

114TH CONGRESS
2D SESSION

H. R. 5638

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 a Solar Fuels 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 “Solar Fuels Innovation
3 Act”.

4 **SEC. 2. SOLAR FUELS BASIC RESEARCH INITIATIVE.**

5 (a) AMENDMENT.—Section 973 of the Energy Policy
6 Act of 2005 (42 U.S.C. 16313) is amended to read as
7 follows:

8 **“SEC. 973. SOLAR FUELS BASIC RESEARCH INITIATIVE.**

9 “(a) INITIATIVE.—

10 “(1) IN GENERAL.—The Secretary shall carry
11 out a research initiative, to be known as the Solar
12 Fuels Basic Research Initiative, to expand theo-
13 retical and fundamental knowledge of photo-
14 chemistry, electrochemistry, biochemistry, and mate-
15 rials science useful for the practical development of
16 experimental systems to convert solar energy to
17 chemical energy.

18 “(2) LEVERAGING.—The Secretary shall lever-
19 age expertise and resources from the Basic Energy
20 Sciences Program and Biological and Environmental
21 Research Program within the Office of Science, and
22 the Office of Energy Efficiency and Renewable En-
23 ergy, as provided under subsections (b) and (c).

24 “(3) TEAMS.—The Secretary shall organize ac-
25 tivities under the Solar Fuels Basic Research Initia-
26 tive to include multidisciplinary teams leveraging ex-

1 pertise from the National Laboratories, universities,
2 and the private sector to the extent practicable.
3 These multidisciplinary teams shall pursue aggres-
4 sive, milestone-driven basic research goals. The Sec-
5 retary shall provide sufficient resources for those
6 teams to achieve those goals over a period of time
7 to be determined by the Secretary.

8 “(4) ADDITIONAL ACTIVITIES.—The Secretary
9 is authorized to organize additional activities under
10 this subsection through Energy Frontier Research
11 Centers, Energy Innovation Hubs, or other organiza-
12 tional structures.

13 “(b) ARTIFICIAL PHOTOSYNTHESIS.—

14 “(1) IN GENERAL.—The Secretary shall, as
15 part of the Solar Fuels Basic Research Initiative,
16 carry out a program to support research needed to
17 bridge scientific barriers and discover knowledge rel-
18 evant to artificial photosynthetic systems. In car-
19 rying out activities under this subsection, the Direc-
20 tor of the Office of Basic Energy Sciences shall sup-
21 port basic research to pursue distinct lines of sci-
22 entific inquiry, including photoinduced production of
23 hydrogen and oxygen from water, and the sustain-
24 able photoinduced reduction of carbon dioxide to fuel
25 products including hydrocarbons, alcohols, carbon

1 monoxide, and natural gas. The Assistant Secretary
2 for Energy Efficiency and Renewable Energy shall
3 support translational research, development, and val-
4 idation of physical concepts developed under this
5 subsection.

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 (d), 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) BIOCHEMISTRY, REPLICATION OF NATURAL
2 PHOTOSYNTHESIS, AND RELATED PROCESSES.—

3 “(1) IN GENERAL.—The Secretary shall, as
4 part of the Solar Fuels Basic Research Initiative,
5 carry out a program to support research needed to
6 replicate natural photosynthetic processes by use of
7 artificial photosynthetic components and materials.
8 In carrying out activities under this subsection, the
9 Director of the Office of Basic Energy Sciences shall
10 support basic research to expand fundamental
11 knowledge to replicate natural synthesis processes,
12 including the photoinduced reduction of dinitrogen
13 to ammonia, absorption of carbon dioxide from am-
14 bient air, molecular-based charge separation and
15 storage, photoinitiated electron transfer, and catal-
16 ysis in biological or biomimetic systems. The Asso-
17 ciate Director of Biological and Environmental Re-
18 search shall support systems biology and genomics
19 approaches to understand genetic and physiological
20 pathways connected to photosynthetic mechanisms.
21 The Assistant Secretary for Energy Efficiency and
22 Renewable Energy shall support translational re-
23 search, development, and validation of physical con-
24 cepts developed under this 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 (d), there are authorized for carrying
8 out activities under this subsection for each of
9 fiscal years 2017 through 2020—

10 “(i) \$50,000,000 from funds within
11 the Basic Energy Sciences Program and
12 Biological and Environmental Research
13 Program accounts; and

14 “(ii) \$25,000,000 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) FUNDING.—No additional funds are authorized
22 to be appropriated under this section. This section shall
23 be carried out using funds otherwise authorized by law.”.

1 (b) TABLE OF CONTENTS AMENDMENT.—The item
2 relating to section 973 in the table of contents of such
3 Act is amended to read as follows:

“Sec. 973. Solar Fuels Basic Research Initiative.”.

Passed the House of Representatives July 11, 2016.

Attest:

KAREN L. HAAS,

Clerk.