115TH CONGRESS
2d Session
HOUSE OF REPRESENTATIVES
REPORT
115–554

LOW-DOSE RADIATION RESEARCH ACT OF 2017

FEBRUARY 13, 2018.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. SMITH of Texas, from the Committee on Science, Space, and Technology, submitted the following

R E P O R T

[To accompany H.R. 4675]

[Including cost estimate of the Congressional Budget Office]

The Committee Science, Space, and Technology, to whom was referred the bill (H.R. 4675) to amend the Energy Policy Act of 2005 to provide for a low-dose radiation basic research program, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

CONTENTS

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Low-Dose Radiation Research Act of 2017".

SEC. 2. LOW-DOSE RADIATION RESEARCH PROGRAM.

(a) IN GENERAL.—Subtitle G of title IX of the Energy Policy Act of 2005 (42 U.S.C. 16311 et seq.) is amended by inserting after section 977 the following new section:

"SEC. 977A. LOW-DOSE RADIATION RESEARCH PROGRAM.

"(a) IN GENERAL.—The Secretary shall carry out a basic research program on low-dose radiation to—

"(1) enhance the scientific understanding of, and reduce uncertainties associated with, the effects of exposure to low-dose radiation; and

"(2) inform improved risk-assessment and risk-management methods with respect to such radiation.

"(b) PROGRAM COMPONENTS.—In carrying out the program required under subsection (a), the Secretary shall—

"(1) formulate scientific goals for low-dose radiation basic research in the United States;

"(2) identify ongoing scientific challenges for understanding the long-term effects of ionizing radiation on biological systems;

"(3) develop a long-term strategic and prioritized basic research agenda to address such scientific challenges in coordination with other research efforts;

"(4) identify and, to the extent possible, quantify, potential monetary and health-related benefits to Federal agencies, the general public, industry, research communities, and other users of information produced by such research program;

"(5) leverage the collective body of knowledge from existing low-dose radiation research; and

"(6) engage with other Federal agencies, research communities, and potential users of information produced under this section, including institutions concerning radiation research, medical physics, radiology, health physics, and emergency response.

"(c) COORDINATION.—In carrying out the program, the Secretary, in coordination with the Physical Science Subcommittee of the National Science and Technology Council, shall—

"(1) support the directives under section 106 of the American Innovation and Competitiveness Act (42 U.S.C. 6601 note);

"(2) ensure that the Office of Science of the Department of Energy consults with the National Aeronautics and Space Administration, the National Institutes of Health, the Environmental Protection Agency, the Department of Defense, the Nuclear Regulatory Commission, and the Department of Homeland Security;

"(3) advise and assist the National Science and Technology Council on policies and initiatives in radiation biology, including enhancing scientific knowledge of the effects of low-dose radiation on biological systems to improve radiation risk-assessment and risk-management methods; and

"(4) identify opportunities to stimulate international cooperation relating to low-dose radiation and leverage research and knowledge from sources outside of the United States.

"(d) RESEARCH PLAN.—Not later than 180 days after the date of enactment of this Act, the Secretary shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a 4-year research plan that identifies and prioritizes basic research needs relating to low-dose radiation. In developing such plan, the Secretary shall incorporate the components described in subsection (b).

"(e) DEFINITION OF LOW-DOSE RADIATION.—In this section, the term 'low-dose radiation' means a radiation dose of less than 100 millisieverts.

"(f) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to subject any research carried out by the Secretary for the program under this section to any limitations described in 977(e) of the Energy Policy Act of 2005 (42 U.S.C. 16317(e)).

"(g) FUNDING.—For purposes of carrying out this section, the Secretary is authorized to make available from funds provided to the Biological and Environmental Research Program—

"(1) $20,000,000 for fiscal year 2018;

"(2) $20,000,000 for fiscal year 2019;

"(3) $30,000,000 for fiscal year 2020; and

"(4) $30,000,000 for fiscal year 2021.".

