

NEXT-GENERATION GEOTHERMAL RESEARCH AND
DEVELOPMENT ACT

JULY 16, 2026.—Committed to the Committee of the Whole House on the State of
the Union and ordered to be printed

Mr. BABIN, from the Committee on Science, Space, and Technology,
submitted the following

R E P O R T

[To accompany H.R. 8790]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 8790) to amend the Energy Independence and Security Act of 2007 to direct research, development, demonstration, and commercial application activities in support of next-generation geothermal and closed-loop geothermal systems in various conditions, and for other purposes, having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

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The amendment is as follows:

Strike all that follows after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Next-Generation Geothermal Research and Development Act”.

SEC. 2. GEOTHERMAL ENERGY.

(a) IN GENERAL.—The Energy Independence and Security Act of 2007 (Public Law 110–140) is amended—

(1) in section 612 (42 U.S.C. 17191; relating to definitions)—

(A) by redesignating paragraphs (1), (2), (3), (4), (5), (6), (7), and (8) as paragraphs (2), (3), (4), (5), (6), (7), (8), and (11), respectively;

(B) by inserting before paragraph (2), as so redesignated, the following new paragraph:

“(1) CLOSED-LOOP GEOTHERMAL SYSTEMS.—The term ‘closed-loop geothermal systems’ means a wellbore or subsurface circuit of wellbores containing a fluid heated through contact with the borehole wall.”; and

(C) by inserting after paragraph (8), as so redesignated, the following new paragraphs:

“(9) NEXT-GENERATION GEOTHERMAL SYSTEMS.—The term ‘next-generation geothermal systems’ means—

“(A) enhanced geothermal systems;

“(B) closed-loop geothermal systems;

“(C) in supercritical conditions—

“(i) enhanced geothermal systems; or

“(ii) closed-loop geothermal systems; and

“(D) other innovative energy technologies.

“(10) SUPERCRITICAL GEOTHERMAL.—The term ‘supercritical geothermal’ means energy derived from a subsurface rock resource in-situ existing at or above the supercritical conditions, whether relating to temperature or pressure, of the primary fluid present.”;

(2) in section 613(b)(1) (42 U.S.C. 17192(b)(1); relating to hydrothermal research and development), by striking “advanced geologic tools to assist” and inserting “advanced tools, including machine learning algorithms, to assist”;

(3) in section 614 (42 U.S.C. 17193; relating to general geothermal systems research and development)—

(A) in subsection (d)(1), by striking “among the Office of Fossil Energy, the Office of Energy Efficiency and Renewable Energy,” and inserting “across the Department”; and

(B) in subsection (h)—

(i) in paragraph (1), by inserting “and publicly available subsurface data, including data reported as part of fossil fuel and mining operations,” after “geothermal drilling information”; and

(ii) in paragraph (2), by adding at the end the following new subparagraphs:

“(C) UPDATES.—The repository established under paragraph (1) shall be periodically updated in order to carry out the following:

“(i) Standardize data in a uniform manner to the maximum extent practicable and enable analysis across different projects.

“(ii) Enhance the accessibility and usability of data to increase analysis of geothermal energy and next-generation geothermal systems on regional, local, and site-specific scales.

“(iii) Increase uses of data, including data viewable by map and organization by common attributes, such as region.

“(iv) Make other improvements in functionality and usability, as determined by the Secretary.

“(D) MEMORANDUM OF UNDERSTANDING.—

“(i) IN GENERAL.—The Secretary shall enter into a memorandum of understanding with the Secretary of the Interior, and with the heads of other relevant Federal departments, for notifying, sharing, and providing opportunities for additional data collection regarding shared geothermal development data from projects funded by the Department of the Interior and each such other relevant department, including data from mining, critical minerals, and energy projects, such as subsurface heat data, seismic data, lithology data, boundaries of State and federally protected areas, and existing transmission capacity.

“(ii) **PRIORITIZATION.**—To the maximum extent practicable, activities conducted pursuant to a memorandum of understanding under clause (i) shall prioritize heat, lithology, and strain profiles through deep exploration boreholes and control points for deep heat mapping and geothermal development.

“(E) **REGIONAL DATA PROBES.**—The Secretary of the Interior may, in consultation with the Secretary, commission the drilling of supercritical geothermal exploration boreholes in representative geological provinces in the United States to provide control points for deep heat mapping and geothermal development. The resulting data shall include an exploration of heat, lithology, and strain profiles, and shall be shared publicly on the repository established under paragraph (1).

“(F) **STUDY ON SITE SELECTION CHARACTERISTICS FOR SUPERCRITICAL GEOTHERMAL.**—The Secretary of the Interior shall, in consultation with the Secretary, conduct a study on site selection characteristics in representative geological provinces in the United States, including the United States territories of American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands, for supercritical geothermal.”;

(4) in section 615 (42 U.S.C. 17194; relating to enhanced geothermal systems research and development)—

(A) in the section heading, by striking “**ENHANCED**” and inserting “**NEXT-GENERATION**”;

(B) in subsection (a), by striking “enhanced” and inserting “next-generation”;

(C) in subsection (b)—

(i) in the heading, by inserting “**AND CLOSED-LOOP**” after “**ENHANCED**”;

(ii) in the matter preceding paragraph (1), by inserting “and closed-loop” after “enhanced”;

(iii) in paragraph (11), by striking “and” after the semicolon;

(iv) in paragraph (12), by striking the period and inserting “; and”;

and

(v) by adding at the end the following new paragraph:

“(13) the research topics specified in paragraphs (1) through (12) in supercritical conditions.”;

(D) in subsection (c)—

(i) by redesignating paragraph (7) as paragraph (8); and

(ii) by inserting after paragraph (6) the following new paragraph:

“(7) **NEXT-GENERATION GEOTHERMAL TESTING.**—Not later than one year after the date of the enactment of this paragraph, the Secretary shall take such actions as may be necessary to ensure that at least one FORGE site has the capabilities to include next-generation geothermal testing, including in supercritical conditions.”; and

(E) by adding at the end the following new subsections:

“(e) **NEXT-GENERATION GEOTHERMAL RESEARCH AND DEVELOPMENT PROGRAM.**—

“(1) **IN GENERAL.**—Within the Geothermal Technologies Office of the Department, the Secretary shall support a program of next-generation geothermal research, development, demonstration, and commercial application activities, including in supercritical conditions.

