

Union Calendar No. 379

116TH CONGRESS
2D SESSION

H. R. 2986

[Report No. 116–472]

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 HOUSE OF REPRESENTATIVES

MAY 23, 2019

Mr. FOSTER (for himself, Mr. CASTEN of Illinois, Ms. HERRERA BEUTLER, and Mr. GONZALEZ of Ohio) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

AUGUST 7, 2020

Additional sponsors: Mr. FITZPATRICK, Mr. WELCH, Mr. BACON, Mr. GRIJALVA, Mr. CRENSHAW, Mr. KENNEDY, Mr. GALLAGHER, Mr. LIPINSKI, Mr. STIVERS, Mrs. FLETCHER, Mr. MCHENRY, Mr. CASE, Mr. CALVERT, Mr. WEBER of Texas, Ms. LEE of California, Ms. SPANBERGER, Mr. KATKO, Ms. KUSTER of New Hampshire, Mr. KIND, Mr. QUIGLEY, Ms. LOFGREN, Mr. COX of California, Ms. NORTON, Mrs. DINGELL, Mr. HIMES, Ms. HAALAND, Mrs. LURIA, Mr. LEWIS, Mr. BLUMENAUER, Mr. LARSEN of Washington, Mr. SMITH of New Jersey, Ms. STEFANIK, Mr. BRINDISI, Mr. COHEN, Mr. CONNOLLY, Mr. KIM, Mr. SCHNEIDER, Mrs. BEATTY, Mr. DAVID SCOTT of Georgia, Mr. HARDER of California, Mr. SUOZZI, Mr. KEATING, Mr. MEEKS, Mrs. NAPOLITANO, Ms. JOHNSON of Texas, Ms. PINGREE, Mr. PRICE of North Carolina, Ms. BARRAGÁN, Mr. COLE, Mr. FORTENBERRY, Mr. MEUSER, Mr. MCADAMS, Ms. SHERRILL, Mr. OLSON, Mr. DEFazio, Ms. ESCOBAR, Mr. STEIL, Mr. SOTO, Ms. JUDY CHU of California, Mr. CICILLINE, Miss RICE of New York, Mr. KHANNA, Mr. POCAN, Mr. CRIST, Mr. JOYCE of Ohio, Mr. AGUILAR, Ms. BROWNLEY of California, Mr. COOPER, Mr. CASTRO of Texas, Mrs. RODGERS of Washington, Mr. PHILLIPS, Mr. SAN NICOLAS, Ms. BONAMICI, Mr. THOMPSON of California, Ms. SÁNCHEZ, Mr. ROSE of New York, Mrs. WATSON COLEMAN, Mr. GOLDEN, Mr. PAPPAS, Mr. LANGEVIN, Mr. GALLEGRO, Ms. ESHOO, Ms. HOULAHAN, Mr. MICHAEL F. DOYLE of Pennsylvania, Mr. BERA, Mr. HECK, Mrs. HAYES, Mr. AMODEI, Ms.

JAYAPAL, Ms. ROYBAL-ALLARD, Mr. LUJÁN, Mr. HORSFORD, Mr. SHERMAN, Mr. CURTIS, Ms. TITUS, Mr. TRONE, Mr. PETERS, Ms. CRAIG, and Ms. STEVENS

AUGUST 7, 2020

Reported with an amendment; committed to the Committee of the Whole House on the State of the Union and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in *italic*]

[For text of introduced bill, see copy of bill as introduced on May 23, 2019]

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.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 *This Act may be cited as the “Better Energy Storage*
5 *Technology Act” or the “BEST Act”.*

6 **SEC. 2. ENERGY STORAGE.**

7 *(a) IN GENERAL.—The United States Energy Storage*
8 *Competitiveness Act of 2007 (42 U.S.C. 17231) is amend-*
9 *ed—*

10 *(1) by redesignating subsections (l) through (p)*
11 *as subsections (p) through (t), respectively; and*

