

Calendar No. 595

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

**H. R. 655**

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**AN ACT**

To authorize basic research, development, and demonstration on hydrogen as a fuel, and for other purposes.

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SEPTEMBER 13, 1996

Reported with an amendment

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104TH CONGRESS  
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# H. R. 655

IN THE SENATE OF THE UNITED STATES

MAY 3 (legislative day, MAY 1), 1995

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

SEPTEMBER 13, 1996

Reported by Mr. MURKOWSKI, with an amendment

[Strike out all after the enacting clause and insert the part printed in italic]

## AN ACT

To authorize basic research, development, and demonstration on hydrogen as a fuel, and for other purposes.

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 1995”.

6 **SEC. 2. FINDINGS.**

7 The Congress finds that—

1           (1) fossil fuels, the main energy source of the  
2 present, have provided this country with tremendous  
3 supply but are limited and polluting;

4           (2) additional basic research and development  
5 are needed to encourage private sector investment in  
6 development of new and better energy sources and  
7 enabling technologies;

8           (3) hydrogen holds tremendous promise as a  
9 fuel, because it can be extracted from water and can  
10 be burned much more cleanly than conventional  
11 fuels;

12           (4) hydrogen production efficiency is a major  
13 technical barrier to society collectively benefiting  
14 from one of the great energy sources of the future;

15           (5) an aggressive, results-oriented, multiyear re-  
16 search initiative on efficient hydrogen fuel produc-  
17 tion and use should continue; and

18           (6) the current Federal effort to develop hydro-  
19 gen as a fuel is inadequate.

20 **SEC. 3. PURPOSES.**

21 The purposes of this Act are—

22           (1) to provide for a basic research, develop-  
23 ment, and demonstration program leading to the  
24 production, storage, transport, and use of hydrogen

1 for industrial, residential, transportation, and utility  
2 applications; and

3 ~~(2) to provide for advice from academia and the~~  
4 ~~private sector in the implementation of the Depart-~~  
5 ~~ment of Energy hydrogen research, development,~~  
6 ~~and demonstration program to ensure that economic~~  
7 ~~benefits of the program accrue to the United States.~~

8 **SEC. 4. DEFINITIONS.**

9 For purposes of this Act—

10 ~~(1) the term “demonstration” means a valida-~~  
11 ~~tion of the technical feasibility of a theory or proe-~~  
12 ~~ess;~~

13 ~~(2) the term “Department” means the Depart-~~  
14 ~~ment of Energy; and~~

15 ~~(3) the term “Secretary” means the Secretary~~  
16 ~~of Energy.~~

17 **SEC. 5. RESEARCH AND DEVELOPMENT.**

18 ~~(a) AUTHORIZED ACTIVITIES.—Pursuant to this see-~~  
19 ~~tion, the Spark M. Matsunaga Hydrogen Research, Devel-~~  
20 ~~opment, and Demonstration Act of 1990 and the Energy~~  
21 ~~Policy Act of 1992, and in accordance with the purposes~~  
22 ~~of this Act, the Secretary shall provide for a hydrogen en-~~  
23 ~~ergy basic research, development, and demonstration pro-~~  
24 ~~gram relating to production, storage, transportation, and~~  
25 ~~use of hydrogen, with the goal of enabling the private sec-~~

1 tor to demonstrate the technical feasibility of using hydro-  
2 gen for industrial, residential, transportation, and utility  
3 applications. In establishing priorities for Federal funding  
4 under this section, the Secretary shall survey private sec-  
5 tor hydrogen activities and take steps to ensure that ac-  
6 tivities under this section do not displace or compete with  
7 the privately funded hydrogen activities of United States  
8 industry.

9 (b) SCHEDULE.—Within 180 days after the date of  
10 the enactment of the later of this Act or an Act providing  
11 appropriations for programs authorized by this Act, the  
12 Secretary shall solicit proposals from all interested parties  
13 for carrying out the research, development, and dem-  
14 onstration activities authorized under this section. The  
15 Secretary may consider a proposal from a contractor who  
16 manages and operates a Department facility under con-  
17 tract with the Department, and the contractor may per-  
18 form the work at that facility or any other facility. Within  
19 180 days after such solicitation, if the Secretary identifies  
20 proposals worthy of Federal assistance, financial assist-  
21 ance shall be awarded under this section competitively,  
22 using peer review of proposals with appropriate protection  
23 of proprietary information. The Secretary shall use appro-  
24 priations authorized by this Act that are not allocated for  
25 such awards to carry out research, development, and dem-

1 onstration activities in accordance with the purposes of  
2 this Act.