“(2) **FOCUS AREAS.**—

“(A) **IN GENERAL.**—The program described in paragraph (1) shall focus on the following topics:

“(i) Well completion.

“(ii) Permeability creation and management, including proppants and packers.

“(iii) Materials development and equipment design, including power production, specific to supercritical geothermal systems.

“(iv) Sensor development.

“(v) Water-rock geochemistry.

“(vi) Rock properties.

“(vii) Hard rock and deep drilling.

“(viii) Any other topics the Secretary determines necessary.

“(B) **PRIORITIZATION.**—In carrying out next-generation geothermal research under the program described in paragraph (1), the Secretary shall prioritize projects best able to produce iterative data for deep drilling projects in unique geodynamic settings on the following topics:

“(i) Characterization and crustal stress.

“(ii) Lab work.

“(iii) Drilling.

“(iv) Stimulation.

“(v) Power production.

“(C) ADMINISTRATION.—The Secretary may administer grants to institutions of higher education and private sector entities to carry out activities on the topics specified in subparagraph (A) and, to the maximum extent practicable, share data, results, and information publicly.

“(3) REPORT ON WATER USE.—Not later than five years after the date of the enactment of this subsection, the Secretary shall submit to the Committee on Natural Resources and the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report on the following:

“(A) Water use and estimated needs of enhanced geothermal systems.

“(B) Water use and estimated needs for closed-loop, and next-generation geothermal energy production.

“(C) The ability of next-generation geothermal systems to use brackish and nonpotable water.

“(D) The withdrawal and consumption of water per megawatt hour of next-generation geothermal systems, as compared to other power-generation technologies.

“(E) Technological and operational improvements that could lead to decreases in water withdrawal and consumption of next-generation geothermal systems.

“(4) NEXT-GENERATION GEOTHERMAL CENTER OF EXCELLENCE.—

“(A) ESTABLISHMENT.—The Secretary shall award grants through a competitive, merit-reviewed process, to National Laboratories (as such term is defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801)), multi-institutional collaborations, public-private partnerships, or institutes of higher education (or consortia thereof) for the following:

“(i) The continuation and expansion of research, development, demonstration, testing, and commercial application activities applicable to FORGE sites, including activities in supercritical conditions.

“(ii) The establishment of a next-generation geothermal systems center of excellence.

“(B) LOCATION.—In selecting National Laboratories, multi-institutional collaborations, public-private partnerships, or institutions of higher education (or a consortia thereof) for a center of excellence referred to in subparagraph (A), the Secretary shall consider the following criteria:

“(i) Whether the entity hosts an existing geothermal energy research and development program.

“(ii) Whether the entity has proven technical expertise to support geothermal energy research.

“(iii) Whether the entity has access to geothermal resources.

“(C) PURPOSE.—The center of excellence referred to in subparagraph (A) shall coordinate among existing FORGE sites, the Department, and National Laboratories to carry out the following:

“(i) Advance research, development, demonstration, and commercial application of next-generation geothermal energy technologies, including supercritical geothermal technologies, in response to industry and commercial needs, including by partnering with other academic or research institutions, industry, non-governmental organizations, and State, local, or Tribal governments.

“(ii) Foster collaboration for education, research, and partnership initiatives in order to support the technology, deployment, and workforce needs of the United States geothermal energy industry, including a focus on next-generation geothermal systems.

“(iii) Support workforce development across the next-generation geothermal systems energy development lifecycle.

“(iv) Provide educational, technical, and analytical assistance on next-generation geothermal systems to Federal agencies, industry, and State, local, and Tribal governments.

“(v) Collect and disseminate information on best practices in all areas relating to developing and managing geothermal energy resources and energy systems, including next-generation geothermal systems.

“(5) COMMERCIAL-READINESS INNOVATION GRANTS.—

“(A) IN GENERAL.—The Secretary shall award grants to accelerate the development, testing, and implementation of innovative technologies identified as areas for improving the performance of commercial geothermal energy projects using next-generation geothermal systems.

“(B) FOCUS AREAS.—Grants may be awarded under this paragraph for innovative technologies, including the following:

“(i) Hardrock drilling equipment, components, and systems, including bit design and vibration control.

“(ii) Reservoir characterization, well design and spacing, and completions.

“(iii) Data acquisition and analysis, including fiber optic sensing tools and methodologies.

“(C) APPLICATIONS.—

“(i) IN GENERAL.—An entity seeking a grant under this paragraph shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require.

“(ii) PRIORITIZATION.—In awarding grants under this paragraph, the Secretary shall give priority to the following:

“(I) Applicants, including for-profit entities and public-private partnerships, with demonstrated expertise relating to in-field development and commercial operations for geothermal energy projects.

“(II) Projects with the greatest ability to advance near-term commercial deployment of enhanced geothermal systems and closed-loop geothermal systems.

“(III) Projects that advance the commercialization of geothermal energy projects in diverse geological conditions or supercritical conditions.

“(D) COST SHARING.—The Federal share of the cost of a project carried out with a grant under this paragraph shall be not more than 80 percent.

“(f) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Secretary to carry out this section \$150,000,000 for each of fiscal years 2027 through 2031. Such amounts shall be derived from amounts otherwise authorized to be appropriated to the Office of Energy Efficiency and Renewable Energy of the Department.”; and

(5) in section 617 (42 U.S.C. 17196; relating to organization and administration of programs)—

(A) in subsection (e), by striking “Committee on Science and Technology” and inserting “Committee on Science, Space, and Technology”; and

(B) by amending subsection (f) to read as follows:

“(f) PROGRESS REPORTS.—Not later than one year after the date of the enactment of this subsection and every two years thereafter, the Secretary shall submit 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 report that contains the following:

“(1) A description of the maximum potential of geothermal resources in the United States, including a consideration of next-generation geothermal systems.

“(2) Information relating to the results of projects undertaken under this section.

“(3) An assessment of the barriers to commercialization of next-generation geothermal technologies.

“(4) Such other information as the Secretary considers appropriate.”.

(b) UPDATE TO GEOTHERMAL RESOURCE ASSESSMENT.—

(1) IN GENERAL.—Section 2501 of the Energy Policy Act of 1992 (30 U.S.C. 1028) is amended—

(A) in subsection (c)—

(i) in the matter preceding paragraph (1), by inserting “quadrennially” before “update”;

(ii) in paragraph (1)(D)(ii), by striking “and” at the end;

(iii) in paragraph (2), by striking the period at the end and inserting “; and”; and

(iv) by adding at the end the following new paragraph:

“(3) to the maximum extent practicable, by assessing regions of the United States, including the United States territories of American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands, with significant potential for supercritical geothermal (as such term is defined in section 612 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17191)).”; and

(B) by striking subsection (d).