12 *(2) by inserting after subsection (k) the fol-*
13 *lowing:*

14 *“(l) ENERGY STORAGE RESEARCH AND DEVELOPMENT*
15 *PROGRAM.—*

16 *“(1) IN GENERAL.—Not later than 180 days*
17 *after the date of enactment of the Better Energy Stor-*
18 *age Technology Act, the Secretary shall establish a re-*
19 *search and development program for energy storage*
20 *systems, components, and materials across multiple*
21 *program offices of the Department.*

22 *“(2) REQUIREMENTS.—In carrying out the pro-*
23 *gram under paragraph (1), the Secretary shall—*

24 *“(A) coordinate across all relevant program*
25 *offices throughout the Department, including the*

1 *Office of Electricity, the Office of Energy Effi-*
2 *ciency and Renewable Energy, the Advanced Re-*
3 *search Projects Agency – Energy, the Office of*
4 *Science, and the Office of Cybersecurity, Energy*
5 *Security, and Emergency Response;*

6 *“(B) adopt long-term cost, performance,*
7 *and demonstration targets for different types of*
8 *energy storage systems and for use in a variety*
9 *of regions, including rural areas;*

10 *“(C) incorporate considerations of sustain-*
11 *ability, sourcing, recycling, reuse, and disposal*
12 *of materials, including critical elements, in the*
13 *design of energy storage systems;*

14 *“(D) identify energy storage duration needs;*

15 *“(E) analyze the need for various types of*
16 *energy storage to improve electric grid resilience*
17 *and reliability; and*

18 *“(F) support research and development of*
19 *advanced manufacturing technologies that have*
20 *the potential to improve United States competi-*
21 *tiveness in energy storage manufacturing.*

22 *“(3) STRATEGIC PLAN.—*

23 *“(A) IN GENERAL.—No later than 180 days*
24 *after the date of enactment of the Better Energy*
25 *Storage Technology Act, the Secretary shall de-*

1 *velop a 5-year strategic plan identifying re-*
2 *search, development, demonstration, and com-*
3 *mmercial application goals for the program in ac-*
4 *cordance with this section. The Secretary shall*
5 *submit this plan to the Committee on Science,*
6 *Space, and Technology of the House of Rep-*
7 *resentatives and the Committee on Energy and*
8 *Natural Resources of the Senate.*

9 “(B) *CONTENTS.*—*The strategic plan sub-*
10 *mitted under subparagraph (A) shall—*

11 “(i) *identify programs at the Depart-*
12 *ment related to energy storage systems that*
13 *support the research and development ac-*
14 *tivities described in paragraph (4), and the*
15 *demonstration projects under subsection*
16 *(m); and*

17 “(ii) *include timelines for the accom-*
18 *plishment of goals developed under the plan.*

19 “(C) *UPDATES TO PLAN.*—*Not less fre-*
20 *quently than once every 3 years, the Secretary*
21 *shall submit to the Committee on Science, Space,*
22 *and Technology of the House of Representatives*
23 *and the Committee on Energy and Natural Re-*
24 *sources of the Senate an updated version of the*
25 *plan under subparagraph (A).*

1 “(4) *RESEARCH AND DEVELOPMENT.*—*In carrying out the program established in paragraph (1),*
2 *the Secretary shall focus on developing—*

4 “(A) *energy storage systems that can store*
5 *energy and deliver stored energy for a minimum*
6 *of 6 hours in duration to balance electricity*
7 *needs over the course of a single day;*

8 “(B) *long-duration energy storage systems*
9 *that can store energy and deliver stored energy*
10 *for 10 to 100 hours in duration; and*

11 “(C) *energy storage systems that can store*
12 *energy and deliver stored energy over several*
13 *months and address seasonal scale variations in*
14 *supply and demand.*

15 “(5) *TESTING AND VALIDATION.*—*The Secretary*
16 *shall support the standardized testing and validation*
17 *of energy storage systems under the program through*
18 *collaboration with 1 or more National Laboratories,*
19 *including the development of methodologies to inde-*
20 *pendently validate energy storage technologies by—*