3 (c) COST SHARING.—(1) Except as otherwise pro-  
4 vided in section 6, for research proposals funded under  
5 this Act, the Secretary shall require a commitment from  
6 non-Federal sources of at least 25 percent of the cost of  
7 the proposed program. The Secretary may reduce or elimi-  
8 nate the non-Federal requirement under this paragraph  
9 if the Secretary determines that the research is of such  
10 a purely basic or fundamental nature that a non-Federal  
11 commitment is not obtainable.

12 (2) The Secretary shall require at least 50 percent  
13 of the costs directly and specifically related to any develop-  
14 ment or demonstration project under this Act to be pro-  
15 vided from non-Federal sources.

16 (d) CERTIFICATIONS AND REQUIREMENTS.—Before  
17 financial assistance is provided under this section or the  
18 Spark M. Matsunaga Hydrogen Research, Development,  
19 and Demonstration Act of 1990—

20 (1) the Secretary must ensure that providing  
21 such financial assistance is consistent with the  
22 Agreement on Subsidies and Countervailing Meas-  
23 ures as approved in section 101 of the Uruguay  
24 Round Agreements Act (19 U.S.C. 3511); and

1           (2) industry participants must certify that they  
2           have made reasonable efforts to obtain non-Federal  
3           funding for the entire cost of the project, and that  
4           such non-Federal funding could not be reasonably  
5           obtained.

6           (c) **DUPLICATION OF PROGRAMS.**—The Secretary  
7           shall not carry out any activities under this section that  
8           unnecessarily duplicate activities carried out elsewhere by  
9           the Federal Government or the private sector.

10 **SEC. 6. HIGHLY INNOVATIVE TECHNOLOGIES.**

11           Of the amounts made available for carrying out sec-  
12           tion 5, up to 5 percent shall be used to support basic re-  
13           search on highly innovative energy technologies. Such  
14           amounts shall not be subject to the cost sharing require-  
15           ments in section 5(c).

16 **SEC. 7. TECHNOLOGY TRANSFER.**

17           The Secretary shall foster the exchange of generic,  
18           nonproprietary information and technology, developed  
19           pursuant to section 5, among industry, academia, and the  
20           Federal Government. The Secretary shall ensure that eco-  
21           nomic benefits of such exchange of information and tech-  
22           nology will accrue to the United States economy.

23 **SEC. 8. REPORTS TO CONGRESS.**

24           Within 18 months after the date of the enactment  
25           of this Act, and annually thereafter, the Secretary shall

1 transmit to the Congress a detailed report on the status  
2 and progress of the Department's hydrogen research and  
3 development program, with particular emphasis on activi-  
4 ties carried out pursuant to section 7 of this Act. Such  
5 report shall include an analysis of the effectiveness of such  
6 program, to be prepared and submitted by the Hydrogen  
7 Technical Advisory Panel established under section 108  
8 of the Spark M. Matsunaga Hydrogen Research, Develop-  
9 ment, and Demonstration Act of 1990. Such Panel shall  
10 also make recommendations for improvements to such pro-  
11 gram if needed, including recommendations for additional  
12 legislation.

13 **SEC. 9. COORDINATION AND CONSULTATION.**

14 (a) **COORDINATION WITH OTHER FEDERAL AGEN-**  
15 **ENCIES.**—The Secretary shall coordinate all hydrogen re-  
16 search and development activities within the Department,  
17 and with the activities of other Federal agencies involved  
18 in similar research and development, including the De-  
19 partment of Defense, the Department of Transportation,  
20 and the National Aeronautics and Space Administration.  
21 Further, the Secretary shall pursue opportunities for co-  
22 operation with such Federal entities.

23 (b) **CONSULTATION.**—The Secretary shall consult  
24 with the Hydrogen Technical Advisory Panel established  
25 under section 108 of the Spark M. Matsunaga Hydrogen

1 Research, Development, and Demonstration Act of 1990  
2 as necessary in carrying out this Act.

3 **SEC. 10. AUTHORIZATION OF APPROPRIATIONS.**

4 (a) ~~GENERAL AUTHORIZATION.~~—There are author-  
5 ized to be appropriated, to carry out the purposes of this  
6 Act—

7 (1) \$25,000,000 for fiscal year 1996;

8 (2) \$35,000,000 for fiscal year 1997; and

9 (3) \$40,000,000 for fiscal year 1998.