(2) FIRST UPDATE.—The first quadrennial update to the geothermal resource assessment carried out by the United States Geological Survey under subsection (c) of section 2501 of the Energy Policy Act of 1992, as amended by paragraph

(1), shall be completed by not later than two years after the date of the enactment of this Act.

(c) CLERICAL AMENDMENT.—The table of contents in section 1(b) of the Energy Independence and Security Act of 2007 is amended by amending the item relating to section 615 to read as follows:

“Sec. 615. Next-generation geothermal systems research and development.”.

PURPOSE AND SUMMARY

H.R. 8790, the Next-Generation Geothermal Research and Development Act, directs the Department of Energy (DOE) to support research, development, demonstration, and commercial application activities in support of next-generation geothermal technologies, including enhanced geothermal, supercritical geothermal, and closed-loop geothermal systems.

BACKGROUND AND NEED FOR LEGISLATION

Geothermal energy currently accounts for only 0.4% of the utility-scale electricity produced in the U.S., with these sites concentrated in the western half of the country. Recent breakthroughs in drilling and drilling techniques have unlocked the ability to generate electricity from geothermal energy in areas where it was previously impossible. Furthermore, the Department of Energy and Princeton University have both estimated that next-generation geothermal energy could provide 90–132 gigawatts of electricity by 2050.

The DOE, through the Office of Geothermal (OG), has an initiative with a dedicated field site called the Frontier Observatory for Research in Geothermal Energy (FORGE). FORGE hosts research and development activities in the enhanced geothermal systems (EGS) space. EGS is just one of the three types of next-generation geothermal systems; the other two are closed-loop geothermal systems and supercritical conditions.

To date, authorizing language from the Energy Independence and Security Act of 2007 (P.L. 110–140) and the Energy Act of 2020 (P.L. 116–260 Div. Z) have provided the most recent legislative direction for geothermal research, development, and demonstration (RD&D) activities at DOE. H.R. 8790 updates the direction provided by these previous authorizations.

LEGISLATIVE HISTORY

H.R. 8790 was introduced on May 13, 2026, by Rep. Harrigan (R–NC) and cosponsored by Rep. Salinas (D–OR).

SECTION-BY-SECTION

Section 1. Short title

This section establishes the short title of the legislation as the “Next-Generation Geothermal Research and Development Act.”

Section 2. Geothermal energy

This section updates the definition of geothermal systems to include the three types of next-generation geothermal systems and expands the scope of general geothermal systems research across the entire Department of Energy (DOE).

This section also directs DOE to enter into a memorandum of understanding with the Department of the Interior (DOI) to notify, share, and provide opportunities for additional data collection regarding shared geothermal development data from DOI projects.

Additionally, the Secretary of the Interior is required to conduct a study on site selection for supercritical geothermal.

This section establishes the Next-Generation Geothermal Research and Development Program and requires next-generation geothermal testing at one or more DOE Frontier Observatory for Research in Geothermal Energy (FORGE) sites.

This section also mandates a report on water use in next-generation geothermal systems and directs DOE to establish the Next-Generation Geothermal Center of Excellence for research, development, and commercialization of next-generation geothermal energy technologies.

In addition, the Secretary of Energy may award grants to accelerate the development of next-generation geothermal systems.

This section authorizes \$150,000,000 for each fiscal year 2027 through 2031 from amounts appropriated to the Office of Energy Efficiency and Renewable Energy and directs the Department to submit reports on next-generation geothermal development every other year.

Finally, this section requires supercritical geothermal systems to be included in the Geothermal Resource Assessment.

RELATED COMMITTEE HEARINGS

Pursuant to clause 3(c)(6) of rule XIII, the following hearing was used to develop or consider H.R. 8790.

On April 16, 2026, the Subcommittee on Energy held a hearing entitled *Subsurface Science and Technology: American Energy and Mineral Dominance*.

Witnesses:

- Mr. Carlos Araque, President and Chief Executive Officer, Quaise Energy
- Dr. Elizabeth Holley, Professor, Mining Engineering, Colorado School of Mines
- Dr. Thomas A. Lograsso, Director, Critical Materials Innovation Hub, Ames National Laboratory
- Mr. Joel Edwards, Co-Founder and Chief Technology Officer, Zanskar Geothermal & Minerals

COMMITTEE CONSIDERATION

On May 20, 2026, the Committee on Science, Space, and Technology met to consider H.R. 8790.

Rep. Harrigan offered an amendment to direct DOE to include supercritical geothermal conditions within its FORGE Sites and research and development programs. The amendment was adopted by voice vote.

Rep. Van Epps offered an amendment to prioritize geothermal projects intending to power high-load-factor facilities. The amendment was withdrawn.

Chairman Babin moved that the Committee favorably report the bill, H.R. 8790, as amended, to the House of Representatives with

the recommendation that the bill be approved. The motion was agreed to by voice vote.

APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

The Committee finds that H.R. 8790 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

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, the Committee's oversight findings and recommendations are reflected in the descriptive portions of this report.

STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to clause (3)(c)(4) of rule XIII, the goal of H.R. 8790 is to direct research, development, demonstration, and commercial application activities in support of next-generation geothermal and closed-loop geothermal systems in various conditions.

DUPLICATION OF FEDERAL PROGRAMS

Pursuant to clause 3(c)(5) of rule XIII, the Committee finds that no provision of H.R. 8790 establishes or reauthorizes a program of the Federal Government known to be duplicative of another Federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or identified in the most recent Catalog of Federal Domestic Assistance.

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 section 5(b) of the Federal Advisory Committee Act.

UNFUNDED MANDATE STATEMENT

The Committee adopts as its own the estimate of Federal mandates prepared by the Director of the Congressional Budget Office pursuant to section 423 of the Unfunded Mandates Reform Act.

EARMARK IDENTIFICATION

Pursuant to clauses 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 8790 does not include any congressional earmarks, limited tax benefits, or limited tariff benefits.

COMMITTEE COST ESTIMATE

Pursuant to clause 3(d)(1) of rule XIII, the Committee adopts as its own the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974. At the time this report was filed, the estimate was not yet available.