21 “(A) *performance of energy storage systems*
22 *on the electric grid, including—*

23 “(i) *when appropriate, testing of ap-*
24 *plication-driven charge and discharge pro-*
25 *ocols;*

1 “(ii) *evaluation of power capacity and*
2 *energy output;*

3 “(iii) *degradation of the energy storage*
4 *systems from cycling and aging;*

5 “(iv) *safety; and*

6 “(v) *reliability testing under grid duty*
7 *cycles; and*

8 “(B) *prediction of lifetime metrics.*

9 “(6) *COORDINATION.—In carrying out this sub-*
10 *section, the Secretary shall coordinate with—*

11 “(A) *programs and offices that aim to in-*
12 *crease domestic manufacturing and production*
13 *of energy storage systems, such as those within*
14 *the Department and within the National Insti-*
15 *tute of Standards and Technology;*

16 “(B) *other Federal agencies that are car-*
17 *rying out initiatives to increase energy reli-*
18 *ability through the development of energy storage*
19 *systems, including the Department of Defense;*
20 *and*

21 “(C) *other stakeholders working to advance*
22 *the development of commercially viable energy*
23 *storage systems.*

24 “(7) *TECHNICAL ASSISTANCE PROGRAM.—*

1 “(A) *IN GENERAL.*—*The Secretary shall*
2 *provide technical assistance for commercial ap-*
3 *plication of energy storage technologies to eligible*
4 *entities.*

5 “(B) *TECHNICAL ASSISTANCE.*—*Technical*
6 *assistance provided under this paragraph—*

7 “(i) *may include assistance with—*

8 “(I) *assessment of relevant tech-*
9 *nical and geographic characteristics;*

10 “(II) *interconnection of electricity*
11 *storage systems with the electric grid;*
12 *and*

13 “(III) *engineering design; and*

14 “(ii) *may not include assistance relat-*
15 *ing to modification of Federal, State, or*
16 *local regulations or policies with respect to*
17 *energy storage systems.*

18 “(C) *APPLICATIONS.*—

19 “(i) *IN GENERAL.*—*The Secretary shall*
20 *seek applications for technical assistance*
21 *and grants under the program—*

22 “(I) *on a competitive basis; and*

23 “(II) *on a periodic basis, but not*
24 *less frequently than once every 12*
25 *months.*

1 “(ii) *PRIORITIES.*—*In selecting eligible*
2 *entities for technical assistance for commer-*
3 *cial applications, the Secretary shall give*
4 *priority to eligible entities with projects*
5 *that have the greatest potential for—*

6 “(I) *strengthening the reliability*
7 *and resilience of the electric grid to the*
8 *impact of extreme weather events,*
9 *power grid failures, and interruptions*
10 *in supply of electricity;*

11 “(II) *reducing the cost of energy*
12 *storage systems; or*

13 “(III) *facilitating the use of net*
14 *zero emission energy resources.*

15 “(8) *PROGRAM DEFINED.*—*In this subsection, the*
16 *term ‘program’ means the research and development*
17 *program established under paragraph (1).”.*

18 “(b) *ENERGY STORAGE DEMONSTRATION PROGRAM.*—
19 *The United States Energy Storage Competitiveness Act of*
20 *2007 (42 U.S.C. 17231), as amended, is further amended*
21 *by inserting after subsection (l), as added by subsection (a),*
22 *the following:*

23 “(m) *ENERGY STORAGE DEMONSTRATION PRO-*
24 *GRAM.*—

1 “(1) *ESTABLISHMENT.*—*The Secretary shall es-*
2 *tablish a competitive grant program for the dem-*
3 *onstration of energy storage systems, as identified by*
4 *the Secretary, that use either—*

5 “(A) *a single system; or*

6 “(B) *aggregations of multiple systems.*

7 “(2) *ELIGIBILITY.*—*Entities eligible to receive a*
8 *grant under paragraph (1) include—*