10 (b) ~~RELATED AUTHORIZATIONS.~~—(1) For each of  
11 the fiscal years 1996, 1997, and 1998, the total amount  
12 which may be obligated for Energy Supply Research and  
13 Development Activities shall not exceed the total amount  
14 obligated for such activities in fiscal year 1995.

15 (2) Paragraph (1) of this subsection does not author-  
16 ize the appropriation of any Federal funds.

17 **SECTION 1. SHORT TITLE.**

18 *This Act may be cited as the “Hydrogen Future Act*  
19 *of 1996”.*

20 **SEC. 2. DEFINITIONS.**

21 *For purposes of title II and III—*

22 (1) *the term “Department” means the Depart-*  
23 *ment of Energy; and*

24 (2) *the term “Secretary” means the Secretary of*  
25 *Energy.*



1 *the status and progress of the programs authorized under*  
2 *this Act.*

3 “(b) *ANALYSIS AND RECOMMENDATIONS.*— *A report*  
4 *under subsection (a) shall include, in addition to any views*  
5 *and recommendations of the Secretary—*

6 “(1) *an analysis of the effectiveness of the pro-*  
7 *grams authorized under this chapter, to be prepared*  
8 *and submitted to the Secretary by the Hydrogen*  
9 *Technical Advisory Panel established under section*  
10 *108 of this Act; and*

11 “(2) *recommendations of the Hydrogen Technical*  
12 *Advisory Panel for any improvements in the program*  
13 *that are needed, including recommendations for addi-*  
14 *tional legislation.”*

15 (b) *Section 108(d) of Public Law 101–566 (42 U.S.C.*  
16 *12407(d)) is amended—*

17 (1) *by adding “and” at the end of paragraph*  
18 *(1);*

19 (2) *by striking “; and” at the end of paragraph*  
20 *(2) and inserting a period; and*

21 (3) *by striking paragraph (3).*

22 **SEC. 103. HYDROGEN RESEARCH AND DEVELOPMENT.**

23 (a) *Section 104 of Public Law 101–566 (42 U.S.C.*  
24 *12403) is amended to read as follows:*

1 **“§ 104. Hydrogen research and development**

2       “(a) *PROGRAM.—The Secretary shall conduct a hydro-*  
3 *gen research and development program relating to produc-*  
4 *tion, storage, transportation, and use of hydrogen, with the*  
5 *goal of enabling the private sector to demonstrate the tech-*  
6 *nical feasibility of using hydrogen for industrial, residen-*  
7 *tial, transportation, and utility applications.*

8       “(b) *PROGRAMMATIC CONSIDERATIONS.—In conduct-*  
9 *ing the program authorized by this section, the Secretary*  
10 *shall—*

11               “(1) *give particular attention to developing an*  
12 *understanding and resolution of critical technical is-*  
13 *ssues preventing the introduction of hydrogen into the*  
14 *marketplace;*

15               “(2) *initiate or accelerate existing research in*  
16 *critical technical issues that will contribute to the de-*  
17 *velopment of more economic hydrogen production and*  
18 *use, including, but not limited to, critical technical*  
19 *issues with respect to production (giving priority to*  
20 *those production techniques that use renewable energy*  
21 *resources as their primary source of energy for hydro-*  
22 *gen production), liquefaction, transmission, distribu-*  
23 *tion, storage, and use (including use of hydrogen in*  
24 *surface transportation); and*

25               “(3) *survey private sector hydrogen activities*  
26 *and take steps to ensure that research and develop-*

1        *ment activities under this section do not displace or*  
2        *compete with the privately funded hydrogen research*  
3        *and development activities of United States industry.*

4        *“(c) TECHNOLOGIES.—The Secretary is authorized to*  
5        *evaluate any reasonable new or improved technology, in-*  
6        *cluding basic research on highly innovative energy tech-*  
7        *nologies, that could lead or contribute to the development*  
8        *of economic hydrogen production, storage, and utilization.*

