116TH CONGRESS
1ST SESSION

S. _____

To amend the United States Energy Storage Competitiveness Act of 2007 to establish a research, development, and demonstration program for grid-scale energy storage systems, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Ms. COLLINS (for herself, Mr. HEINRICH, Ms. SMITH, Mr. GARDNER, Mr. COONS, Ms. MCSALLY, and Mr. KING) introduced the following bill; which was read twice and referred to the Committee on _____

A BILL

To amend the United States Energy Storage Competitiveness Act of 2007 to establish a research, development, and demonstration program for grid-scale energy storage systems, 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 ''Better Energy Storage Technology Act'' or the ''BEST Act''.

SEC. 2. GRID-SCALE ENERGY STORAGE SYSTEM RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROGRAM.

(a) IN GENERAL.—The United States Energy Storage Competitiveness Act of 2007 (42 U.S.C. 17231) is amended—

(1) by redesignating subsections (l) through (p) as subsections (m) through (q), respectively; and

(2) by inserting after subsection (k) the following:

''(l) GRID-SCALE ENERGY STORAGE SYSTEM RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROGRAM.—

''(1) DEFINITIONS.—In this subsection:

''(A) ENERGY STORAGE SYSTEM.—The term 'energy storage system' means a system, equipment, facility, or technology that—

''(i) is capable of absorbing energy, storing that energy for a period of time, and dispatching the stored energy; and

''(ii)(I) uses a mechanical, electrical, chemical, electrochemical, or thermal process to store energy that—

''(aa) was generated at an earlier time for use at a later time; or

"(bb) was generated from a mechanical process, and would otherwise be wasted, for delivery at a later time; or

"(II) stores thermal energy for direct use for heating or cooling at a later time in a manner that avoids the need to use electricity at that later time, in the same manner as the storage and use offered by a grid-enabled water heater.

"(B) PROGRAM.—The term 'program' means the research, development, and demonstration program established under paragraph (2)(A).

"(2) ESTABLISHMENT.—

"(A) IN GENERAL.—Not later than 180 days after the date of enactment of the BEST Act, the Secretary shall establish within the Office of Electricity of the Department of Energy a research, development, and demonstration program of grid-scale energy storage systems, in accordance with this subsection.

"(B) GOALS, PRIORITIES, COST TARGETS.—The Secretary shall develop goals, priorities, and cost targets for the program.

''(3) STRATEGIC PLAN.—

''(A) IN GENERAL.—Not later than 180 days after the date of enactment of the BEST Act, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a 10-year strategic plan for the program.

''(B) CONTENTS.—The strategic plan submitted under subparagraph (A) shall—

''(i) identify Department of Energy programs that—

''(I) support the research and development activities described in paragraph (4) and the demonstration projects under paragraph (6); and

''(II)(aa) do not support the activities or projects described in subclause (I); but

''(bb) are important to the development of grid-scale energy storage systems and the mission of the Office of Electricity of the Department of Energy, as determined by the Secretary; and

"(ii) include expected timelines for—

"(I) the accomplishment of relevant objectives under current programs of the Department of Energy relating to grid-scale energy storage systems; and

"(II) the commencement of any new initiatives within the Department of Energy relating to grid-scale energy storage systems to accomplish those objectives.

"(C) UPDATES TO PLAN.—Not less frequently than once every 2 years, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Science, Space, and Technology of the House of Representatives an updated 10-year strategic plan, which shall identify, and provide a justification for, any major deviation from a previous strategic plan submitted under this paragraph.

"(4) RESEARCH AND DEVELOPMENT.—In carrying out the program, the Secretary shall focus research and development activities on developing cost-effective energy storage systems that—

"(A)(i) to balance day-scale needs, are capable of highly flexible power output for not less than 6 hours; and

"(ii) have a lifetime of—

"(I) not less than 8,000 cycles of discharge at full output; and

"(II) 20 years of operation;

"(B)(i) can provide power to the electric grid for durations of approximately 10 to 100 hours; and

"(ii) have a lifetime of—

"(I) not less than 1,500 cycles of discharge at full output; and

"(II) 20 years of operation; and

"(C) can store energy over several months and address seasonal scale variations in supply and demand.