9 “(A) *a State, territory, or possession of the*
10 *United States;*

11 “(B) *a State energy office;*

12 “(C) *a tribal organization (as defined in*
13 *section 3765 of title 38, United States Code);*

14 “(D) *an institution of higher education (as*
15 *defined in section 101 of the Higher Education*
16 *Act of 1965 (20 U.S.C. 1001));*

17 “(E) *an electric utility, including—*

18 “(i) *a rural electric cooperative;*

19 “(ii) *a political subdivision of a State,*
20 *such as a municipally owned electric util-*
21 *ity, or any agency, authority, corporation,*
22 *or instrumentality of one or more State po-*
23 *litical subdivisions; and*

24 “(iii) *an investor-owned utility; and*

1 “(F) a private company, such as but not
2 limited to an energy storage company.

3 “(3) *SELECTION REQUIREMENTS.*—In selecting
4 eligible entities to receive a grant under this section,
5 the Secretary shall, to the maximum extent prac-
6 ticable—

7 “(A) ensure regional diversity among eligi-
8 ble entities that receive the grants, including
9 participation by rural States and small States;

10 “(B) ensure that specific projects selected for
11 grants—

12 “(i) expand on the existing technology
13 demonstration programs of the Department
14 of Energy; and

15 “(ii) are designed to achieve one or
16 more of the objectives described in para-
17 graph (4);

18 “(C) give consideration to proposals from
19 eligible entities for securing energy storage
20 through competitive procurement or contract for
21 service; and

22 “(D) prioritize projects that leverage match-
23 ing funds from non-Federal sources.

1 “(4) *OBJECTIVES.*—*Each demonstration project*
2 *selected for a grant under paragraph (1) shall include*
3 *one or more of the following objectives:*

4 “(A) *To improve the security of critical in-*
5 *frastructure and emergency response systems.*

6 “(B) *To improve the reliability of the trans-*
7 *mission and distribution system, particularly in*
8 *rural areas, including high energy cost rural*
9 *areas.*

10 “(C) *To optimize transmission or distribu-*
11 *tion system operation and power quality to defer*
12 *or avoid costs of replacing or upgrading electric*
13 *grid infrastructure, including transformers and*
14 *substations.*

15 “(D) *To supply energy at peak periods of*
16 *demand on the electric grid or during periods of*
17 *significant variation of electric grid supply or*
18 *demand.*

19 “(E) *To reduce peak loads of homes and*
20 *businesses, particularly to defer or avoid invest-*
21 *ments in new electric grid capacity.*

22 “(F) *To advance power conversion systems*
23 *to make the systems smarter, more efficient, able*
24 *to communicate with other inverters, and able to*
25 *control voltage.*

1 “(G) *To provide ancillary services for grid*
2 *stability and management.*

3 “(H) *To integrate one or more energy re-*
4 *sources, including renewable energy resources, at*
5 *the source or away from the source.*

6 “(I) *To increase the feasibility of microgrids*
7 *or islanding.*

8 “(J) *To enable the use of stored energy in*
9 *forms other than electricity to support the nat-*
10 *ural gas system and other industrial processes.*

11 “(5) *RESTRICTION ON USE OF FUNDS.—Any eli-*
12 *gible entity that receives a grant under paragraph (1)*
13 *may only use the grant to fund programs relating to*
14 *the demonstration of energy storage systems connected*
15 *to the electric grid, or that provides bi-directional en-*
16 *ergy storage capable of providing back-up energy in*
17 *the event of grid outages, including energy storage*
18 *systems sited behind a customer revenue meter.*

19 “(6) *COST SHARING.—In carrying out this sec-*
20 *tion, the Secretary shall require cost sharing under*
21 *this section in accordance with section 988 of the En-*
22 *ergy Policy Act of 2005 (42 U.S.C. 16352).*

23 “(7) *NO PROJECT OWNERSHIP INTEREST.—The*
24 *United States shall hold no equity or other ownership*

