

103D CONGRESS
1ST SESSION

H. R. 1479

To focus basic energy research where the potential for revolutionary technological advancement is the greatest.

IN THE HOUSE OF REPRESENTATIVES

MARCH 25, 1993

Mr. WALKER introduced the following bill; which was referred to the Committee on Science, Space, and Technology

A BILL

To focus basic energy research where the potential for revolutionary technological advancement is the greatest.

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 “Hydrogen Future Act
5 of 1993”.

6 **SEC. 2. FINDINGS, PURPOSE, DEFINITIONS.**

7 (a) FINDINGS.—The Congress finds that—

8 (1) fossil fuels, the main energy source of the
9 present, have provided this country with tremendous

1 supply, but are limited and polluting, and their pro-
2 duction and utilization technologies are mature;

3 (2) the basic scientific fundamentals are needed
4 for private sector investment in and commercializa-
5 tion of new and better energy sources and enabling
6 technologies;

7 (3) hydrogen holds tremendous promise as a
8 new and better energy source as it secures an infi-
9 nite supply from water and combusts purely to
10 water;

11 (4) under current technological capability, the
12 energy required to produce hydrogen is greater than
13 the potential energy of the hydrogen produced;

14 (5) the hydrogen production efficiency dilemma
15 is the major technical barrier to society collectively
16 benefiting from one of the great energy sources of
17 the future;

18 (6) an aggressive, results-oriented multiyear re-
19 search initiative on efficient hydrogen fuel produc-
20 tion and use is in order;

21 (7) the current \$4,500,000 per year Federal ef-
22 fort is wholly inadequate to the technically daunting
23 task at hand;

1 (8) an annual \$100,000,000 multiyear author-
2 ization offset by a reallocation of resources from
3 more mature fossil technologies is justified; and

4 (9) the national interest demands the accelera-
5 tion of research, development, and demonstration ef-
6 forts that will make possible the near-term commer-
7 cial introduction of hydrogen into the current energy
8 consumption system in order to increase supply to
9 support economic growth, decrease airborne emis-
10 sions from mobile and stationary sources, improve
11 fuel efficiency, and invigorate industries that can de-
12 velop hydrogen enabling technologies that will lead
13 to new markets and jobs, and that will provide stim-
14 ulus for the transfer of information and relevant
15 technology from the space and aerospace industries
16 to the broader energy and transportation market.

17 (b) PURPOSE.—The purpose of the Act is to provide
18 the fundamental scientific basis to support the develop-
19 ment of commercial, economically feasible technologies for
20 the production and use of hydrogen as a zero- or low-emis-
21 sion power source on a national scale by the year 1998.

22 (c) DEFINITIONS.—As used in this Act—

23 (1) the term “Secretary” means the Secretary
24 of Energy;

1 (2) the term “United States” means the several
2 States, the District of Columbia, the Commonwealth
3 of Puerto Rico, the United States Virgin Islands,
4 Guam, American Samoa, the Commonwealth of the
5 Northern Mariana Islands, and any other territory
6 or possession of the United States; and

7 (3) the term “United States company” means
8 a business entity that is incorporated in the United
9 States and that conducts business operations in the
10 United States.

11 **SEC. 3. CONSULTATION.**

12 The Secretary shall consult with the Department of
13 Energy’s Hydrogen Technical Advisory Panel established
14 under section 108 of Public Law 101–566 as necessary
15 in implementing this Act.

16 **SEC. 4. RESEARCH AND DEVELOPMENT ACTIVITIES.**

17 (a) **PRODUCTION.**—The Secretary shall support in-
18 dustrial hydrogen energy production research and develop-
19 ment in the following areas:

20 (1) Photoconversion:

21 (A) Photochemical.

22 (B) Photoelectrochemical.

23 (C) Photobiological.

24 (2) Coal gasification and hydrogen purification.

25 (3) Bioconversion:

1 (A) Biomass growth, harvesting, and con-
2 version.

3 (B) Municipal solid waste and sewage
4 sludge disposal.

