



(Original Signature of Member)

118TH CONGRESS
2D SESSION

H. R. _____

To amend the Energy Independence and Security Act of 2007 to direct research, development, demonstration, and commercial application activities in support of supercritical geothermal and closed-loop geothermal systems in supercritical various conditions, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

Mr. LUCAS introduced the following bill; which was referred to the Committee
on _____

A BILL

To amend the Energy Independence and Security Act of 2007 to direct research, development, demonstration, and commercial application activities in support of supercritical geothermal and closed-loop geothermal systems in supercritical 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,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Supercritical Geo-
5 thermal Research and Development Act”.

1 **SEC. 2. GEOTHERMAL ENERGY.**

2 (a) IN GENERAL.—The Energy Independence and
3 Security Act of 2007 is amended—

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

6 (A) by redesignating paragraph (8) as
7 paragraph (9); and

8 (B) by inserting after paragraph (7) the
9 following new paragraph:

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

15 (2) in section 613 (42 U.S.C. 17192; relating
16 to hydrothermal research and development), by
17 striking “advanced geologic tools to assist” and in-
18 serting “advanced tools, including machine learning
19 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 paragraph (1) of subsection (d), by
24 striking “among the Office of Fossil Energy,
25 the Office of Energy Efficiency and Renewable

1 Energy,” and inserting “across the Depart-
2 ment”; and

3 (B) in subsection (h)—

4 (i) in paragraph (1), by inserting
5 “and publicly available subsurface data, in-
6 cluding data reported as part of fossil fuel
7 and mining operations,” after “geothermal
8 drilling information”; and

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

11 “(C) UPDATES.—The repository estab-
12 lished under paragraph (1) shall be periodically
13 updated in order to carry out the following:

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

18 “(ii) Enhance the accessibility and
19 usability of data to increase analysis of
20 geothermal energy, including enhanced,
21 closed-loop, and supercritical geothermal,
22 on regional, local, and site-specific scales.

23 “(iii) Increase uses of data, including
24 data viewable by map and organization by
25 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.—The Secretary shall enter into a
6 memorandum of understanding with the Sec-
7 retary of the Interior, along with the heads of
8 other relevant Federal departments, for noti-
9 fying, sharing, and providing opportunities for
10 additional data collection regarding shared geo-
11 thermal development data from projects funded
12 by each such department, including data from
13 mining, critical minerals, and energy projects,
14 such as subsurface heat data, seismic data, li-
15 thology data, boundaries of State and federally
16 protected areas, and existing transmission ca-
17 pacity. To the maximum extent practicable, ac-
18 tivities conducted under such a memorandum of
19 understanding shall prioritize heat, lithology,
20 and strain profiles through deep exploration
21 boreholes and control points for deep heat map-
22 ping and geothermal development.

23 “(E) REGIONAL DEEP DATA PROBES.—
24 The Secretary shall work with the Secretary of
25 the Interior, who shall be responsible for com-

1 missioning the drilling of deep exploration
2 boreholes deeper than eight kilometers in depth
3 in representative geological provinces in the
4 United States to provide control points for deep
5 heat mapping and geothermal development. The
6 resulting data shall include an exploration of
7 heat, lithology, and strain profiles, and shall be
8 shared publicly on the drilling data repository.”;

9 (4) in section 615 (42 U.S.C. 17194; relating
10 to enhanced geothermal systems research and devel-
11 opment)—

12 (A) in subsection (b)—

13 (i) in paragraph (11), by striking
14 “and” after the semicolon;

15 (ii) in paragraph (12), by striking the
16 period and inserting “; and”; and

17 (iii) by adding at the end the fol-
18 lowing new paragraph:

19 “(13) the research topics specified in subpara-
20 graphs (1) through (12) in supercritical condi-
21 tions.”;

22 (B) in subsection (c), by adding at the end
23 the following new paragraph:

24 “(8) SUPERCRITICAL NEXT GENERATION GEO-
25 THERMAL TESTING.—Not later than one year after

1 the date of the enactment of this paragraph, the
2 Secretary shall take such actions as may be nec-
3 essary to ensure that at least one FORGE site has
4 the capabilities to include supercritical geothermal
5 testing and, if practicable and technically feasible,
6 closed-loop geothermal systems in supercritical con-
7 ditions.”; and

8 (C) by adding at the end the following new
9 subsection:

10 “(e) SUPERCRITICAL GEOTHERMAL RESEARCH AND
11 DEVELOPMENT PROGRAM.—

12 “(1) IN GENERAL.—Within the Geothermal
13 Technologies Office of the Department, the Sec-
14 retary shall support a program of supercritical geo-
15 thermal research, development, demonstration, and
16 commercial application activities and, if practicable
17 and technically feasible, closed-loop geothermal sys-
18 tems in supercritical conditions.

19 “(2) FOCUS AREAS.—

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

23 “(i) Well completion.

