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(Original Signature of Member)

114TH CONGRESS  
2D SESSION

**H. R.** \_\_\_\_\_

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

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IN THE HOUSE OF REPRESENTATIVES

Mr. SMITH of Texas introduced the following bill; which was referred to the  
Committee on \_\_\_\_\_

\_\_\_\_\_  
**A BILL**

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,*

3        **SECTION 1. SHORT TITLE.**

4        This Act may be cited as the “Electricity Storage In-  
5        novation Act”.

1 **SEC. 2. ELECTRICITY STORAGE BASIC RESEARCH INITIA-**  
2 **TIVE.**

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

6 **“SEC. 975. ELECTRICITY STORAGE BASIC RESEARCH INI-**  
7 **TIATIVE.**

8 “(a) INITIATIVE.—

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

19 “(2) LEVERAGING.—The Secretary shall lever-  
20 age expertise and resources from the Basic Energy  
21 Sciences Program, Advanced Scientific Computing  
22 Research Program, and Biological and Environ-  
23 mental Research Program within the Office of  
24 Science, and the Office of Energy Efficiency and Re-  
25 newable Energy, as provided under subsections (b),  
26 (c), and (d).

1           “(3) TEAMS.—The Secretary shall organize ac-  
2           tivities under the Electricity Storage Basic Research  
3           Initiative to include multidisciplinary teams  
4           leveraging expertise from the National Laboratories,  
5           universities, and the private sector to the extent  
6           practicable. These multidisciplinary teams shall pur-  
7           sue aggressive, milestone-driven basic research goals.  
8           The Secretary shall provide sufficient resources for  
9           those teams to achieve those goals over a period of  
10          time to be determined by the Secretary.

11          “(4) ADDITIONAL ACTIVITIES.—The Secretary  
12          is authorized to organize additional activities under  
13          this subsection through Energy Frontier Research  
14          Centers or other organizational structures.

15          “(b) MULTIVALENT SYSTEMS.—

16          “(1) IN GENERAL.—The Secretary shall, as  
17          part of the Electricity Storage Basic Research Ini-  
18          tiative, carry out a program to support research  
19          needed to bridge scientific barriers and discover  
20          knowledge relevant to multivalent ion materials in  
21          electric energy storage systems. In carrying out ac-  
22          tivities under this subsection, the Director of the Of-  
23          fice of Basic Energy Sciences shall investigate elec-  
24          trochemical properties and the dynamics of mate-  
25          rials, including charge transfer phenomena and mass

1 transport in materials. The Assistant Secretary for  
2 Energy Efficiency and Renewable Energy shall sup-  
3 port translational research, development, and valida-  
4 tion of physical concepts developed under this sub-  
5 section.

6 “(2) STANDARD OF REVIEW.—The Secretary  
7 shall review the program activities under this sub-  
8 section to determine the achievement of technical  
9 milestones.

10 “(3) AUTHORIZATION OF APPROPRIATIONS.—

11 “(A) AUTHORIZATION.—Subject to sub-  
12 section (e), there are authorized for carrying  
13 out activities under this subsection for each of  
14 fiscal years 2017 through 2020—

15 “(i) \$50,000,000 from funds within  
16 the Basic Energy Sciences Program ac-  
17 count; and

18 “(ii) \$25,000,000 from funds within  
19 the Energy Efficiency and Renewable En-  
20 ergy account.

21 “(B) PROHIBITION.—No funds authorized  
22 under this subsection may be obligated or ex-  
23 pended for commercial application of energy  
24 technology.

1           “(c) ELECTROCHEMISTRY MODELING AND SIMULA-  
2 TION.—

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

22           “(2) STANDARD OF REVIEW.—The Secretary  
23 shall review the program activities under this sub-  
24 section to determine the achievement of technical  
25 milestones.

1 “(3) AUTHORIZATION OF APPROPRIATIONS.—

2 “(A) AUTHORIZATION.—Subject to sub-  
3 section (e), there are authorized for carrying  
4 out activities under this subsection for each of  
5 fiscal years 2017 through 2020—

6 “(i) \$30,000,000 from funds within  
7 the Basic Energy Sciences Program and  
8 Advanced Scientific Computing Research  
9 Program accounts; and

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

13 “(B) PROHIBITION.—No funds authorized  
14 under this subsection may be obligated or ex-  
15 pended for commercial application of energy  
16 technology.

17 “(d) MESOSCALE ELECTROCHEMISTRY.—

18 “(1) IN GENERAL.—The Secretary shall, as  
19 part of the Electricity Storage Basic Research Ini-  
20 tiative, carry out a program to support research  
21 needed to reveal electrochemistry in confined  
22 mesoscale spaces, including scientific discoveries rel-  
23 evant to bio-electrochemistry and electrochemical en-  
24 ergy conversion and storage in confined spaces and  
25 the dynamics of these phenomena. In carrying out

1 activities under this subsection, the Director of the  
2 Office of Basic Energy Sciences and the Associate  
3 Director of Biological and Environmental Research  
4 shall investigate phenomena of mesoscale electro-  
5 chemical confinement for the purpose of replicating  
6 and controlling new electrochemical behavior. The  
7 Assistant Secretary for Energy Efficiency and Re-  
8 newable Energy shall support translational research,  
9 development, and validation of physical concepts de-  
10 veloped under this subsection.

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

15 “(3) AUTHORIZATION OF APPROPRIATIONS.—

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

20 “(i) \$20,000,000 from funds within  
21 the Basic Energy Sciences Program and  
22 the Biological and Environmental Research  
23 Program accounts; and

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

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

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

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

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