9        *“(d) ISOLATED COMMUNITIES.—The Secretary is au-*  
10       *thorized to evaluate any reasonable new or improved tech-*  
11       *nology that could lead or contribute to, or demonstrate the*  
12       *use of, advanced renewable energy systems or hybrid sys-*  
13       *tems for use in isolated communities that currently im-*  
14       *ported diesel fuel as the primary fuel for electric power pro-*  
15       *duction.*

16       *“(e) INFORMATION.—The Secretary is authorized to*  
17       *arrange for tests and demonstrations and to disseminate to*  
18       *researchers and developers information, data, and other*  
19       *materials necessary to support the research and develop-*  
20       *ment activities authorized under this section and other ef-*  
21       *forts authorized under this chapter, consistent with section*  
22       *106 of this Act.*

23       *“(f) PROJECT SELECTION.—The Secretary shall carry*  
24       *out the research and development activities authorized*  
25       *under this section only through the funding of research and*

1 *development proposals submitted by interested persons ac-*  
2 *cording to such procedures as the Secretary may require*  
3 *and evaluated on a competitive basis using peer review.*  
4 *Such funding shall be in the form of a grant agreement,*  
5 *procurement contract, or cooperative agreement (as those*  
6 *terms are used in chapter 63 of title 31, United States*  
7 *Code).*

8       “(g) *NON-FEDERAL FUNDING.*—*The Secretary shall*  
9 *not consider a proposal submitted by a person from indus-*  
10 *try unless the proposal contains a certification that reason-*  
11 *able efforts to obtain non-Federal funding for the entire cost*  
12 *of the project have been made, and that such non-Federal*  
13 *funding could not be reasonably obtained. As appropriate,*  
14 *the Secretary shall require a commitment from non-Federal*  
15 *sources of at least 50 percent of the cost of the development*  
16 *portion of such a proposal.*

17       “(h) *UNNECESSARY DUPLICATION.*—*The Secretary*  
18 *shall not carry out any activities under this section that*  
19 *unnecessarily duplicate activities carried out elsewhere by*  
20 *the Federal Government or industry.*

21       “(i) *GATT.*—*The Secretary shall establish, after con-*  
22 *sultation with other Federal agencies, terms and conditions*  
23 *under which Federal funding will be provided under this*  
24 *chapter that are consistent with the Agreement on Subsidies*  
25 *and Countervailing Measures referred to in section*

1 101(d)(12) of the Uruguay Round Agreement Act (19  
2 U.S.C. 3511(d)(12)).”.

3 (b)(1) Section 2026(a) of the Energy Policy Act of  
4 1992 (42 U.S.C. 13436(a)) is amended by striking “, in  
5 accordance with sections 3001 and 3002 of this Act,”.

6 (2) Effective October 1, 1998, section 2026 of the En-  
7 ergy Policy Act of 1992 (42 U.S.C. 13436) is repealed.

8 **SEC. 104. DEMONSTRATIONS.**

9 Section 105 of Public Law 101–566 (42 U.S.C. 12404)  
10 is amended by adding at the end the following new sub-  
11 section:

12 “(c) *COST SHARING.*—The Secretary shall require a  
13 commitment from non-Federal sources of at least 50 percent  
14 of the cost of any demonstration conducted under this sec-  
15 tion.”.

16 **SEC. 105. TECHNOLOGY TRANSFER.**

17 Section 106(b) of Public Law 101–566 (42 U.S.C.  
18 12405(b)) is amended by adding to the end of the subsection  
19 the following: “The Secretary shall also foster the exchange  
20 of generic, nonproprietary information and technology, de-  
21 veloped pursuant to this chapter, among industry, aca-  
22 demia, and the Federal Government, to help the United  
23 States economy attain the economic benefits of this informa-  
24 tion and technology.”.