NEW BUDGET AUTHORITY, ENTITLEMENT AUTHORITY,
AND TAX EXPENDITURES

Pursuant to clause 3(c)(2) of rule XIII, the Committee finds that H.R. 8790 would result in no new or increased budget authority, entitlement authority, or tax expenditures or revenues.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

Pursuant to clause 3(c)(3) of rule XIII, at the time this report was filed, the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974 was not yet available.

COMMITTEE CORRESPONDENCE

BRUCE WESTERMAN OF ARKANSAS
CHAIRMAN

JARED HUFFMAN OF CALIFORNIA
RANKING DEMOCRAT

VIVIAN MOEGLEN
STAFF DIRECTOR

ANA UNRUH COHEN
DEMOCRATIC STAFF DIRECTOR

U.S. House of Representatives
Committee on Natural Resources
Washington, DC 20515

July 13, 2026

The Honorable Brian Babin
Chairman
Committee on Science, Space, and Technology
2321 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Babin:

I write regarding H.R. 8790, the "Next-Generation Geothermal Research and Development Act", which the Committee on Science, Space, and Technology ordered reported on May 20, 2026.

There are certain provisions of H.R. 8790 that fall within the Rule X jurisdiction of the Committee on Natural Resources. I recognize and appreciate your desire to bring this legislation before the House of Representatives in an expeditious manner, and accordingly agree that the Committee on Natural Resources shall be discharged from further consideration of the bill. However, this is conditional on our mutual understanding that by forgoing consideration of H.R. 8790 at this time, we do not waive any jurisdiction over the subject matter contained in this or similar legislation that falls within the Committee on Natural Resources' Rule X jurisdiction. We also request that the Committee on Natural Resources be appropriately consulted and involved on this or similar legislation as it moves forward. Further, this does not prejudice the Committee on Natural Resources with respect to the appointment of conferees, and should a conference on the bill be necessary, I appreciate your agreement to support my request to have the Committee represented on the conference committee.

Finally, I would ask that a copy of this letter and your response acknowledging the jurisdictional interest of the Committee on Natural Resources in the bill be included in the Committee Report and *Congressional Record* during consideration of H.R. 8790 on the House floor.

Sincerely,



Bruce Westerman
Chairman
Committee on Natural Resources

cc: The Honorable Mike Johnson, Speaker of the House
The Honorable Zoe Lofgren, Ranking Member, Committee on Science, Space, and
Technology
The Honorable Jared Huffman, Ranking Member, Committee on Natural Resources
Mr. Jason Smith, Parliamentarian

BRIAN BABIN, D.D.S., Texas
CHAIRMAN

ZOE LOFGREN, California
RANKING MEMBER

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House of Representatives
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July 14, 2026

The Honorable Bruce Westerman
Chairman
Committee on Natural Resources
U.S. House of Representatives
Washington, D.C. 20515

Dear Chairman Westerman:

I write concerning H.R. 8790, the "Next-Generation Geothermal Research and Development Act", which the Committee on Science, Space, and Technology ordered reported on May 20, 2026.

I recognize that the bill contains provisions that fall within the jurisdiction of the Committee on Natural Resources and appreciate your willingness to forgo further consideration of the bill. I acknowledge that the Committee on Natural Resources will not formally consider H.R. 8790 and agree that the inaction of your Committee with respect to the bill does not waive any jurisdiction over the subject matter contained therein.

I will ensure that our exchange of letters is included in the *Congressional Record* during floor consideration of this bill and will include such letters in the Committee report on H.R. 8790. I appreciate your cooperation regarding this legislation.

Sincerely,



Brian Babin, D.D.S.
Chairman
Committee on Science, Space, and Technology

cc: The Honorable Mike Johnson, Speaker of the House
The Honorable Zoe Lofgren, Ranking Member, Committee on Science, Space, and Technology
The Honorable Jared Huffman, Ranking Member, Committee on Natural Resources
Mr. Jason Smith, Parliamentarian

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 (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, and existing law in which no change is proposed is shown in roman):

ENERGY INDEPENDENCE AND SECURITY ACT OF 2007**SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

(a) **SHORT TITLE.**—This Act may be cited as the “Energy Independence and Security Act of 2007”.

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

Sec. 1. Short title; table of contents.

* * * * *

TITLE VI—ACCELERATED RESEARCH AND DEVELOPMENT

* * * * *

Subtitle B—Geothermal Energy

* * * * *

[Sec. 615. Enhanced geothermal systems research and development.]

Sec. 615. Next-generation geothermal systems research and development.

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**TITLE VI—ACCELERATED RESEARCH
AND DEVELOPMENT**

* * * * *

Subtitle B—Geothermal Energy

* * * * *

SEC. 612. DEFINITIONS.

For purposes of this subtitle:

(1) *CLOSED-LOOP GEOTHERMAL SYSTEMS.*—The term “closed-loop geothermal systems” means a wellbore or subsurface circuit of wellbores containing a fluid heated through contact with the borehole wall.

[(1)] (2) **ENGINEERED.**—When referring to enhanced geothermal systems, the term “engineered” means designed to access subsurface heat, including stimulation and nonstimulation technologies to address one or more of the following issues:

(A) Lack of effective permeability, porosity or open fracture connectivity within the heat reservoir.

(B) Insufficient contained geofluid in the heat reservoir.

(C) A low average geothermal gradient which necessitates deeper drilling, or the use of alternative heat sources or heat generation processes.

[(2)] (3) **ELIGIBLE ENTITY.**—The term “eligible entity” means any of the following entities:

- (A) An institution of higher education.
- (B) A National laboratory.
- (C) A Federal research agency.
- (D) A State research agency.
- (E) A nonprofit research organization.
- (F) An industrial entity.
- (G) A consortium of 2 or more entities described in subparagraphs (A) through (F).

[(3)] (4) ENHANCED GEOTHERMAL SYSTEMS.—The term “enhanced geothermal systems” means geothermal reservoir systems that are engineered, as opposed to occurring naturally.

[(4)] (5) GEOFLUID.—The term “geofluid” means any fluid used to extract thermal energy from the Earth which is transported to the surface for direct use or electric power generation, except that such term shall not include oil or natural gas.

[(5)] (6) GEOPRESSURED RESOURCES.—The term “geopressured resources” mean geothermal deposits found in sedimentary rocks under higher than normal pressure and saturated with gas or methane.

