**Statutory Notes and Related Subsidiaries**

EFFECTIVE DATE

Section effective on the date that is 1 day after Dec. 19, 2007, see section 1601 of Pub. L. 110–140, set out as a note under section 1824 of Title 2, The Congress.

SHORT TITLE

This part known as the ''Advanced Geothermal Energy Research and Development Act of 2007'', see Short Title note set out under section 17001 of this title.

### § 17192. 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 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.

(Pub. L. 110–140, title VI, § 613, Dec. 19, 2007, 121 Stat. 1679; Pub. L. 116–260, div. Z, title III, § 3002(b), Dec. 27, 2020, 134 Stat. 2487.)

**Editorial Notes**

AMENDMENTS

2020—Pub. L. 116–260 amended section generally. Prior to amendment, section related to hydrothermal research and development.

**Statutory Notes and Related Subsidiaries**

EFFECTIVE DATE

Section effective on the date that is 1 day after Dec. 19, 2007, see section 1601 of Pub. L. 110–140, set out as a note under section 1824 of Title 2, The Congress.

### § 17193. 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,[1] 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, 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;

[1] So in original. The words ''The Secretary shall'' appear in introductory provisions.

(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 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.

(Pub. L. 110–140, title VI, § 614, Dec. 19, 2007, 121 Stat. 1680; Pub. L. 116–260, div. Z, title III, § 3002(c), Dec. 27, 2020, 134 Stat. 2488.)

**Editorial Notes**

AMENDMENTS

2020—Pub. L. 116–260 amended section generally. Prior to amendment, section related to general geothermal systems research and development.

**Statutory Notes and Related Subsidiaries**

EFFECTIVE DATE

Section effective on the date that is 1 day after Dec. 19, 2007, see section 1601 of Pub. L. 110–140, set out as a note under section 1824 of Title 2, The Congress.

## § 17194. Enhanced geothermal systems research and development

**(a) In general**

The Secretary shall support a program of research, development, demonstration, and commercial application for enhanced geothermal systems, including the programs described in subsection (b).

**(b) Enhanced 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 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.

**(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 December 27, 2020, may continue to receive support.