5 (4) “Water-cracking” using the excess capacity
6 at hydropower and nuclear electricity production fa-
7 cilities during off-peak hours.

8 (5) Fuel cell power plants suitable for vehicle
9 propulsion.

10 (6) Fuel cell systems for stationary applica-
11 tions.

12 (b) USE.—The Secretary shall support industrial hy-
13 drogen energy use research and development in the follow-
14 ing areas, including funding for at least one technical dem-
15 onstration in each such area:

16 (1) Economically feasible, low-emission motor
17 vehicles using hydrogen as a combustible power sup-
18 ply, either in pure form or mixed with other fuels
19 (such as methane).

20 (2) Economically feasible, zero-emission auto-
21 motive and locomotive engines using hydrogen as a
22 constituent for the release of chemical energy.

23 (3) Electricity generation using hydrogen as a
24 fuel source for utility applications.

1 (4) Heating and cooling using hydrogen as a
2 fuel source for building and appliance applications.

3 (5) Stationary power generation using hydrogen
4 as a fuel source for industrial applications.

5 (c) SCHEDULE.—Within 90 days after the date of en-
6 actment of this Act, the Secretary shall solicit proposals
7 for carrying out the research, development, and dem-
8 onstration activities authorized under subsections (a) and
9 (b). Awards of financial assistance for such activities shall
10 be made within 1 year after such date of enactment.

11 (d) RESTRICTIONS ON RECIPIENTS.—Financial as-
12 sistance may be awarded under this section only to United
13 States companies or consortia of United States companies,
14 alone or in conjunction with universities and independent
15 nonprofit research organizations. Awards under subsection
16 (a) may be made separately for each area described in
17 paragraphs (1) through (6) of that subsection or collec-
18 tively for more than 1 or all such areas. Awards for tech-
19 nical demonstrations under subsection (b) shall be made
20 separately for each area described in paragraphs (1)
21 through (5) of that subsection.

22 (e) PROCEDURES.—(1) Except as otherwise provided
23 in this Act, research, development, and demonstration ac-
24 tivities under this Act may be carried out using the proce-
25 dures of the Federal Nonnuclear Research and Develop-

1 ment Act of 1974 (42 U.S.C. 5901–5920), the Atomic En-
2 ergy Act of 1954 (42 U.S.C. 2011 et seq.), or any other
3 Act under which the Secretary is authorized to carry out
4 such activities.

5 (2) Except as otherwise provided in this Act, in carry-
6 ing out research, development, and demonstration pro-
7 grams and activities under this Act, the Secretary may
8 use, to the extent authorized under applicable provisions
9 of law, contracts, cooperative agreements, cooperative re-
10 search and development agreements under the Stevenson-
11 Wydler Technology Innovation Act of 1980, grants, joint
12 ventures, and any other form of agreement available to
13 the Secretary.

14 (3) For purposes of this subsection, the term “joint
15 venture” has the meaning given the term “joint research
16 and development venture” under section 2(a)(6) and (b)
17 of the National Cooperative Research Act of 1984 (15
18 U.S.C. 4301(a)(6) and (b)).

19 (f) ANTITRUST.—The National Cooperative Research
20 Act of 1984 (15 U.S.C. 4301 et seq.) shall apply to con-
21 sortia supported under this Act.

22 (g) COST SHARING.—(1) The Secretary shall require
23 at least 50 percent of the costs directly and specifically
24 related to any research, development, or demonstration

1 project under this Act to be provided from non-Federal
2 sources.

3 (2) The Secretary shall also require that at least 50
4 percent of the non-Federal share of the costs related to
5 any research, development, or demonstration project
6 under this Act be provided by United States companies.

7 **SEC. 5. HIGHLY INNOVATIVE TECHNOLOGIES.**

8 Of the amounts made available for carrying out sec-
9 tion 4 of this Act, up to 5 percent may be used to support
10 research on highly innovative energy technologies, includ-
11 ing those based on yet unproven scientific theory.
12 Amounts so transferred under this section shall not be
13 subject to the requirements stated in section 4.