[(6)] (7) GEOTHERMAL.—The term “geothermal” refers to heat energy stored in the Earth’s crust that can be accessed for direct use or electric power generation.

[(7)] (8) HYDROTHERMAL.—The term “hydrothermal” refers to naturally occurring subsurface reservoirs of hot water or steam.

(9) NEXT-GENERATION GEOTHERMAL SYSTEMS.—*The term “next-generation geothermal systems” means—*

- (A) *enhanced geothermal systems;*
- (B) *closed-loop geothermal systems;*
- (C) *in supercritical conditions—*
 - (i) *enhanced geothermal systems; or*
 - (ii) *closed-loop geothermal systems; and*
- (D) *other innovative energy technologies.*

(10) SUPERCRITICAL GEOTHERMAL.—*The term “supercritical geothermal” means energy derived from a subsurface rock resource in-situ existing at or above the supercritical conditions, whether relating to temperature or pressure, of the primary fluid present.*

[(8)] (11) SYSTEMS APPROACH.—The term “systems approach” means an approach to solving problems or designing systems that attempts to optimize the performance of the overall system, rather than a particular component of the system.

SEC. 613. HYDROTHERMAL RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—The Secretary shall carry out a program of research, development, demonstration, and commercial application for geothermal energy production from hydrothermal systems.

(b) PROGRAMS.—The program authorized in subsection (a) shall include the following:

- (1) ADVANCED HYDROTHERMAL RESOURCE TOOLS.—The research and development of [advanced geologic tools to assist] *advanced tools, including machine learning algorithms, to assist in locating hydrothermal resources, and to increase the reliability of site characterization, including the development of new imaging and sensing technologies and techniques to assist in prioritization of targets for characterization;*

(2) **EXPLORATORY DRILLING FOR GEOTHERMAL RESOURCES.**—The demonstration of advanced technologies and techniques of siting and exploratory drilling for undiscovered resources in a variety of geologic settings, carried out in collaboration with industry partners that will assist in the acquisition of high quality data sets relevant for hydrothermal subsurface characterization activities.

SEC. 614. GENERAL GEOTHERMAL SYSTEMS RESEARCH AND DEVELOPMENT.

(a) **SUBSURFACE COMPONENTS AND SYSTEMS.**—The Secretary shall support a program of research, development, demonstration, and commercial application of components and systems capable of withstanding geothermal environments and necessary to develop, produce, and monitor geothermal reservoirs and produce geothermal energy.

(b) **ENVIRONMENTAL IMPACTS.**—The Secretary shall—

(1) support a program of research, development, demonstration, and commercial application of technologies and practices designed to mitigate or preclude potential adverse environmental impacts of geothermal energy development, production or use;

(2) support a research program to identify potential environmental impacts, including induced seismicity, and environmental benefits of geothermal energy development, production, and use, and ensure that the program described in paragraph (1) addresses such impacts, including water use and effects on groundwater and local hydrology;

(3) support a program of research to compare the potential environmental impacts and environmental benefits identified as part of the development, production, and use of geothermal energy with the potential emission reductions of greenhouse gases gained by geothermal energy development, production, and use; and

(4) in carrying out this section, the Secretary shall, to the maximum extent practicable, consult with relevant federal agencies, including the Environmental Protection Agency.

(c) **RESERVOIR THERMAL ENERGY STORAGE.**—The Secretary shall support a program of research, development, and demonstration of reservoir thermal energy storage, emphasizing cost-effective improvements through deep direct use engineering, design, and systems research.

(d) **OIL AND GAS TECHNOLOGY TRANSFER INITIATIVE.**—

(1) **IN GENERAL.**—The Secretary shall support an initiative [among the Office of Fossil Energy, the Office of Energy Efficiency and Renewable Energy,] *across the Department* and the private sector to research, develop, and demonstrate relevant advanced technologies and operation techniques used in the oil and gas sector for use in geothermal energy development.

(2) **PRIORITIES.**—In carrying out paragraph (1), the Secretary shall prioritize technologies with the greatest potential to significantly increase the use and lower the cost of geothermal energy in the United States, including the cost and speed of geothermal drilling surface technologies, large- and small-scale drilling, and well construction.

(e) COPRODUCTION OF GEOTHERMAL ENERGY AND MINERALS PRODUCTION RESEARCH AND DEVELOPMENT INITIATIVE.—

(1) IN GENERAL.—The Secretary shall carry out a research and development initiative under which the Secretary shall provide financial assistance to demonstrate the coproduction of critical minerals from geothermal resources.

(2) REQUIREMENTS.—An award made under paragraph (1) shall—

(A) improve the cost effectiveness of removing minerals from geothermal brines as part of the coproduction process;

(B) increase recovery rates of the targeted mineral commodity;

(C) decrease water use and other environmental impacts, as determined by the Secretary; and

(D) demonstrate a path to commercial viability.

(f) FLEXIBLE OPERATIONS.—The Secretary shall support a research initiative on flexible operation of geothermal power plants.

(g) INTEGRATED ENERGY SYSTEMS.—The Secretary shall identify opportunities for joint research, development, and demonstration programs between geothermal systems and other energy generation or storage systems.

(h) DRILLING DATA REPOSITORY.—

(1) IN GENERAL.—The Secretary shall, in consultation with the Secretary of the Interior, establish and operate a voluntary, industry-wide repository of geothermal drilling information *and publicly available subsurface data, including data reported as part of fossil fuel and mining operations*, to lower the cost of future geothermal drilling.

(2) REPOSITORY.—

(A) IN GENERAL.—In carrying out paragraph (1), the Secretary shall collaborate with countries utilizing a significant amount of geothermal energy, as determined by the Secretary.

(B) DATA SYSTEM.—The repository established under paragraph (1) shall be integrated with the National Geothermal Data System.

(C) UPDATES.—*The repository established under paragraph (1) shall be periodically updated in order to carry out the following:*

(i) *Standardize data in a uniform manner to the maximum extent practicable and enable analysis across different projects.*

(ii) *Enhance the accessibility and usability of data to increase analysis of geothermal energy and next-generation geothermal systems on regional, local, and site-specific scales.*

(iii) *Increase uses of data, including data viewable by map and organization by common attributes, such as region.*

(iv) *Make other improvements in functionality and usability, as determined by the Secretary.*

(D) MEMORANDUM OF UNDERSTANDING.—

(i) IN GENERAL.—*The Secretary shall enter into a memorandum of understanding with the Secretary of*

the Interior, and with the heads of other relevant Federal departments, for notifying, sharing, and providing opportunities for additional data collection regarding shared geothermal development data from projects funded by the Department of the Interior and each such other relevant department, including data from mining, critical minerals, and energy projects, such as subsurface heat data, seismic data, lithology data, boundaries of State and federally protected areas, and existing transmission capacity.