(b) CONFORMING AMENDMENT.—The table of contents for subtitle G of title IX of the Energy Policy Act of 2005 is amended by inserting after the item relating to section 977 the following:

"Sec. 977A. Low-dose radiation research program.".

COMMITTEE STATEMENT AND VIEWS

PURPOSE AND SUMMARY

The purpose of H.R. 4675, the "Low-Dose Radiation Research Act of 2017," is to direct the Department of Energy (DOE) to carry out a basic research program on low dose radiation from the existing federal investment in basic research and fundamental scientific discovery by the DOE Office of Science.

This bill authorizes a four-year program in the Biological and Environmental Research Program (BER) within the DOE Office of Science and directs the Department to develop both short and long term basic research plans to address significant challenges in low dose radiation research. H.R. 4675 also requires DOE to consult with interagency partners in developing a research program.

BACKGROUND AND NEED FOR LEGISLATION

Every day, humans are exposed to low doses of ionizing radiation, typically created by industrial activities, commercial processes, medical procedures, and naturally occurring sources. While existing data on nuclear bomb survivors and workers at nuclear contamination sites can be used to establish the impact of high doses of radiation on human health, there is currently insufficient data available to definitively determine the health effects of low doses of radiation.

In the absence of this data, a linear no-threshold (LNT) model is used to describe the health risks for all levels of radiation exposure. In this application, the LNT model concludes that any exposure to ionizing radiation increases the risk of adverse health effects, no matter how small the exposure, and that there is no threshold below which exposure is considered safe.

This restricted understanding of low-dose radiation health risk impairs our ability to appropriately address potential radiological events and medically-based radiation exposures, and may result in overly stringent standards. There is wide consensus among the radiobiology community that more research is necessary for physicians and related experts to make better informed decisions regarding the health risks associated with low doses of ionizing radiation. This consensus is referenced in the June 2005 publication of The National Academies Press titled, "Health Risks From Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2," and in the 2012 publication of the National Council on Radiation Protection and Measurements titled, "Report No. 171—Uncertainties in the Estimation of Radiation Risks and Probability of Disease Causation."

DOE is the leading federal sponsor of research in the physical sciences, and from 1999 to 2016, the Department operated a leading low-dose radiation research program within BER. While uncertainties remain, the previous Administration closed the program in FY 2016.

This legislation follows through on the assessment of the Government Accountability Office (GAO) in their September 2017 publication titled, "Low Dose Radiation: Interagency Collaboration on Planning Research Could Improve Information on Health Effects," which recommends that DOE lead the development of a mechanism

for interagency collaboration on research of health effects linked to exposure to low-dose radiation.

Based on the recommendations provided in the GAO publication, as well as consistent feedback provided to this Committee by researchers and stakeholders in the radiation biology and medical communities, H.R. 4675 authorizes existing BER funds to re-start the low-dose radiation basic research program within the DOE Office of Science.

LEGISLATIVE HISTORY

On November 17, 2014, H.R. 5544, the Low-Dose Radiation Research Act of 2014, passed the House under suspension of the rules.

On January 7, 2015, H.R. 35, the Low-Dose Radiation Research Act of 2015, passed the House under suspension of the rules.

On May 13, 2015, the Energy Subcommittee held a hearing titled, "Nuclear Energy Innovation and the National Labs." Witnesses were: Dr. Mark Peters, Associate Laboratory Director, Energy and Global Security, Argonne National Laboratory; Mr. Frank Batten, Jr., President, The Landmark Foundation; Mr. Nathan Gilliland, CEO, General Fusion; Dr. John Parmentola, Senior Vice President, Energy and Advanced Concepts, General Atomics.

On March 22, 2016, the Committee held a hearing titled, "An Overview of the Budget Proposal for the Department of Energy for Fiscal Year 2017." The witness was Dr. Ernest Moniz, U.S. Secretary of Energy.

