Calendar No. 314

112TH CONGRESS
2D SESSION

S. 1142

[Report No. 112–145]

To promote the mapping and development of United States geothermal resources by establishing a direct loan program for high risk geothermal exploration wells, to amend the Energy Independence and Security Act of 2007 to improve geothermal energy technology and demonstrate the use of geothermal energy in large scale thermal applications, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MAY 26, 2011

Mr. TESTER (for himself, Ms. MURKOWSKI, Mr. REID, and Mr. BEGICH) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

FEBRUARY 7, 2012

Reported by Mr. BINGAMAN, with amendments

[Omit the part struck through and insert the part printed in italic]

A BILL

To promote the mapping and development of United States geothermal resources by establishing a direct loan program for high risk geothermal exploration wells, to amend the Energy Independence and Security Act of 2007 to improve geothermal energy technology and demonstrate the use of geothermal energy in large scale thermal applications, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Geothermal Exploration and Technology Act of 2011''.

SEC. 2. GEOTHERMAL EXPLORATORY DRILLING LOAN PROGRAM.

(a) DEFINITIONS.—In this section:

(1) FUND.—The term ''Fund'' means the Geothermal Investment Fund established under subsection (h).

(2) PROGRAM.—The term ''program'' means the direct loan program for high risk geothermal exploration wells established under this section.

(3) SECRETARY.—The term ''Secretary'' means the Secretary of Energy.

(b) ESTABLISHMENT.—The Secretary shall establish a direct loan program for high risk geothermal exploration wells.

(c) APPLICATIONS.—An applicant that seeks to receive a loan under the program may submit to the Secretary an application for the loan at such time, in such form, and containing such information as the Secretary may prescribe.

(d) PROJECT CRITERIA.—

(1) IN GENERAL.—In selecting applicants for loans under this section to carry out projects under the program, the Secretary shall consider—

(A) the potential for unproven geothermal resources that would be explored and developed under a project;

(B) the expertise and experience of an applicant in developing geothermal resources; and

(C) the importance of the project in meeting the goals of the Department of Energy.

(2) PREFERENCE.—In selecting applicants for loans under this section to carry out projects under the program, the Secretary shall provide a preference for ~~previously unexplored, underexplored, or unproven geothermal resources in a variety of geologic and geographic settings~~ *projects likely to lead to successful new geothermal development leading to electricity production*.

(e) DATA SHARING.—Data from all exploratory wells that are carried out under the program shall be provided to the Secretary and the Secretary of the Interior for use in mapping national geothermal resources and other uses, including—

(1) subsurface geologic data;

(2) metadata;

(3) borehole temperature data; and

(4) inclusion in the National Geothermal Data System of the Department of Energy.

(f) ADMINISTRATION.—

(1) COST SHARE.—

(A) IN GENERAL.—The Secretary shall determine the cost share for a loan made under this section.

(B) HIGHER RISKS.—The Secretary may base the cost share percentage for loans made under this section on a sliding scale, with higher Federal shares awarded to projects with higher risks.

(2) NUMBER OF WELLS.—The Secretary shall determine the number of wells for each selected geothermal project for which a loan may be made under this section.

(3) UNPRODUCTIVE PROJECTS.—The Secretary may grant further delays or dispense with the repayment obligation on a demonstration that a selected geothermal project is unproductive.

(g) LOAN REPAYMENT.—

(1) COMMENCEMENT.—The recipient of a loan made under this section for a geothermal facility

shall commence repayment of the loan beginning on the earlier of—

(A) the date that is 4 years after the date the loan is made; or

(B) the date on which the geothermal facility enters into commercial production.

(2) TERM.—

(A) IN GENERAL.—Except as provided in subparagraph (B), the term of a loan made under this section shall be 4 years beginning on the applicable loan repayment commencement date under paragraph (1).

(B) EXTENSION.—The Secretary may extend the term of a loan under this section for not more than 4 years.

(3) USE OF LOAN REPAYMENTS.—Amounts repaid on loans made under this section shall be deposited in the Fund.

(h) GEOTHERMAL INVESTMENT FUND.—

(1) ESTABLISHMENT OF FUND.—There is established in the Treasury of the United States a fund to be known as the ''Geothermal Investment Fund'', to be administered by the Secretary, to be available without fiscal year limitation and not subject to appropriation, to carry out this section.

~~(2) TRANSFERS TO FUND.—The Fund shall consist of such amounts as are appropriated to the Fund under subsection (j).~~

(2) TRANSFERS TO FUND.—The Fund shall consist of—

(A) such amounts as are appropriated to the Fund under subsection (j); and

(B) amounts repaid on loans under subsection (g)(3).