(ii) PRIORITIZATION.—To the maximum extent practicable, activities conducted pursuant to a memorandum of understanding under clause (i) shall prioritize heat, lithology, and strain profiles through deep exploration boreholes and control points for deep heat mapping and geothermal development.

(E) REGIONAL DATA PROBES.—The Secretary of the Interior may, in consultation with the Secretary, commission the drilling of supercritical geothermal exploration boreholes in representative geological provinces in the United States to provide control points for deep heat mapping and geothermal development. The resulting data shall include an exploration of heat, lithology, and strain profiles, and shall be shared publicly on the repository established under paragraph (1).

(F) STUDY ON SITE SELECTION CHARACTERISTICS FOR SUPERCRITICAL GEOTHERMAL.—The Secretary of the Interior shall, in consultation with the Secretary, conduct a study on site selection characteristics in representative geological provinces in the United States, including the United States territories of American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands, for supercritical geothermal.

SEC. 615. [ENHANCED] NEXT-GENERATION GEOTHERMAL SYSTEMS RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—The Secretary shall support a program of research, development, demonstration, and commercial application for [enhanced] next-generation geothermal systems, including the programs described in subsection (b).

(b) ENHANCED AND CLOSED-LOOP GEOTHERMAL SYSTEMS TECHNOLOGIES.—In collaboration with industry partners, institutions of higher education, and the national laboratories, the Secretary shall support a program of research, development, demonstration, and commercial application of the technologies to achieve higher efficiency and lower cost enhanced and closed-loop geothermal systems, including—

- (1) reservoir stimulation;*
- (2) drilled, non-stimulated (e.g. closed-loop) reservoir technologies;*
- (3) reservoir characterization, monitoring, and modeling and understanding of the surface area and volume of fractures;*
- (4) stress and fracture mapping including real time monitoring and modeling;*
- (5) tracer development;*

- (6) three and four-dimensional seismic imaging and tomography;
- (7) well placement and orientation;
- (8) long-term reservoir management;
- (9) drilling technologies, methods, and tools;
- (10) improved exploration tools;
- (11) zonal isolation; [and]
- (12) understanding induced seismicity risks from reservoir engineering and stimulation[.]; and
- (13) *the research topics specified in paragraphs (1) through (12) in supercritical conditions.*

(c) FRONTIER OBSERVATORY FOR RESEARCH IN GEOTHERMAL ENERGY.—

(1) IN GENERAL.—The Secretary shall support the establishment and construction of up to 3 field research sites, which shall each be known as a “Frontier Observatory for Research in Geothermal Energy” or “FORGE” site to develop, test, and enhance techniques and tools for enhanced geothermal energy.

(2) DUTIES.—The Secretary shall—

(A) provide financial assistance in support of research and development projects focused on advanced monitoring technologies, new technologies and approaches for implementing multi-zone stimulations, nonstimulation techniques, and dynamic reservoir modeling that incorporates all available high-fidelity characterization data; and

(B) seek opportunities to coordinate efforts and share information with domestic and international partners engaged in research and development of geothermal systems and related technology, including coordination between FORGE sites.

(3) SITE SELECTION.—Of the FORGE sites referred to in paragraph (1), the Secretary shall—

(A) consider applications through a competitive, merit-reviewed process, from National Laboratories, multi-institutional collaborations, institutes of higher education and other appropriate entities best suited to provide national leadership on geothermal related issues and perform the duties enumerated under this subsection;

(B) prioritize existing field sites and facilities with capabilities relevant to the duties enumerated under this subsection;

(C) determine the mission need for and potential location of subsequent FORGE sites following the completion of construction and one year of operation of two FORGE sites; and

(D) ensure geologic diversity among FORGE sites when developing subsequent sites, to the maximum extent practicable.

(4) EXISTING FORGE SITES.—A FORGE site already in existence on the date of enactment of this Act may continue to receive support.

(5) SITE OPERATION.—

(A) INITIAL DURATION.—FORGE sites selected under paragraph (3) shall operate for an initial term of not more than 7 years after the date on which site operation begins.

(B) PERFORMANCE METRICS.—The Secretary shall establish performance metrics for each FORGE site supported under this paragraph, which may be used by the Secretary to determine whether a FORGE site should continue to receive funding.

(6) ADDITIONAL TERMS.—

(A) IN GENERAL.—At the end of an operational term described in subparagraph (B), a FORGE site may—

- (i) be transferred to other public or private entities for further enhanced geothermal testing; or
- (ii) subject to appropriations and a merit review by the Secretary, operate for an additional term of not more than 7 years.

(B) OPERATIONAL TERM DESCRIBED.—An operational term referred to in subparagraph (A)—

- (i) in the case of an existing FORGE site, is the existing operational term; and
- (ii) in the case of new FORGE sites selected under paragraph (3), is the initial term under paragraph (5)(A) or an additional term under subparagraph (A)(ii) of this paragraph.

(7) NEXT-GENERATION GEOTHERMAL TESTING.—*Not later than one year after the date of the enactment of this paragraph, the Secretary shall take such actions as may be necessary to ensure that at least one FORGE site has the capabilities to include next-generation geothermal testing, including in supercritical conditions.*

[(7)] (8) FUNDING.—

(A) IN GENERAL.—Out of funds authorized to be appropriated under section 623, there shall be made available to the Secretary to carry out the FORGE activities under this paragraph—

- (i) \$45,000,000 for fiscal year 2021;
- (ii) \$55,000,000 for fiscal year 2022;
- (iii) \$65,000,000 for fiscal year 2023;
- (iv) \$70,000,000 for fiscal year 2024; and
- (v) \$70,000,000 for fiscal year 2025.

(B) CONSIDERATIONS.—In carrying out this subsection, the Secretary shall consider the balance between funds dedicated to construction and operations and research activities to reflect the state of site development.

