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2D SESSION

H. R. 8790

IN THE SENATE OF THE UNITED STATES

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Received; read twice and referred to the Committee on Energy and Natural
Resources

AN ACT

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.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Next-Generation Geo-
3 thermal Research and Development Act”.

4 **SEC. 2. GEOTHERMAL ENERGY.**

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

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

9 (A) by redesignating paragraphs (1), (2),
10 (3), (4), (5), (6), (7), and (8) as paragraphs
11 (2), (3), (4), (5), (6), (7), (8), and (10), respec-
12 tively;

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

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

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

22 “(9) NEXT-GENERATION GEOTHERMAL SYS-
23 TEMS.—The term ‘next-generation geothermal sys-
24 tems’ means—

25 “(A) enhanced geothermal systems;

26 “(B) closed-loop geothermal systems;

1 “(C) in supercritical conditions—

2 “(i) enhanced geothermal systems; or

3 “(ii) closed-loop geothermal systems;

4 and

5 “(D) other innovative energy tech-
6 nologies.”; and

7 (D) by adding at the end the following new
8 paragraph:

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

15 (2) in section 613(b)(1) (42 U.S.C.
16 17192(b)(1); relating to hydrothermal research and
17 development), by striking “advanced geologic tools to
18 assist” and inserting “advanced tools, including ma-
19 chine learning algorithms, to assist”;

20 (3) in section 614 (42 U.S.C. 17193; relating
21 to general geothermal systems research and develop-
22 ment)—

23 (A) in subsection (d)(1), by striking
24 “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, in-
cluding 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 estab-
lished 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.

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

4 “(D) MEMORANDUM OF UNDER-
5 STANDING.—

6 “(i) IN GENERAL.—The Secretary
7 shall enter into a memorandum of under-
8 standing with the Secretary of the Interior,
9 and with the heads of other relevant Fed-
10 eral departments, for notifying, sharing,
11 and providing opportunities for additional
12 data collection regarding shared geo-
13 thermal development data from projects
14 funded by the Department of the Interior
15 and each such other relevant department,
16 including data from mining, critical min-
17 erals, and energy projects, such as sub-
18 surface heat data, seismic data, lithology
19 data, boundaries of State and federally
20 protected areas, and existing transmission
21 capacity.

22 “(ii) PRIORITIZATION.—To the max-
23 imum extent practicable, activities con-
24 ducted pursuant to a memorandum of un-
25 derstanding under clause (i) shall prioritize

1 heat, lithology, and strain profiles through
2 deep exploration boreholes and control
3 points for deep heat mapping and geo-
4 thermal development.

5 “(E) REGIONAL DATA PROBES.—The Sec-
6 retary of the Interior may, in consultation with
7 the Secretary, commission the drilling of super-
8 critical geothermal exploration boreholes in rep-
9 resentative geological provinces in the United
10 States to provide control points for deep heat
11 mapping and geothermal development. The re-
12 sulting data shall include an exploration of
13 heat, lithology, and strain profiles, and shall be
14 shared publicly on the repository established
15 under paragraph (1).

16 “(F) STUDY ON SITE SELECTION CHARAC-
17 TERISTICS FOR SUPERCRITICAL GEO-
18 THERMAL.—The Secretary of the Interior shall,
19 in consultation with the Secretary, conduct a
20 study on site selection characteristics in rep-
21 resentative geological provinces in the United
22 States, including the United States territories
23 of American Samoa, Guam, Northern Mariana
24 Islands, Puerto Rico, and the U.S. Virgin Is-
25 lands, 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 subparagraphs (1) through (12) in supercritical conditions.”;

(D) in subsection (c)—

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

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

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

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

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

16 “(1) IN GENERAL.—Within the Geothermal
17 Technologies Office of the Department, the Sec-
18 retary shall support a program of next-generation
19 geothermal research, development, demonstration,
20 and commercial application activities, including in
21 supercritical conditions.

22 “(2) FOCUS AREAS.—

23 “(A) IN GENERAL.—The program de-
24 scribed in paragraph (1) shall focus on the fol-
25 lowing topics:

1 “(i) Well completion.

2 “(ii) Permeability creation and man-
3 agement, including proppants and packers.

4 “(iii) Materials development and
5 equipment design, including power produc-
6 tion, specific to supercritical geothermal
7 systems.

8 “(iv) Sensor development.

9 “(v) Water-rock geochemistry.

10 “(vi) Rock properties.

11 “(vii) Hard rock and deep drilling.

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

14 “(B) PRIORITIZATION.—In carrying out
15 next-generation geothermal research under the
16 program described in paragraph (1), the Sec-
17 retary shall prioritize projects best able to
18 produce iterative data for deep drilling projects
19 in unique geodynamic settings on the following
20 topics:

21 “(i) Characterization and crustal
22 stress.

23 “(ii) Lab work.

24 “(iii) Drilling.

25 “(iv) Stimulation.

1 “(v) Power production.

2 “(C) ADMINISTRATION.—The Secretary
3 may administer grants to institutions of higher
4 education and private sector entities to carry
5 out activities on the topics specified in subpara-
6 graph (A) and, to the maximum extent prac-
7 ticable, share data, results, and information
8 publicly.

9 “(3) REPORT ON WATER USE.—Not later than
10 five years after the date of the enactment of this
11 subsection, the Secretary shall submit to the Com-
12 mittee on Natural Resources and the Committee on
13 Science, Space, and Technology of the House of
14 Representatives and the Committee on Energy and
15 Natural Resources of the Senate a report on the fol-
16 lowing:

17 “(A) Water use and estimated needs of en-
18 hanced geothermal systems.