On September 21, 2016, the Oversight Subcommittee and the Energy Subcommittee held a joint hearing titled, "Examining Misconduct and Intimidation of Scientists by Senior DOE Officials." Witnesses were: Dr. Sharlene Weatherwax, Associate Director, Biological and Environmental Research, U.S. Department of Energy; Dr. Noelle Metting, Radiation Biologist, U.S. Department of Energy.

On January 6, 2017, S. 3084, the American Innovation and Competitiveness Act, which includes authority for DOE to formulate scientific goals for future low-dose radiation research and to ensure coordination between Federal agencies for research in radiation biology, was signed into law (P.L. 114–329).

On January 24, 2017, H.R. 589, the Department of Energy Research and Innovation Act, which includes authority for a low-dose radiation research program within the DOE Office of Science, passed the House without amendment.

On November 1, 2017, the Energy Subcommittee held a hearing titled, "The Future of Low Dose Radiation Research." Witnesses were: Mr. John Neumann, Director of Science and Technology Issues, Government Accountability Office; Dr. Gayle Woloschak, Professor of Radiation Oncology and Radiology, Northwestern University; Dr. James Brink, Professor of Radiology, Harvard Medical School, Radiologist-in-Chief, Massachusetts General Hospital.

On December 18, 2017, Dr. Roger Marshall introduced H.R. 4675, which was referred solely to the Committee.

On January 10, 2018, the Committee on Science, Space, and Technology approved and ordered reported H.R. 4675 by voice vote.

COMMITTEE VIEWS

Low-Dose Radiation Research Program

H.R. 4675 authorizes a four-year basic research program on low-dose radiation within BER. This legislation directs the Secretary of Energy to identify ongoing scientific challenges in low-dose radiation research and to develop a long-term basic research plan that addresses these challenges. The Secretary is also required to provide Congress with a four-year research plan that identifies and prioritizes basic research needs relating to low-dose radiation within 180 days of enactment.

The Committee recognizes the importance of BER's basic research on complex biological and environmental systems in support of DOE's energy mission. The Committee is concerned, however, about the trend within BER towards increased emphasis on climate modeling seemingly at the expense of physical science programs, including genomic and radiological sciences. H.R. 4675 rebalances these priorities by requiring increased investment in the vital area of basic research in radiobiology. The Committee calls for the use of the Department's unique capabilities to research the intersection of biological systems and radiological sciences to execute a comprehensive program on low-dose radiation research. Within BER, $20 million of the current budget is provided for this purpose in each of fiscal years 2018 and 2019, while $30 million is provided for each of fiscal years 2020 and 2021.

SECTION-BY-SECTION

Section 1. Short title

Low-dose radiation research act of 2017.

Section 2. Low-Dose Radiation Research Program

This section authorizes a basic research program on low-dose radiation within the DOE Office of Science over four years. It directs DOE to develop a long-term basic research plan for low-dose radiation research using existing scientific knowledge and by engaging the international research community and ensuring consultation between the DOE Office of Science and the National Aeronautics and Space Administration, the National Institutes of Health, the Environmental Protection Agency, the Department of Defense, the Nuclear Regulatory Commission, and the Department of Homeland Security. The plan must be submitted to Congress within 180 days, and funding for this program will come from the funds provided for the Biological and Environmental Research Program in the DOE Office of Science.

EXPLANATION OF AMENDMENTS

An amendment by Rep. Bill Foster was accepted by the Committee. The amendment added identifying and quantifying the benefits of low-dose radiation research to the program's components.

COMMITTEE CONSIDERATION

On January 10, 2018, the Committee met in open session and ordered reported favorably the bill, H.R. 4675, as amended, by voice vote, a quorum being present.

APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

Section 102(b)(3) of Public Law 104–1 requires a description of the application of this bill to the legislative branch where the bill relates to the terms and conditions of employment or access to public services and accommodations. This bill amends the Energy Policy Act of 2005 to provide for a low-dose radiation basic research program. As such this bill does not relate to employment or access to public services and accommodations.

