

114<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

# H. R. 5640

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## 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:

*Clerk.*





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