

AMENDMENT TO
COMMITTEE PRINT OF H.R. 5374
OFFERED BY Mr . Lucas _____

Page 1, in the Table of Contents, rename section 10 as “Organization and administration of programs”.

Page 1, line 8, strike “612(1)” and insert “612”.

Page 1, line 9, strike “17191(1)” and insert “17191”.

Page 1, line 9, insert “— (1) in paragraph (1),” after “amended”.

Page 2, after line 11, insert the following:

- 1 (2) by adding after paragraph (1) the following:
- 2 “(2) ELIGIBLE ENTITY.—The term ‘eligible en-
- 3 tity’ means any of the following entities:
- 4 “(A) An institution of higher education.
- 5 “(B) A National laboratory.
- 6 “(C) A Federal research agency.
- 7 “(D) A State research agency.
- 8 “(E) A nonprofit research organization.
- 9 “(F) An industrial entity.

1 “(G) A consortium of 2 or more entities
2 described in subparagraphs (A) through (F).”;
3 and
4 (3) by redesignating paragraphs (2) through
5 (7) as paragraphs (3) through (8), respectively.

Page 4, line 12, add “, including induced seismicity,” after “environmental impacts”.

Page 4, line 16, add “water use and” after “including”.

Page 5, line 22, add “surface technologies, and well construction” after “drilling”.

Page 5, strike line 23 and all that follows through page 6, line 17 and insert the following new subsection:

6 “(e) COPRODUCTION OF GEOTHERMAL ENERGY AND
7 MINERALS PRODUCTION RESEARCH AND DEVELOPMENT
8 INITIATIVE.—

9 “(1) IN GENERAL.—The Secretary shall carry
10 out a research and development initiative under
11 which the Secretary shall award grants to demonstrate the coproduction of critical minerals from
12 geothermal resources.
13 geothermal resources.

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

1 “(A) improve the cost effectiveness of re-
2 moving minerals from geothermal brines as part
3 of the coproduction process;

4 “(B) increase recovery rates of the tar-
5 geted mineral commodity;

6 “(C) decrease water use and other environ-
7 mental impacts, as determined by the Sec-
8 retary; and

9 “(D) demonstrate a path to commercial vi-
10 ability.”.

Page 6, after line 17, insert the following new sub-
sections:

11 “(f) FLEXIBLE OPERATIONS.—The Secretary shall
12 support a research initiative on flexible operation of geo-
13 thermal power plants.

14 “(g) HYBRID ENERGY SYSTEMS.—The Secretary
15 shall identify opportunities for joint research, develop-
16 ment, and demonstration programs between geothermal
17 systems and other energy generation or storage systems.

Page 7, line 8, add “institutions of higher education,
and the national laboratories,” after “industry part-
ners,”.

Page 7, line 14, insert the following new paragraph
(and redesignate subsequent paragraphs accordingly):

1 “(2) drilled, non-stimulated (e.g. closed-loop)
2 reservoir technologies;”.

Page 7, line 17, add “and understanding of the surface area and volume of fractures” after “modeling”.

Page 8, line 6, strike “operated by public or academic entities”.

Page 8, line 16, add “nonstimulation techniques,” after “stimulations,”.

Page 8, line 23, add “, including coordination between FORGE sites” after “technology”.

Page 9, after line 11, insert the following (and redesignate subsequent paragraphs accordingly):

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

Page 9, line 12, strike “3” and insert “4”.

Page 9, line 13, strike “11” and insert “12”.

Page 9, line 18, strike “2020” and insert “2021”.

Page 9, line 19, strike “2021” and insert “2022”.

Page 9, line 20, strike “2022” and insert “2023”.

Page 9, line 21, strike “2023” and insert “2024”.

Page 9, line 23, strike “2024” and insert “2025”.

Page 10, strike lines 3 through page 11, line 15 and insert the following:

1 “(d) ENHANCED GEOTHERMAL SYSTEMS DEM-
2 ONSTRATIONS.—

3 “(1) IN GENERAL.—Beginning on the date of
4 enactment of the ‘Advanced Geothermal Research
5 and Development Act of 2019’, the Secretary, in col-
6 laboration with industry partners, institutions of
7 higher education, and the national laboratories, shall
8 support an initiative for demonstration of enhanced
9 geothermal systems for power production or direct
10 use.

11 “(2) PROJECTS.—

12 “(A) IN GENERAL.—Under the initiative
13 described in paragraph (1), demonstration
14 projects shall be carried out in locations that
15 are commercially viable for enhanced geo-
16 thermal systems development, while also consid-
17 ering environmental impacts to the maximum
18 extent practicable, as determined by the Sec-
19 retary.

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

22 “(i) collectively demonstrate—

1 “(I) different geologic settings,
2 such as hot sedimentary aquifers, lay-
3 ered geologic systems, supercritical
4 systems, and basement rock systems;
5 and

6 “(II) a variety of development
7 techniques, including open hole and
8 cased hole completions, differing well
9 orientations, and stimulation and non-
10 stimulation mechanisms; and

11 “(ii) to the extent practicable, use ex-
12 isting sites where subsurface characteriza-
13 tion or geothermal energy integration anal-
14 ysis has been conducted.

15 “(C) EASTERN DEMONSTRATION.—Not
16 fewer than 1 of the demonstration projects car-
17 ried out under subparagraph (A) shall be lo-
18 cated an area east of the Mississippi that is
19 suitable for enhanced geothermal demonstration
20 for power, heat, or a combination of power and
21 heat.”.

Page 12, line 8, add “understanding of related earth
sciences,” before “components”.

Page 12, line 20, add “and cooling” after “heating”.

Page 13, line 7, strike “ground” and insert “geology, groundwater,”.

Page 14, lines 20 through 22, strike “water sources at a temperature of less than 150 degrees Celsius” and insert “low temperature groundwater”.

Page 17, line 6, add “fluid and” before “heat flow”.

Page 17, line 7, add “geomechanics, geochemistry,” before “seismicity”.

Page 18, line 19, strike “**REPORTING REQUIREMENTS**” and insert “**ORGANIZATION AND ADMINISTRATION OF PROGRAMS**”.

Page 18, line 23, strike “**REPORTS**” and insert “**ORGANIZATION AND ADMINISTRATION OF PROGRAMS**”.

Page 18, line 24, insert the following (and redesignate subsequent subsections accordingly):

1 “(a) **EDUCATION AND OUTREACH**.—In carrying out
2 the activities described in this subtitle, the Secretary shall
3 support education and outreach activities to disseminate
4 information on geothermal energy technologies and the
5 geothermal energy workforce, including activities at the
6 Frontier Observatory for Research in Geothermal Energy
7 site(s).

1 “(b) TECHNICAL ASSISTANCE.—In carrying out this
2 subtitle, the Secretary shall also conduct technical assist-
3 ance and analysis activities with eligible entities for the
4 purpose of supporting the commercial application of ad-
5 vances in geothermal energy systems development and op-
6 erations, which may include activities that support ex-
7 panding access to advanced geothermal energy tech-
8 nologies for rural, Tribal, and low-income communities.”.

Page 20, strike lines 9 through 13, and insert the following:

9 “(1) \$121,375,000 for fiscal year 2021;
10 “(2) \$132,750,000 for fiscal year 2022;
11 “(3) \$144,125,000 for fiscal year 2023;
12 “(4) \$150,500,000 for fiscal year 2024; and
13 “(5) \$151,875,000 for fiscal year 2025.”.

Page 21, line 10, strike “11” and insert “12”.

Page 21, line 13, strike “2020 through 2024” and insert “2021 through 2025”.