STATEMENT OF OVERSIGHT FINDINGS AND RECOMMENDATIONS OF THE COMMITTEE

In compliance with clause 3(c)(1) of rule XIII and clause (2)(b)(1) of rule X of the Rules of the House of Representatives, the Committee's oversight findings and recommendations are reflected in the descriptive portions of this report.

STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

H.R. 4675 amends the Energy Policy Act of 2005 to provide for a low-dose radiation basic research program.

DUPLICATION OF FEDERAL PROGRAMS

No provision of H.R. 4675 establishes or reauthorizes a program of the Federal Government known to be duplicative of another Federal program, a program that was included in any report from the Government Accountability Office to Congress pursuant to section 21 of Public Law 111–139, or a program related to a program identified in the most recent Catalog of Federal Domestic Assistance.

DISCLOSURE OF DIRECTED RULE MAKINGS

The Committee estimates that enacting H.R. 4675 does not direct the completion of any specific rule makings within the meaning of 5 U.S.C. 551.

FEDERAL ADVISORY COMMITTEE ACT

The Committee finds that the legislation does not establish or authorize the establishment of an advisory committee within the definition of 5 U.S.C. App., Section 5(b).

UNFUNDED MANDATE STATEMENT

Section 423 of the Congressional Budget and Impoundment Control Act (as amended by Section 101(a)(2) of the Unfunded Mandate Reform Act, P.L. 104–4) requires a statement as to whether the provisions of the reported include unfunded mandates. In compliance with this requirement the Committee has received a letter from the Congressional Budget Office included herein.

EARMARK IDENTIFICATION

H.R. 4675 does not include any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9 of rule XXI.

COMMITTEE ESTIMATE

Clause 3(d)(2) of rule XIII of the Rules of the House of Representatives requires an estimate and a comparison by the Committee of the costs that would be incurred in carrying out H.R. 4675. However, clause 3(d)(3)(B) of that rule provides that this requirement does not apply when the Committee has included in its report a timely submitted cost estimate of the bill prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act.

BUDGET AUTHORITY AND CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

With respect to the requirements of clause 3(c)(2) of rule XIII of the Rules of the House of Representatives and section 308(a) of the Congressional Budget Act of 1974 and with respect to requirements of clause (3)(c)(3) of rule XIII of the Rules of the House of Representatives and section 402 of the Congressional Budget Act of 1974, the Committee has received the following cost estimate for H.R. 4675 from the Director of Congressional Budget Office:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, January 18, 2018.

Hon. LAMAR SMITH,
Chairman, Committee on Science, Space, and Technology,
House of Representatives, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 4675, the Low-Dose Radiation Research Act of 2017.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Janani Shankaran.

Sincerely,

KEITH HALL,
Director.

Enclosure.

H.R. 4675—Low-Dose Radiation Research Act of 2017

Summary: H.R. 4675 would authorize the appropriation of funds for the Department of Energy's (DOE's) Office of Science to conduct basic research on low-dose radiation. CBO estimates that implementing H.R. 4675 would cost $96 million over the 2018–2022 period, assuming appropriation of the authorized amounts.

Enacting the bill would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

CBO estimates that enacting H.R. 4675 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

H.R. 4675 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA).

Estimated cost to the Federal Government: The estimated budgetary effect of H.R. 4675 is shown in the following table. The costs of the legislation fall within budget function 250 (general science, space, and technology).

	By fiscal year, in millions of dollars—					
	2018	2019	2020	2021	2022	2018–2022
INCREASES IN SPENDING SUBJECT TO APPROPRIATION						
Authorization Level	20	20	30	30	0	100
Estimated Outlays	11	17	26	29	13	96

Basis of estimate: For this estimate, CBO assumes that the legislation will be enacted early in calendar year 2018. Under H.R. 4675, DOE's radiation research program would be similar to an agency program that was terminated in 2016. The bill also would require DOE to submit a four-year research plan to the Congress and to coordinate its work with other federal agencies studying low-dose exposures.