14 **SEC. 6. TECHNOLOGY TRANSFER.**

15 The Secretary shall foster the exchange of generic,
16 nonproprietary information and technology developed pur-
17 suant to section 4 or other similar Federal programs (in-
18 cluding activities under the Automotive Propulsion Re-
19 search and Development Act of 1978, the National Aero-
20 Space Plane program, and programs carried out under
21 section 2025 of the Energy Policy Act of 1992) among
22 industry, academia, and the Federal Government with re-
23 gard to the production and use of hydrogen.

1 **SEC. 7. PROTECTION OF INFORMATION AND PATENTS.**

2 For purposes of this Act, the provisions of chapter
3 18 of title 35, United States Code (popularly referred to
4 as the Bayh-Dole Act) shall apply to United States compa-
5 nies as if they were small business firms under the provi-
6 sions of such chapter 18.

7 **SEC. 8. REPORT TO CONGRESS.**

8 (a) **REQUIREMENT.**—Within 18 months after the
9 date of enactment of this Act, and annually thereafter,
10 the Secretary shall present Congress with a detailed report
11 on the status and progress of the programs created under
12 this Act. As part of this report, the Secretary shall include
13 an analysis of the effectiveness of the Department’s hydro-
14 gen research and development programs, an enumeration
15 of improvements that could be made to such programs,
16 and recommendations for any legislation necessary to ac-
17 complish those improvements.

18 (b) **COORDINATION WITH DEFENSE PROGRAMS.**—As
19 part of the report required under subsection (a), Depart-
20 ment of Defense research and development programs that
21 involve issues of hydrogen-based power, especially within
22 the Air Force and the Defense Advanced Research
23 Projects Agency, shall be analyzed by the Secretary for
24 coordination and cooperation with the programs created
25 under this Act.

1 (c) COORDINATION WITH NASA PROGRAMS.—As
2 part of the report required under subsection (a), National
3 Aeronautics and Space Administration research and devel-
4 opment programs that involve issues of hydrogen-based
5 power shall be analyzed by the Secretary for coordination
6 and cooperation with the programs created under this Act.

7 **SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**

8 (a) GENERAL AUTHORIZATION.—There are author-
9 ized to be appropriated for each of the fiscal years 1994
10 through 1998, to carry out the purposes of this Act (in
11 addition to any amounts made available for such purposes
12 under other Acts) \$100,000,000, of which 60 percent is
13 authorized only for activities under section 4(a) and 40
14 percent is authorized for activities under section 4(b).

15 (b) RELATED AUTHORIZATIONS.—For fiscal year
16 1994, the amount authorized to be appropriated to carry
17 out subtitle A of title XIII of the Energy Policy Act of
18 1992 (Public Law 102–486) shall be 175 percent of the
19 amount authorized for such fiscal year under subsection
20 (a) of this section. For fiscal year 1995, the amount au-
21 thorized to be appropriated to carry out subtitle A of title
22 XIII of the Energy Policy Act of 1992 (Public Law 102–
23 486) shall be 175 percent of the amount appropriated for
24 fiscal year 1994 under subsection (a) of this section. For
25 fiscal year 1996, the amount authorized to be appro-

1 priated to carry out subtitle A of title XIII of the Energy
2 Policy Act of 1992 (Public Law 102–486) shall be 150
3 percent of the amount appropriated for fiscal year 1995
4 under subsection (a) of this section. For fiscal year 1997,
5 the amount authorized to be appropriated to carry out
6 subtitle A of title XIII of the Energy Policy Act of 1992
7 (Public Law 102–486) shall be 125 percent of the amount
8 appropriated for fiscal year 1996 under subsection (a) of
9 this section. For fiscal year 1998, the amount authorized
10 to be appropriated to carry out subtitle A of title XIII
11 of the Energy Policy Act of 1992 (Public Law 102–486)
12 shall be 100 percent of the amount appropriated for fiscal
13 year 1997 under subsection (a) of this section.

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