111TH CONGRESS
2D SESSION

S. 3619

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

JULY 20, 2010

Mr. TESTER introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

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A BILL

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. 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 Energy 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 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, 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;

''(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 rejecting 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 2011 through 2015.''.

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