(3) PROHIBITION.—Amounts in the Fund may not be made available for any purpose other than a purpose described in paragraph (1).

(4) ANNUAL REPORTS.—

(A) IN GENERAL.—Not later than 60 days after the end of each fiscal year beginning with fiscal year 2012, the Secretary of Energy shall submit to the the Committee on Energy and Natural Resources of the Senate and the Committee on Energy and Commerce of the House of Representatives a report on the operation of the Fund during the fiscal year.

(B) CONTENTS.—Each report shall include, for the fiscal year covered by the report, the following:

(i) A statement of the amounts deposited into the Fund.

(ii) A description of the expenditures made from the Fund for the fiscal year, including the purpose of the expenditures.

(iii) Recommendations for additional authorities to fulfill the purpose of the Fund.

(iv) A statement of the balance remaining in the Fund at the end of the fiscal year.

(i) GUIDELINES.—~~Not later~~

(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall ~~develop~~ *issue* guidelines for the implementation of the program.

(2) ADMINISTRATION.—The guidelines shall—

(A) specify—

(i) the terms and conditions that would require a higher or lower level of cost sharing under this section;

(ii) the conditions under which the Secretary will allow loan modifications or forgiveness in cases in which a well cannot be used for production or injection; and

(iii) the information necessary to provide a loan applicant with certainty about application of subsection (f), including the level of cost and risk that the applicant and the Secretary will assume; and

(B) require that—

(i) loans be provided under this section only after the developer has committed the share of the developer for expenditures for drilling costs; and

(ii) loans for successful wells shall to be repaid by the developer within a 10-year period.

(j) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section such sums as are necessary for each of fiscal years 2012 through 2021.

SEC. 3. LARGE-SCALE GEOTHERMAL ENERGY.

Title VI of the Energy Independence and Security Act of 2007 is amended by inserting after section 616 (42 U.S.C. 17195) the following:

"SEC. 616A. LARGE-SCALE GEOTHERMAL ENERGY.

''(a) FINDINGS.—Congress finds that—

''(1) the Geothermal Technologies Program of the Office of Energy Efficiency and Renewable En-

ergy of the Department has included a focus on direct use of geothermal energy in the low-temperature geothermal energy subprogram (including in the development of a research and development plan for the program);

''(2) the Building Technologies Program of the Office of Energy Efficiency and Renewable Energy of the Department—

''(A) is focused on the energy demand and energy efficiency of buildings; and

''(B) includes geothermal heat pumps as a component technology in the residential and commercial deployment activities of the program; and

''(3) geothermal heat pumps and direct use of geothermal energy, especially in large-scale applications, can make a significant contribution to the use of renewable energy but are underrepresented in research, development, demonstration, and commercialization.

''(b) PURPOSES.—The purposes of this section are—

''(1) to improve the components, processes, and systems used for geothermal heat pumps and the direct use of geothermal energy; and

''(2) to increase the energy efficiency, lower the cost, increase the use, and improve and demonstrate the applicability of geothermal heat pumps to, and the direct use of geothermal energy in, large buildings, commercial districts, residential communities, and large municipal, agricultural, or industrial projects.

''(c) DEFINITIONS.—In this section:

''(1) DIRECT USE OF GEOTHERMAL ENERGY.—The term 'direct use of geothermal energy' means systems that use water that is at a temperature between approximately 38 degrees Celsius and 149 degrees Celsius directly or through a heat exchanger to provide—

''(A) heating to buildings; or

''(B) heat required for industrial processes, agriculture, aquaculture, and other facilities.

''(2) GEOTHERMAL HEAT PUMP.—The term 'geothermal heat pump' means a system that provides heating and cooling by exchanging heat from shallow ground or surface water using—

''(A) a closed loop system, which transfers heat ~~via~~ *by way of* buried or immersed pipes that contain a mix of water and antifreeze; or

''(B) an open loop system, which circulates ground or surface water directly into the building and returns the water to the same aquifer or surface water source.

''(3) LARGE-SCALE APPLICATION.—The term 'large-scale application' means an application for space or process heating or cooling for large entities *with a name-plate capacity, expected resource, or rating of 10 or more megawatts*, such as a large building, commercial district, residential community, or a large municipal, agricultural, or industrial project.

''(4) SECRETARY.—The term 'Secretary' means Secretary of Energy, acting through the Assistant Secretary for Energy Efficiency and Renewable Energy.

''(d) PROGRAM.—

''(1) IN GENERAL.—The Secretary shall establish a program of research, development, demonstration, and commercial application for geothermal heat pumps and the direct use of geothermal energy.