24 “(ii) Permeability creation and man-
25 agement, including proppants and packers.

1 “(iii) Materials development and
2 equipment design, including power produc-
3 tion, specific to supercritical geothermal
4 systems.

5 “(iv) Sensor development.

6 “(v) Water-rock geochemistry.

7 “(vi) Rock properties.

8 “(vii) Hard rock and deep drilling.

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

11 “(B) ADMINISTRATION.—The Secretary
12 may administer grants to universities and pri-
13 vate sector entities to carry out activities on the
14 topics specified in subparagraph (A) and, to the
15 maximum extent practicable, share data, re-
16 sults, and information publicly.

17 “(3) REPORT ON WATER USE.—Not later than
18 five years after the date of the enactment of this
19 subsection, the Secretary shall submit to the Com-
20 mittee on Natural Resources and the Committee on
21 Science, Space, and Technology of the House of
22 Representatives and the Committee on Energy and
23 Natural Resources of the Senate a report on the fol-
24 lowing:

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

3 “(B) Water use and estimated needs for
4 closed-loop, and superhot geothermal energy
5 production.

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

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

16 “(i) The continuation and expansion
17 of research, development, demonstration,
18 testing, and commercial application activi-
19 ties applicable to FORGE sites.

20 “(ii) The establishment of a next-gen-
21 eration geothermal center of excellence.

22 “(B) LOCATION.—In selecting institutions
23 of higher education for a center referred to in
24 subparagraph (A), the Secretary shall consider
25 the following criteria:

1 “(i) Whether the institution hosts an
2 existing geothermal energy research and
3 development program.

4 “(ii) Whether the institution has prov-
5 en technical expertise to support geo-
6 thermal energy research.

7 “(iii) Whether the institution has ac-
8 cess to geothermal resources.

9 “(C) PURPOSE.—The center referred to in
10 subparagraph (A) shall coordinate among exist-
11 ing FORGE sites, the Department, and na-
12 tional laboratories to carry out the following:

13 “(i) Advance research, development,
14 demonstration, and commercial application
15 of enhanced geothermal energy tech-
16 nologies, including supercritical geothermal
17 technologies, in response to industry and
18 commercial needs, including by partnering
19 with other academic or research institu-
20 tions, industry, non-governmental organi-
21 zations, and State, local, or Tribal govern-
22 ments.

23 “(ii) Foster collaboration for edu-
24 cation, research, and partnership initiatives
25 in order to support the technology, deploy-

1 ment, and workforce needs of the United
2 States geothermal energy industry, includ-
3 ing a focus on enhanced, closed-loop, and
4 supercritical geothermal systems.

5 “(iii) Support workforce development
6 across the enhanced geothermal energy de-
7 velopment lifecycle.

8 “(iv) Provide educational, technical,
9 and analytical assistance on enhanced geo-
10 thermal systems to Federal agencies, in-
11 dustry, and State, local, and Tribal govern-
12 ments.

13 “(v) Collect and disseminate informa-
14 tion on best practices in all areas relating
15 to developing and managing geothermal
16 energy resources and energy systems, in-
17 cluding enhanced, closed-loop, and super-
18 critical geothermal.

19 “(5) AUTHORIZATION OF APPROPRIATIONS.—
20 There are authorized to be appropriated to the Sec-
21 retary \$5,000,000 for each fiscal years 2026
22 through 2030 to carry out this subsection.”; and

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

1 (A) in subsection (e), by striking “Com-
2 mittee on Science and Technology” and insert-
3 ing “Committee on Science, Space, and Tech-
4 nology”; and

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

7 “(f) PROGRESS REPORTS.—Not later than one year
8 after the date of the enactment of this subsection and
9 every two years thereafter, the Secretary shall submit to
10 the Committee on Science, Space, and Technology of the
11 House of Representatives and the Committee on Energy
12 and Natural Resources of the Senate a report that con-
13 tains the following:

14 “(1) A description of the maximum potential of
15 geothermal resources in the United States.

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

18 “(3) An assessment of the barriers to commer-
19 cialization of enhanced, closed-loop, and supercritical
20 geothermal technologies.

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

23 (b) UPDATE TO GEOTHERMAL RESOURCE ASSESS-
24 MENT.—

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

3 (A) in subsection (c)—

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

7 (ii) in paragraph (1)(D)(ii), by strik-
8 ing “and” after the semicolon;

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

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

13 “(3) assessing regions of the United States with
14 significant potential for supercritical geothermal.”;
15 and

16 (B) by striking subsection (d).

17 (2) FIRST UPDATE.—The first quadrennial up-
18 date to the geothermal resource assessment carried
19 out by the United States Geological Survey under
20 subsection (c) of section 2501 of the Energy Policy
21 Act of 1992, as amended by paragraph (1), shall be
22 completed by not later than 180 days after the date
23 of the enactment of this Act.