19 “(B) Water use and estimated needs for
20 closed-loop, and next-generation geothermal en-
21 ergy production.

22 “(C) The ability of next-generation geo-
23 thermal systems to use brackish and nonpotable
24 water.

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

5 “(E) Technological and operational im-
6 provements that could lead to decreases in
7 water withdrawal and consumption of next-gen-
8 eration geothermal systems.

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

11 “(A) ESTABLISHMENT.—The Secretary
12 shall award grants through a competitive,
13 merit-reviewed process, to National Labora-
14 tories (as such term is defined in section 2 of
15 the Energy Policy Act of 2005 (42 U.S.C.
16 15801)), multi-institutional collaborations, pub-
17 lic-private partnerships, or institutes of higher
18 education (or consortia thereof) for the fol-
19 lowing:

20 “(i) The continuation and expansion
21 of research, development, demonstration,
22 testing, and commercial application activi-
23 ties applicable to FORGE sites, including
24 activities in supercritical conditions.

1 “(ii) The establishment of a next-gen-
2 eration geothermal systems center of excel-
3 lence.

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

11 “(i) Whether the entity hosts an exist-
12 ing geothermal energy research and devel-
13 opment program.

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

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

19 “(C) PURPOSE.—The center of excellence
20 referred to in subparagraph (A) shall coordinate
21 among existing FORGE sites, the Department,
22 and National Laboratories to carry out the fol-
23 lowing:

24 “(i) Advance research, development,
25 demonstration, and commercial application

1 of next-generation geothermal energy tech-
2 nologies, including supercritical geothermal
3 technologies, in response to industry and
4 commercial needs, including by partnering
5 with other academic or research institu-
6 tions, industry, non-governmental organi-
7 zations, and State, local, or Tribal govern-
8 ments.

9 “(ii) Foster collaboration for edu-
10 cation, research, and partnership initiatives
11 in order to support the technology, deploy-
12 ment, and workforce needs of the United
13 States geothermal energy industry, includ-
14 ing a focus on next-generation geothermal
15 systems.

16 “(iii) Support workforce development
17 across the next-generation geothermal sys-
18 tems energy development lifecycle.

19 “(iv) Provide educational, technical,
20 and analytical assistance on next-genera-
21 tion geothermal systems to Federal agen-
22 cies, industry, and State, local, and Tribal
23 governments.

24 “(v) Collect and disseminate informa-
25 tion on best practices in all areas relating

1 to developing and managing geothermal
2 energy resources and energy systems, in-
3 cluding next-generation geothermal sys-
4 tems.

5 “(5) COMMERCIAL-READINESS INNOVATION
6 GRANTS.—

7 “(A) IN GENERAL.—The Secretary shall
8 award grants to accelerate the development,
9 testing, and implementation of innovative tech-
10 nologies identified as areas for improving the
11 performance of commercial geothermal energy
12 projects using next-generation geothermal sys-
13 tems.

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

17 “(i) Hardrock drilling equipment,
18 components, and systems, including bit de-
19 sign and vibration control.

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

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

25 “(C) APPLICATIONS.—

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

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

9 “(I) Applicants, including for-
10 profit entities and public-private part-
11 nerships, with demonstrated expertise
12 relating to in-field development and
13 commercial operations for geothermal
14 energy projects.

15 “(II) Projects with the greatest
16 ability to advance near-term commer-
17 cial deployment of enhanced geo-
18 thermal systems and closed-loop geo-
19 thermal systems.

20 “(III) Projects that advance the
21 commercialization of geothermal en-
22 ergy projects in diverse geological con-
23 ditions or supercritical conditions.

24 “(D) COST SHARING.—The Federal share
25 of the cost of a project carried out with a grant

1 under this paragraph shall be not more than 80
2 percent.

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

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

12 (A) in subsection (e), by striking “Com-
13 mittee on Science and Technology” and insert-
14 ing “Committee on Science, Space, and Tech-
15 nology”; and

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

18 “(f) PROGRESS REPORTS.—Not later than one year
19 after the date of the enactment of this subsection and
20 every two years thereafter, the Secretary shall submit to
21 the Committee on Science, Space, and Technology of the
22 House of Representatives and the Committee on Energy
23 and Natural Resources of the Senate a report that con-
24 tains the following:

1 “(1) A description of the maximum potential of
2 geothermal resources in the United States, including
3 a consideration of next-generation geothermal sys-
4 tems.

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

7 “(3) An assessment of the barriers to commer-
8 cialization of next-generation geothermal tech-
9 nologies.

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

12 (b) UPDATE TO GEOTHERMAL RESOURCE ASSESS-
13 MENT.—

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

16 (A) in subsection (c)—

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

20 (ii) in paragraph (1)(D)(ii), by strik-
21 ing “and” at the end;

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

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

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

11 (B) by striking subsection (d).

12 (2) FIRST UPDATE.—The first quadrennial up-
13 date to the geothermal resource assessment carried
14 out by the United States Geological Survey under
15 subsection (c) of section 2501 of the Energy Policy
16 Act of 1992, as amended by paragraph (1), shall be
17 completed by not later than two years after the date
18 of the enactment of this Act.

19 (c) CLERICAL AMENDMENT.—The table of contents
20 in section 1(b) of the Energy Independence and Security

- 1 Act of 2007 is amended by amending the item relating
- 2 to section 615 to read as follows:

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

Passed the House of Representatives July 20, 2026.

Attest: KEVIN F. MCCUMBER,
Clerk.