''(2) AREAS.—The program may include research, development, demonstration, and commercial application of—

''(A) geothermal ground loop efficiency improvements through more efficient heat transfer fluids;

''(B) geothermal ground loop efficiency improvements through more efficient thermal grouts for wells and trenches;

''(C) geothermal ground loop installation cost reduction through—

''(i) improved drilling methods; ~~and~~

''(ii) improvements in drilling equipment;

''(iii) improvements in design methodology and energy analysis procedures; and

''(iv) improved methods for determination of ground thermal properties and ground temperatures;

''(D) installing geothermal ground loops near the foundation walls of new construction to take advantage of existing structures;

''(E) using gray or black wastewater as a method of heat exchange;

''(F) improving geothermal heat pump system economics through integration of geothermal systems with other building systems, including providing hot and cold water and re-

jecting or circulating industrial process heat through refrigeration heat rejection and waste heat recovery;

"(G) advanced geothermal systems using variable pumping rates to increase efficiency;

"(H) geothermal heat pump efficiency improvements;

"(I) use of hot water found in mines and mine shafts and other surface waters as the heat exchange medium;

"(J) heating of districts, neighborhoods, communities, large commercial or public buildings (including office, retail, educational, government, and institutional buildings and multifamily residential buildings and campuses), and industrial and manufacturing facilities;

"(K) geothermal system integration with solar thermal water heating or cool roofs and solar-regenerated desiccants to balance loads and use building hot water to store geothermal energy;

"(L) use of hot water coproduced from oil and gas recovery;

''(M) use of water sources at a temperature of less than 150 degrees Celsius for direct use;

''(N) system integration of direct use with geothermal electricity production; and

''(O) coproduction of heat and power, including on-site use.

''(3) ENVIRONMENTAL IMPACTS.—In carrying out the program, the Secretary shall identify and mitigate potential environmental impacts in accordance with section 614(c).

''(e) GRANTS.—

''(1) IN GENERAL.—The Secretary shall make grants available to State and local governments, institutions of higher education, nonprofit entities, utilities, and for-profit companies (including manufacturers of heat-pump and direct-use components and systems) to promote the development of geothermal heat pumps and the direct use of geothermal energy.

''(2) PRIORITY.—In making grants under this subsection, the Secretary shall give priority to proposals that apply to large buildings (including office, retail, educational, government, institutional, and multifamily residential buildings and campuses and

industrial and manufacturing facilities), commercial districts, and residential communities.

''(3) NATIONAL SOLICITATION.—Not later than 180 days after the date of enactment of this section, the Secretary shall conduct a national solicitation for applications for grants under this section.

''(f) REPORTS.—

''(1) IN GENERAL.—Not later than 2 years after the date of enactment of this section and annually thereafter, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Science and Technology of the House of Representatives a report on progress made and results obtained under this section to develop geothermal heat pumps and direct use of geothermal energy.

''(2) AREAS.—Each of the reports required under this subsection shall include—

''(A) an analysis of progress made in each of the areas described in subsection (d)(2); and

''(B)(i) a description of any relevant recommendations made during a review of the program; and

''(ii) any plans to address the recommendations under clause (i).

''(g) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section such sums as are necessary for each of fiscal years 2012 through 2016.''.

SEC. 4. FACILITATION OF COPRODUCTION OF GEOTHERMAL ENERGY ON OIL AND GAS LEASES.

Section 4(b) of the Geothermal Steam Act of 1970 (30 U.S.C. 1003(b)) is amended by adding at the end the following:

''(4) LAND SUBJECT TO OIL AND GAS LEASE.—Land under an oil and gas lease issued pursuant to the Mineral Leasing Act (30 U.S.C. 181 et seq.) or the Mineral Leasing Act for Acquired Lands (30 U.S.C. 351 et seq.) that is subject to an approved application for permit to drill and from which oil and gas production is occurring may be available for leasing under subsection (c) by the holder of the oil and gas lease—

''(A) on a determination that—

''(i) geothermal energy will be produced from a well producing or capable of producing oil and gas; and

''(ii) the public interest will be served by the issuance of such a lease; and

"(B) in order to provide for the coproduction of geothermal energy with oil and gas.".

Calendar No. 314

112TH CONGRESS
2D SESSION

S. 1142

[Report No. 112–145]

A BILL

To promote the mapping and development of United States geothermal resources by establishing a direct loan program for high risk geothermal exploration wells, to amend the Energy Independence and Security Act of 2007 to improve geothermal energy technology and demonstrate the use of geothermal energy in large scale thermal applications, and for other purposes.

FEBRUARY 7, 2012

Reported with amendments