortium to submit a plan for ongoing and prospective program activities to the Secretary and Congress annually for review.

Section 263. Research, Development, Demonstration, and Commercial Application Programs.

The 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.

Section 264. High Efficiency Gas Turbines Research and Development.

Section 264 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 E – ADVANCED RESEARCH PROJECTS AGENCY-ENERGY

Section 281. ARPA-E Amendments.

Section 281 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 F – MISCELLANEOUS

Section 291. Authorization of Appropriations.

This section authorizes to be appropriated funds for fiscal years 2014 and 2015 for research, development, demonstration, and commercial application activities within the Department of Energy.

Section 292. Definitions.

This section provides relevant definitions for Title II.