

114TH CONGRESS
2D SESSION

H. R. 5640

IN THE SENATE OF THE UNITED STATES

JULY 12, 2016

Received; read twice and referred to the Committee on Energy and Natural
Resources

AN ACT

To provide for the establishment at the Department of
Energy of an Electricity Storage Basic Research Initiative.

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

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Electricity Storage In-
3 novation Act”.

4 **SEC. 2. ELECTRICITY STORAGE BASIC RESEARCH INITIA-**
5 **TIVE.**

6 (a) AMENDMENT.—Section 975 of the Energy Policy
7 Act of 2005 (42 U.S.C. 16315) is amended to read as
8 follows:

9 **“SEC. 975. ELECTRICITY STORAGE BASIC RESEARCH INI-**
10 **TIATIVE.**

11 “(a) INITIATIVE.—

12 “(1) IN GENERAL.—The Secretary shall carry
13 out a research initiative, to be known as the Elec-
14 tricity Storage Basic Research Initiative, to expand
15 theoretical and fundamental knowledge to control,
16 store, and convert electrical energy to chemical en-
17 ergy and the inverse. This initiative shall support
18 scientific inquiry into the practical understanding of
19 chemical and physical processes that occur within
20 systems involving crystalline and amorphous solids,
21 polymers, and organic and aqueous liquids.

22 “(2) LEVERAGING.—The Secretary shall lever-
23 age expertise and resources from the Basic Energy
24 Sciences Program, Advanced Scientific Computing
25 Research Program, and Biological and Environ-
26 mental Research Program within the Office of

1 Science, and the Office of Energy Efficiency and Re-
2 newable Energy, as provided under subsections (b),
3 (c), and (d).

4 “(3) TEAMS.—The Secretary shall organize ac-
5 tivities under the Electricity Storage Basic Research
6 Initiative to include multidisciplinary teams levera-
7 ging expertise from the National Laboratories, uni-
8 versities, and the private sector to the extent prac-
9 ticable. These multidisciplinary teams shall pursue
10 aggressive, milestone-driven basic research goals.
11 The Secretary shall provide sufficient resources for
12 those teams to achieve those goals over a period of
13 time to be determined by the Secretary.

14 “(4) ADDITIONAL ACTIVITIES.—The Secretary
15 is authorized to organize additional activities under
16 this subsection through Energy Frontier Research
17 Centers, Energy Innovation Hubs, or other organiza-
18 tional structures.

19 “(b) MULTIVALENT SYSTEMS.—

20 “(1) IN GENERAL.—The Secretary shall, as
21 part of the Electricity Storage Basic Research Ini-
22 tiative, carry out a program to support research
23 needed to bridge scientific barriers and discover
24 knowledge relevant to multivalent ion materials in
25 electric energy storage systems. In carrying out ac-

1 tivities under this subsection, the Director of the Of-
2 fice of Basic Energy Sciences shall investigate elec-
3 trochemical properties and the dynamics of mate-
4 rials, including charge transfer phenomena and mass
5 transport in materials. The Assistant Secretary for
6 Energy Efficiency and Renewable Energy shall sup-
7 port translational research, development, and valida-
8 tion of physical concepts developed under this sub-
9 section.

10 “(2) STANDARD OF REVIEW.—The Secretary
11 shall review the program activities under this sub-
12 section to determine the achievement of technical
13 milestones.

14 “(3) AUTHORIZATION OF APPROPRIATIONS.—

15 “(A) AUTHORIZATION.—Subject to sub-
16 section (e), there are authorized for carrying
17 out activities under this subsection for each of
18 fiscal years 2017 through 2020—

19 “(i) \$50,000,000 from funds within
20 the Basic Energy Sciences Program ac-
21 count; and

22 “(ii) \$25,000,000 from funds within
23 the Energy Efficiency and Renewable En-
24 ergy account.

1 “(B) PROHIBITION.—No funds authorized
2 under this subsection may be obligated or ex-
3 pended for commercial application of energy
4 technology.