H.R. 4675 would authorize appropriations totaling $100 million over the 2018–2021 period for those activities. Assuming appropriation of the authorized amounts and based on historical spending patterns for similar activities, CBO estimates that implementing H.R. 4675 would cost $96 million over the 2018–2022 period.

Pay-As-You-Go considerations: None.

Increase in long-term direct spending and deficits: CBO estimates that enacting H.R. 4675 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

Mandates: H.R. 4675 contains no intergovernmental or private-sector mandates as defined in UMRA.

Estimate prepared by: Federal Costs: Janani Shankaran; Mandates: Jon Sperl.

Estimate approved by: H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (new matter is printed in italic and existing law in which no change is proposed is shown in roman):

ENERGY POLICY ACT OF 2005

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Energy Policy Act of 2005".

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

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TITLE IX—RESEARCH AND DEVELOPMENT

* * * * * * *

Subtitle G—Science

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SEC. 977A. LOW-DOSE RADIATION RESEARCH PROGRAM.

(a) IN GENERAL.—The Secretary shall carry out a basic research program on low-dose radiation to—

(1) enhance the scientific understanding of, and reduce uncertainties associated with, the effects of exposure to low-dose radiation; and

(2) inform improved risk-assessment and risk-management methods with respect to such radiation.

(b) PROGRAM COMPONENTS.—In carrying out the program required under subsection (a), the Secretary shall—

(1) formulate scientific goals for low-dose radiation basic research in the United States;

(2) identify ongoing scientific challenges for understanding the long-term effects of ionizing radiation on biological systems;

(3) develop a long-term strategic and prioritized basic research agenda to address such scientific challenges in coordination with other research efforts;

(4) identify and, to the extent possible, quantify, potential monetary and health-related benefits to Federal agencies, the general public, industry, research communities, and other users of information produced by such research program;

(5) leverage the collective body of knowledge from existing low-dose radiation research; and

(6) engage with other Federal agencies, research communities, and potential users of information produced under this section, including institutions concerning radiation research, medical physics, radiology, health physics, and emergency response.

(c) COORDINATION.—In carrying out the program, the Secretary, in coordination with the Physical Science Subcommittee of the National Science and Technology Council, shall—

(1) support the directives under section 106 of the American Innovation and Competitiveness Act (42 U.S.C. 6601 note);

(2) ensure that the Office of Science of the Department of Energy consults with the National Aeronautics and Space Administration, the National Institutes of Health, the Environmental Protection Agency, the Department of Defense, the Nuclear Reg-

ulatory Commission, and the Department of Homeland Security;

(3) advise and assist the National Science and Technology Council on policies and initiatives in radiation biology, including enhancing scientific knowledge of the effects of low-dose radiation on biological systems to improve radiation risk-assessment and risk-management methods; and

(4) identify opportunities to stimulate international cooperation relating to low-dose radiation and leverage research and knowledge from sources outside of the United States.

(d) RESEARCH PLAN.—Not later than 180 days after the date of enactment of this Act, the Secretary shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a 4-year research plan that identifies and prioritizes basic research needs relating to low-dose radiation. In developing such plan, the Secretary shall incorporate the components described in subsection (b).

(e) DEFINITION OF LOW-DOSE RADIATION.—In this section, the term "low-dose radiation" means a radiation dose of less than 100 millisieverts.

(f) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to subject any research carried out by the Secretary for the program under this section to any limitations described in 977(e) of the Energy Policy Act of 2005 (42 U.S.C. 16317(e)).

(g) FUNDING.—For purposes of carrying out this section, the Secretary is authorized to make available from funds provided to the Biological and Environmental Research Program—

(1) $20,000,000 for fiscal year 2018;

(2) $20,000,000 for fiscal year 2019;

(3) $30,000,000 for fiscal year 2020; and

(4) $30,000,000 for fiscal year 2021.

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