"(5) COST TARGETS.—

"(A) IN GENERAL.—Cost targets developed by the Secretary under paragraph (2)(B) shall—

"(i) be for energy storage costs across all types of energy storage technology; and

"(ii) include technology costs, installation costs, balance of services costs, and soft costs.

"(B) TARGET UPDATES; SUBTARGETS.—Not less frequently than once every 5 years during the 10-year period beginning on the date of enactment of the BEST Act, the Secretary shall—

"(i) revise the cost targets developed under paragraph (2)(B) to be more stringent, based on—

"(I) a technology-neutral approach that considers all types of energy storage deployment scenarios, including individual technologies, technology combination use profiles, and integrated control system applications;

"(II) input from a variety of stakeholders, including the stakeholders described in subsection (i)(3);

"(III) the inclusion and use of existing infrastructure; and

"(IV) the ability to optimize the integration of intermittent renewable

energy generation technology and distributed energy resources; and

''(ii) establish cost subtargets for technologies and applications relating to the energy storage systems described in paragraph (4), taking into consideration—

''(I) electricity market prices; and

''(II) the goal of being cost-competitive in specific markets for electric grid products and services.

''(6) DEMONSTRATION PROJECTS.—

''(A) IN GENERAL.—Not later than September 30, 2023, under the program, the Secretary shall, to the maximum extent practicable, enter into agreements to carry out not more than 5 grid-scale energy storage system demonstration projects.

''(B) OBJECTIVES.—Each demonstration project carried out under subparagraph (A) shall be designed to further the development of the energy storage systems described in paragraph (4).

''(C) NO PROJECT OWNERSHIP INTEREST.—The Federal Government shall not hold any equity or other ownership interest in any

grid-scale energy storage system that is part of a demonstration project under this paragraph.

''(7) TESTING AND VALIDATION.—The Secretary shall accelerate the standardized testing and validation of grid-scale energy storage systems under the program through collaboration with 1 or more National Laboratories (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801)), including by developing testing and evaluation methodologies for—

''(A) standardized grid performance testing for energy storage systems, materials, and technologies during each stage of development, beginning with the research stage and ending with the deployment stage, including performance testing with charge and discharge protocols to evaluate power capability, energy output, and degradation during cycling and calendar aging on earliest stage commercially viable prototypes (commonly less than 100 kilowatts); and

''(B) accelerated life testing protocols to predict estimated lifetime metrics with accuracy.

''(8) COORDINATION.—To accelerate the development of grid-scale energy storage systems under

the program, and pursuant to subsection (n), the Secretary shall coordinate with—

''(A) offices within the Department of Energy conducting energy storage research, such as the Advanced Research Projects Agency–Energy, the Office of Science, and the Office of Energy Efficiency and Renewable Energy;

''(B) Federal agencies that are carrying out initiatives to increase energy security or reliability, such as the Department of Defense, the National Science Foundation, the Federal Energy Regulatory Commission, and the Department of Homeland Security;

''(C) program offices that aim to increase domestic manufacturing and production, such as the Office of Advanced Manufacturing in the Department of Energy and the National Institute of Standards and Technology in the Department of Commerce; and

''(D) members of private industry to advance the development of commercially viable grid-scale energy storage systems.''.

(b) AUTHORIZATION OF APPROPRIATIONS.—The United States Energy Storage Competitiveness Act of

2007 (42 U.S.C. 17231) is amended, in subsection (q) (as redesignated by subsection (a)(1))—

(1) in paragraph (5), by striking ''and'' at the end;

(2) in paragraph (6), by striking the period at the end and inserting ''; and''; and

(3) by adding at the end the following:

''(7) the research, development, and demonstration program of grid-scale energy storage systems under subsection (l) $60,000,000 for each of fiscal years 2020 through 2024.''.