(d) ENHANCED GEOTHERMAL SYSTEMS DEMONSTRATIONS.—

(1) IN GENERAL.—Beginning on the date of enactment of this section, the Secretary, in collaboration with industry partners, institutions of higher education, and the national laboratories, shall support an initiative for demonstration of enhanced geothermal systems for power production or direct use.

(2) PROJECTS.—

(A) IN GENERAL.—Under the initiative described in paragraph (1), 4 demonstration projects shall be carried out in locations that are potentially commercially viable for enhanced geothermal systems development, while also considering environmental impacts to the maximum extent practicable, as determined by the Secretary.

(B) REQUIREMENTS.—Demonstration projects under subparagraph (A) shall—

(i) collectively demonstrate—

(I) different geologic settings, such as hot sedimentary aquifers, layered geologic systems, supercritical systems, and basement rock systems; and

(II) a variety of development techniques, including open hole and cased hole completions, differing well orientations, and stimulation and non-stimulation mechanisms; and

(ii) to the extent practicable, use existing sites where subsurface characterization or geothermal energy integration analysis has been conducted.

(C) EASTERN DEMONSTRATION.—Not fewer than 1 of the demonstration projects carried out under subparagraph (A) shall be located in an area east of the Mississippi River that is suitable for enhanced geothermal demonstration for power, heat, or a combination of power and heat.

(D) MILESTONE-BASED DEMONSTRATION PROJECTS.—The Secretary may carry out demonstration projects under this subsection as a milestone-based demonstration project under section 9005 of the Energy Act of 2020.

(3) FUNDING.—Out of funds authorized to be appropriated under section 623, there shall be made available to the Secretary to carry out the demonstration activities under this subsection \$21,000,000 for each of fiscal years 2021 through 2025.

(e) NEXT-GENERATION GEOTHERMAL RESEARCH AND DEVELOPMENT PROGRAM.—

(1) IN GENERAL.—*Within the Geothermal Technologies Office of the Department, the Secretary shall support a program of next-generation geothermal research, development, demonstration, and commercial application activities, including in supercritical conditions.*

(2) FOCUS AREAS.—

(A) IN GENERAL.—*The program described in paragraph (1) shall focus on the following topics:*

(i) *Well completion.*

(ii) *Permeability creation and management, including proppants and packers.*

(iii) *Materials development and equipment design, including power production, specific to supercritical geothermal systems.*

(iv) *Sensor development.*

(v) *Water-rock geochemistry.*

(vi) *Rock properties.*

(vii) *Hard rock and deep drilling.*

(viii) *Any other topics the Secretary determines necessary.*

(B) PRIORITIZATION.—*In carrying out next-generation geothermal research under the program described in paragraph (1), the Secretary shall prioritize projects best able to produce iterative data for deep drilling projects in unique geodynamic settings on the following topics:*

(i) *Characterization and crustal stress.*

(ii) *Lab work.*

- (iii) *Drilling.*
- (iv) *Stimulation.*
- (v) *Power production.*

(C) *ADMINISTRATION.*—*The Secretary may administer grants to institutions of higher education and private sector entities to carry out activities on the topics specified in subparagraph (A) and, to the maximum extent practicable, share data, results, and information publicly.*

(3) *REPORT ON WATER USE.*—*Not later than five years after the date of the enactment of this subsection, the Secretary shall submit to the Committee on Natural Resources and the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report on the following:*

(A) *Water use and estimated needs of enhanced geothermal systems.*

(B) *Water use and estimated needs for closed-loop, and next-generation geothermal energy production.*

(C) *The ability of next-generation geothermal systems to use brackish and nonpotable water.*

(D) *The withdrawal and consumption of water per megawatt hour of next-generation geothermal systems, as compared to other power-generation technologies.*

(E) *Technological and operational improvements that could lead to decreases in water withdrawal and consumption of next-generation geothermal systems.*

(4) *NEXT-GENERATION GEOTHERMAL CENTER OF EXCELLENCE.*—

(A) *ESTABLISHMENT.*—*The Secretary shall award grants through a competitive, merit-reviewed process, to National Laboratories (as such term is defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801)), multi-institutional collaborations, public-private partnerships, or institutes of higher education (or consortia thereof) for the following:*

(i) *The continuation and expansion of research, development, demonstration, testing, and commercial application activities applicable to FORGE sites, including activities in supercritical conditions.*

(ii) *The establishment of a next-generation geothermal systems center of excellence.*

(B) *LOCATION.*—*In selecting National Laboratories, multi-institutional collaborations, public-private partnerships, or institutions of higher education (or a consortia thereof) for a center of excellence referred to in subparagraph (A), the Secretary shall consider the following criteria:*

(i) *Whether the entity hosts an existing geothermal energy research and development program.*

(ii) *Whether the entity has proven technical expertise to support geothermal energy research.*

(iii) *Whether the entity has access to geothermal resources.*

(C) *PURPOSE.*—*The center of excellence referred to in subparagraph (A) shall coordinate among existing FORGE*

sites, the Department, and National Laboratories to carry out the following:

(i) Advance research, development, demonstration, and commercial application of next-generation geothermal energy technologies, including supercritical geothermal technologies, in response to industry and commercial needs, including by partnering with other academic or research institutions, industry, non-governmental organizations, and State, local, or Tribal governments.

(ii) Foster collaboration for education, research, and partnership initiatives in order to support the technology, deployment, and workforce needs of the United States geothermal energy industry, including a focus on next-generation geothermal systems.

(iii) Support workforce development across the next-generation geothermal systems energy development lifecycle.

(iv) Provide educational, technical, and analytical assistance on next-generation geothermal systems to Federal agencies, industry, and State, local, and Tribal governments.

(v) Collect and disseminate information on best practices in all areas relating to developing and managing geothermal energy resources and energy systems, including next-generation geothermal systems.

(5) COMMERCIAL-READINESS INNOVATION GRANTS.—

(A) *IN GENERAL.*—The Secretary shall award grants to accelerate the development, testing, and implementation of innovative technologies identified as areas for improving the performance of commercial geothermal energy projects using next-generation geothermal systems.

(B) *FOCUS AREAS.*—Grants may be awarded under this paragraph for innovative technologies, including the following:

(i) Hardrock drilling equipment, components, and systems, including bit design and vibration control.

(ii) Reservoir characterization, well design and spacing, and completions.

(iii) Data acquisition and analysis, including fiber optic sensing tools and methodologies.