1 *interest in an energy storage system for which a*
2 *grant is provided under paragraph (1).*

3 “(8) *RULES AND PROCEDURES; AWARDING OF*
4 *GRANTS.—*

5 “(A) *RULES AND PROCEDURES.—Not later*
6 *than 180 days after the date of enactment of the*
7 *Better Energy Storage Technology Act, the Sec-*
8 *retary shall adopt rules and procedures for car-*
9 *rying out the grant program under subsection*
10 *(m).*

11 “(B) *AWARDING OF GRANTS.—Not later*
12 *than 1 year after the date on which the rules and*
13 *procedures under paragraph (A) are established,*
14 *the Secretary shall award the initial grants pro-*
15 *vided under this section.*

16 “(9) *REPORTS.—The Secretary shall submit to*
17 *Congress and make publicly available—*

18 “(A) *not less frequently than once every 2*
19 *years for the duration of the grant program*
20 *under subsection (m), a report describing the*
21 *performance of the grant program, including a*
22 *synthesis and analysis of any information the*
23 *Secretary requires grant recipients to provide to*
24 *the Secretary as a condition of receiving a grant;*
25 *and*

1 “(B) on termination of the grant program
2 under subsection (m), an assessment of the suc-
3 cess of, and education provided by, the measures
4 carried out by grant recipients under the grant
5 program.

6 “(10) PROGRAM DEFINED.—In this subsection,
7 the term ‘program’ means the demonstration program
8 established under paragraph (1).”.

9 (c) AUTHORIZATION OF APPROPRIATIONS.—The
10 United States Energy Storage Competitiveness Act of 2007
11 (42 U.S.C. 17231) is amended, in subsection (t) (as redesign-
12 nated by subsection (a)(1))—

13 (1) in paragraph (5), by striking “and” at the
14 end;

15 (2) in paragraph (6), by striking the period at
16 the end and inserting “;” and

17 (3) by adding at the end the following:

18 “(7) the research and development program for
19 energy storage systems under subsection (l)—

20 “(A) \$62,000,000 for fiscal year 2020;

21 “(B) \$ 65,100,000 for fiscal year 2021;

22 “(C) \$ 68,355,000 for fiscal year 2022;

23 “(D) \$ 71,773,000 for fiscal year 2023; and

24 “(E) \$ 75,362,000 for fiscal year 2024; and

1 “(8) the demonstration program for energy stor-
2 age systems under subsection (m), \$50,000,000 for
3 each of fiscal years 2020 through 2024.”.

4 **SEC. 3. CRITICAL MINERAL RECYCLING AND REUSE RE-**
5 **SEARCH, DEVELOPMENT, AND DEMONSTRA-**
6 **TION PROGRAM.**

7 *The United States Energy Storage Competitiveness Act*
8 *of 2007 (42 U.S.C. 17231) is amended by inserting after*
9 *subsection (m), as added by section 2(b) of this Act, the*
10 *following:*

11 “(n) *CRITICAL MINERAL RECYCLING AND REUSE RE-*
12 *SEARCH, DEVELOPMENT, AND DEMONSTRATION PRO-*
13 *GRAM.—*

14 “(1) *DEFINITIONS.—In this subsection:*

15 “(A) *CRITICAL MINERAL.—The term ‘crit-*
16 *ical mineral’ means any of a class of chemical*
17 *elements that have a high risk of a supply dis-*
18 *ruption and are critical to one or more new, en-*
19 *ergy-related technologies such that a shortage of*
20 *such element would significantly inhibit large-*
21 *scale deployment of technologies that store en-*
22 *ergy.*

23 “(B) *RECYCLING.—The term ‘recycling’*
24 *means the separation of critical minerals embed-*
25 *ded within an energy storage system through*

1 *physical or chemical means and reuse of those*
2 *separated critical minerals in other technologies.*

3 “(2) *ESTABLISHMENT.*—*Not later than 180 days*
4 *after the date of enactment of the BEST Act, the Sec-*
5 *retary shall establish a research, development, and*
6 *demonstration program of recycling of energy storage*
7 *systems containing critical minerals.*