5 “(c) ELECTROCHEMISTRY MODELING AND SIMULA-
6 TION.—

7 “(1) IN GENERAL.—The Secretary shall, as
8 part of the Electricity Storage Basic Research Ini-
9 tiative, carry out a program to support research to
10 model and simulate organic electrolytes, including
11 their static and dynamic electrochemical behavior
12 and phenomena at the molecular and atomic level in
13 monovalent and multivalent systems. In carrying out
14 activities under this subsection, the Director of the
15 Office of Basic Energy Sciences shall, in coordina-
16 tion with the Associate Director of Advanced Sci-
17 entific Computing Research, support the develop-
18 ment of high performance computational tools
19 through a joint development process to maximize the
20 effectiveness of current and projected high perform-
21 ance computing systems. The Assistant Secretary
22 for Energy Efficiency and Renewable Energy shall
23 support translational research, development, and val-
24 idation of physical concepts developed under this
25 subsection.

1 “(2) STANDARD OF REVIEW.—The Secretary
2 shall review the program activities under this sub-
3 section to determine the achievement of technical
4 milestones.

5 “(3) AUTHORIZATION OF APPROPRIATIONS.—

6 “(A) AUTHORIZATION.—Subject to sub-
7 section (e), there are authorized for carrying
8 out activities under this subsection for each of
9 fiscal years 2017 through 2020—

10 “(i) \$30,000,000 from funds within
11 the Basic Energy Sciences Program and
12 Advanced Scientific Computing Research
13 Program accounts; and

14 “(ii) \$15,000,000 from funds within
15 the Energy Efficiency and Renewable En-
16 ergy account.

17 “(B) PROHIBITION.—No funds authorized
18 under this subsection may be obligated or ex-
19 pended for commercial application of energy
20 technology.

21 “(d) MESOSCALE ELECTROCHEMISTRY.—

22 “(1) IN GENERAL.—The Secretary shall, as
23 part of the Electricity Storage Basic Research Ini-
24 tiative, carry out a program to support research
25 needed to reveal electrochemistry in confined

1 mesoscale spaces, including scientific discoveries rel-
2 evant to bio-electrochemistry and electrochemical en-
3 ergy conversion and storage in confined spaces and
4 the dynamics of these phenomena. In carrying out
5 activities under this subsection, the Director of the
6 Office of Basic Energy Sciences and the Associate
7 Director of Biological and Environmental Research
8 shall investigate phenomena of mesoscale electro-
9 chemical confinement for the purpose of replicating
10 and controlling new electrochemical behavior. The
11 Assistant Secretary for Energy Efficiency and Re-
12 newable Energy shall support translational research,
13 development, and validation of physical concepts de-
14 veloped under this subsection.

15 “(2) STANDARD OF REVIEW.—The Secretary
16 shall review the program activities under this sub-
17 section to determine the achievement of technical
18 milestones.

19 “(3) AUTHORIZATION OF APPROPRIATIONS.—

20 “(A) AUTHORIZATION.—Subject to sub-
21 section (e), there are authorized for carrying
22 out activities under this subsection for each of
23 fiscal years 2017 through 2020—

24 “(i) \$20,000,000 from funds within
25 the Basic Energy Sciences Program and

1 the Biological and Environmental Research
2 Program accounts; and

3 “(ii) \$10,000,000 from funds within
4 the Energy Efficiency and Renewable En-
5 ergy account.

6 “(B) PROHIBITION.—No funds authorized
7 under this subsection may be obligated or ex-
8 pended for commercial application of energy
9 technology.

10 “(e) FUNDING.—No additional funds are authorized
11 to be appropriated under this section. This section shall
12 be carried out using funds otherwise authorized by law.”.

13 (b) TABLE OF CONTENTS AMENDMENT.—The item
14 relating to section 975 in the table of contents of such
15 Act is amended to read as follows:

“Sec. 975. Electricity Storage Basic Research Initiative.”.

Passed the House of Representatives July 11, 2016.

Attest:

KAREN L. HAAS,

Clerk.