(C) *APPLICATIONS.*—

(i) *IN GENERAL.*—An entity seeking a grant under this paragraph shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require.

(ii) *PRIORITIZATION.*—In awarding grants under this paragraph, the Secretary shall give priority to the following:

(I) Applicants, including for-profit entities and public-private partnerships, with demonstrated expertise relating to in-field development and commercial operations for geothermal energy projects.

(II) Projects with the greatest ability to advance near-term commercial deployment of enhanced geo-

thermal systems and closed-loop geothermal systems.

(III) Projects that advance the commercialization of geothermal energy projects in diverse geological conditions or supercritical conditions.

(D) COST SHARING.—The Federal share of the cost of a project carried out with a grant under this paragraph shall be not more than 80 percent.

(f) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Secretary to carry out this section \$150,000,000 for each of fiscal years 2027 through 2031. Such amounts shall be derived from amounts otherwise authorized to be appropriated to the Office of Energy Efficiency and Renewable Energy of the Department.

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SEC. 617. ORGANIZATION AND ADMINISTRATION OF PROGRAMS.

(a) **FEDERAL SHARE.**—The Federal share of costs of projects funded under this subtitle shall be in accordance with section 988 of the Energy Policy Act of 2005.

(b) **ORGANIZATION AND ADMINISTRATION OF PROGRAMS.**—Programs under this subtitle shall incorporate the following elements:

(1) The Secretary shall coordinate with, and where appropriate may provide funds in furtherance of the purposes of this subtitle to, other Department of Energy research and development programs focused on drilling, subsurface characterization, and other related technologies.

(2) The Secretary shall coordinate and consult with the appropriate Federal land management agencies in selecting proposals for funding under this subtitle.

(3) Nothing in this subtitle shall be construed to alter or affect any law relating to the management or protection of Federal lands.

(c) **EDUCATION AND OUTREACH.**—In carrying out the activities described in this subtitle, the Secretary shall support education and outreach activities to disseminate information on geothermal energy technologies and the geothermal energy workforce, including activities at the Frontier Observatory for Research in Geothermal Energy site or sites.

(d) **TECHNICAL ASSISTANCE.**—In carrying out this subtitle, the Secretary shall also conduct technical assistance and analysis activities with eligible entities for the purpose of supporting the commercial application of advances in geothermal energy systems development and operations, which may include activities that support expanding access to advanced geothermal energy technologies for rural, Tribal, and low-income communities.

(e) **REPORT.**—Every 5 years after the date of enactment of this subsection, the Secretary shall report to the [Committee on Science and Technology] *Committee on Science, Space, and Technology* of the House of Representatives and the Committee on Energy and Natural Resources of the Senate on advanced concepts and technologies to maximize the geothermal resource potential of the United States.

[(f) **PROGRESS REPORTS.**—Not later than 1 year after the date of enactment of this subsection, and every 2 years thereafter, the Sec-

retary shall submit to the Committee on Science and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report on the results of projects undertaken under this part and other such information the Secretary considers appropriate.】

(f) *PROGRESS REPORTS.*—Not later than one year after the date of the enactment of this subsection and every two years thereafter, the Secretary shall submit 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 report that contains the following:

(1) *A description of the maximum potential of geothermal resources in the United States, including a consideration of next-generation geothermal systems.*

(2) *Information relating to the results of projects undertaken under this section.*

(3) *An assessment of the barriers to commercialization of next-generation geothermal technologies.*

(4) *Such other information as the Secretary considers appropriate.*

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ENERGY POLICY ACT OF 1992

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TITLE XXV—COAL, OIL, AND GAS

SEC. 2501. HOT DRY ROCK GEOTHERMAL ENERGY.

(a) **DEFINITION OF ENHANCED GEOTHERMAL SYSTEMS.**—In this section, the term “enhanced geothermal systems” has the meaning given the term in section 612 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17191).

(b) **USGS PROGRAM.**—The Secretary of the Interior, acting through the United States Geological Survey, and in consultation with the Secretary of Energy, shall establish a cooperative Government-private sector program with respect to hot dry rock geothermal energy resources on public lands (as such term is defined in section 103(e) of the Federal Land Policy and Management Act of 1976) and lands managed by the Department of Agriculture, other than any such public or other lands that are withdrawn from geothermal leasing. Such program shall include, but shall not be limited to, activities to identify, select, and classify those areas throughout the United States that have a high potential for hot dry rock geothermal energy production and activities to develop and disseminate information regarding the utilization of such areas for hot dry rock energy production. Such information may include information regarding field test processes and techniques for assuring that hot dry rock geothermal energy development projects are developed in an economically feasible manner without adverse environmental consequences. Utilizing the information developed by the Secretary, together with information developed in connection with other related programs carried out by other

Federal agencies, the Secretary, acting through the United States Geological Survey, may also enter into contracts and cooperative agreements with any public or private entity to provide assistance to any such entity to enable such entity to carry out additional projects with respect to the utilization of hot dry rock geothermal energy resources which will further the purposes of this section.

(c) UPDATE TO GEOTHERMAL RESOURCE ASSESSMENT.—The Secretary of the Interior, acting through the United States Geological Survey, and in consultation with the Secretary of Energy, shall *quadrennially* update the 2008 United States geothermal resource assessment carried out by the United States Geological Survey, including—

(1) with respect to areas previously identified by the Department of Energy or the United States Geological Survey as having significant potential for hydrothermal energy or enhanced geothermal systems energy, by focusing on—

(A) improving the resolution of resource potential at systematic temperatures and depths, including temperatures and depths appropriate for power generation and direct use applications;

(B) quantifying the total potential to coproduce geothermal energy and minerals;

(C) incorporating data relevant to underground thermal energy storage and exchange, such as aquifer and soil properties; and

(D) producing high resolution maps, including—

(i) maps that indicate key subsurface parameters for electric and direct use resources; and

(ii) risk maps for induced seismicity based on geologic, geographic, and operational parameters; [and]

(2) to the maximum extent practicable, by coordinating with relevant State officials and institutions of higher education to expand geothermal assessments, including enhanced geothermal systems assessments, to include assessments for the Commonwealth of Puerto Rico and the States of Alaska and Hawaii[.]; and

(3) *to the maximum extent practicable, by assessing regions of the United States, including the United States territories of American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands, with significant potential for supercritical geothermal (as such term is defined in section 612 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17191)).*

[(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated such sums as may be necessary to carry out this section.]

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