8 “(3) *RESEARCH, DEVELOPMENT, AND DEM-*
9 *ONSTRATION.*—*In carrying out the program, the Sec-*
10 *retary may focus research, development, and dem-*
11 *onstration activities on—*

12 “(A) *technologies, process improvements,*
13 *and design optimizations that facilitate and pro-*
14 *mote recycling, including—*

15 “(i) *improvement of efficiency and*
16 *rates of collection of products and scrap*
17 *containing critical minerals from consumer,*
18 *industrial, and other waste streams;*

19 “(ii) *separation and sorting of compo-*
20 *nent materials in energy storage systems*
21 *containing critical minerals, including im-*
22 *proving the recyclability of such energy*
23 *storage systems;*

24 “(iii) *safe storage of energy storage*
25 *systems, including reducing fire risk;*

1 “(iv) *safe transportation of energy*
2 *storage systems and components; and*

3 “(v) *development of technologies to ad-*
4 *vance energy storage recycling facility in-*
5 *frastructure, including integrated recycling*
6 *facilities that can process multiple mate-*
7 *rials;*

8 “(B) *research and development of tech-*
9 *nologies that mitigate emissions and environ-*
10 *mental impacts that arise from recycling, includ-*
11 *ing disposal of toxic reagents and byproducts re-*
12 *lated to recycling processes;*

13 “(C) *research and development of tech-*
14 *nologies to enable recycling of critical materials*
15 *from batteries in electric vehicles;*

16 “(D) *research on and analysis of non-tech-*
17 *nical barriers to improving the transportation of*
18 *energy storage systems containing critical min-*
19 *erals; and*

20 “(E) *research on technologies and methods*
21 *to enable the safe disposal of energy storage sys-*
22 *tems containing critical minerals, including*
23 *waste materials and components recovered dur-*
24 *ing the recycling process.*

1 “(4) *REPORT TO CONGRESS.*—Not later than 2
2 *years after the date of enactment of the BEST Act,*
3 *and every 3 years thereafter, the Secretary shall sub-*
4 *mit to the Committee on Science, Space, and Tech-*
5 *nology of the House of Representatives and the Com-*
6 *mittee on Energy and Natural Resources of the Sen-*
7 *ate a report summarizing the activities, findings, and*
8 *progress of the program.*

9 “(o) *DEFINITIONS.*—For purposes of subsections (l),
10 (i), and (n), the following definitions apply:

11 “(1) *ENERGY STORAGE SYSTEM.*—The term ‘en-
12 *ergy storage system’ means a system, equipment, fa-*
13 *ility, or technology relating to the electric grid*
14 *that—*

15 “(A) *is capable of absorbing energy, storing*
16 *such energy for a period of time, and dis-*
17 *patching such energy after storage; and*

18 “(B) *uses a mechanical, electrical, chemical,*
19 *electrochemical, or thermal process to store such*
20 *energy, or any other process that the Secretary*
21 *determines relevant.*

22 “(2) *ISLAND.*—The term ‘island’ means one or
23 *more distributed generators or energy storage systems*
24 *that continues to power a location in the absence of*
25 *electricity from the electric grid.*

1 “(3) *MICROGRID*.—The term ‘microgrid’ means
2 an integrated energy system consisting of inter-con-
3 nected loads and distributed energy resources, includ-
4 ing generators and energy storage systems, within
5 clearly defined electrical boundaries that—

6 “(A) acts as a single controllable entity
7 with respect to the grid;

8 “(B) can connect and disconnect from the
9 grid to operate in either grid-connected mode or
10 island-mode; or

11 “(C) can operate in the absence of the grid.

12 “(4) *NATIONAL LABORATORY*.—The term ‘na-
13 tional laboratory’ has the meaning given the term in
14 section 2 of the *Energy Policy Act of 2005* (42 U.S.C.
15 15801).”.

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