1 **SEC. 106. AUTHORIZATION OF APPROPRIATIONS.**

2 *Section 109 of Public Law 101–566 (42 U.S.C. 12408)*  
 3 *is amended—*

4 *(1) by striking “to other Acts” and inserting*  
 5 *“under other Acts”;*

6 *(2) by striking “and” from the end of the para-*  
 7 *graph (2);*

8 *(3) by striking the period from the end of para-*  
 9 *graph (3) and inserting “;”; and*

10 *(4) by adding at the end of the section the follow-*  
 11 *ing:*

12 *“(4) \$14,500,000 for fiscal year 1996;*

13 *“(5) \$20,000,000 for fiscal year 1997;*

14 *“(6) \$25,000,000 for fiscal year 1998;*

15 *“(7) \$30,000,000 for fiscal year 1999;*

16 *“(8) \$35,000,000 for fiscal year 2000; and*

17 *“(9) \$40,000,000 for fiscal year 2001.”.*

18 **TITLE II—FUEL CELLS**

19 **SEC. 201. INTEGRATION OF FUEL CELLS WITH HYDROGEN**  
 20 **PRODUCTION SYSTEMS.**

21 *(a) Not later than 180 days after the date of enactment*  
 22 *of this section, and subject to the availability of appropria-*  
 23 *tions made specifically for this section, the Secretary of En-*  
 24 *ergy shall solicit proposals for projects to prove the feasibil-*  
 25 *ity of integrating fuel cells with—*

1           (1) *photovoltaic systems for hydrogen production;*

2           *or*

3           (2) *systems for hydrogen production from solid*  
4           *waste via gasification or steam reforming.*

5           (b) *Each proposal submitted in response to the solicita-*  
6           *tion under this section shall be evaluated on a competitive*  
7           *basis using peer review. The Secretary is not required to*  
8           *make an award under this section in the absence of a meri-*  
9           *torious proposal.*

10          (c) *The Secretary shall give preference, in making an*  
11          *award under this section, to proposals that—*

12               (1) *are submitted jointly from consortia includ-*  
13               *ing academic institutions, industry, State or local*  
14               *governments, and Federal laboratories; and*

15               (2) *reflect proven experience and capability with*  
16               *technologies relevant to the systems described in sub-*  
17               *sections (a)(1) and (a)(2).*

18          (d) *In the case of a proposal involving development*  
19          *or demonstration, the Secretary shall require a commitment*  
20          *from non-Federal sources of at least 50 percent of the cost*  
21          *of the development or demonstration portion of the proposal.*

22          (e) *The Secretary shall establish, after consultation*  
23          *with other Federal agencies, terms and conditions under*  
24          *which Federal funding will be provided under this title that*  
25          *are consistent with the Agreement on Subsidies and Coun-*

1 *tervailing Measures referred to in section 101(d)(12) of the*  
2 *Uruguay Round Agreement Act (19 U.S.C. 3511(d)(12)).*

3 **SEC. 202. AUTHORIZATION OF APPROPRIATIONS.**

4 *There is authorized to be appropriated, for activities*  
5 *under this section, a total of \$50,000,000 for fiscal years*  
6 *1997 and 1998, to remain available until September 30,*  
7 *1999.*

8 **TITLE III—DOE SCIENTIFIC AND**  
9 **TECHNICAL PROGRAM QUALITY**

10 **SEC. 301. TEMPORARY APPOINTMENTS FOR SCIENTIFIC**  
11 **AND TECHNICAL EXPERTS IN DEPARTMENT**  
12 **OF ENERGY RESEARCH AND DEVELOPMENT**  
13 **PROGRAMS.**

14 *(a) The Secretary, utilizing authority under other ap-*  
15 *plicable law and the authority of this section, may appoint*  
16 *for a limited term, or on a temporary basis, scientists, engi-*  
17 *neers, and other technical and professional personnel on*  
18 *leave of absence from academic, industrial, or research in-*  
19 *stitutions to work for the Department.*

20 *(b) The Department may pay, to the extent authorized*  
21 *for certain other Federal employees by section 5723 of title*  
22 *5, United States Code, travel expenses for any individual*  
23 *appointed for a limited term or on a temporary basis and*  
24 *transportation expenses of his or her immediate family and*  
25 *his or her household goods and personal effects from that*

1 *individual's residence at the time of selection or assignment*  
2 *to his or her duty station. The Department may pay such*  
3 *travel expenses to the same extent for such an individual's*  
4 *return to the former place of residence from his or her duty*  
5 *station, upon separation from the Federal service following*  
6 *an agreed period of service. The Department may also pay*  
7 *a per diem allowance at a rate not to exceed the daily*  
8 *amounts prescribed under section 5702 of title 5 to such*  
9 *an individual, in lieu of transportation expenses of the im-*  
10 *mediate family and household goods and personal effects,*  
11 *for the period of his or her employment with the Depart-*  
12 *ment. Notwithstanding any other provision of law, the em-*  
13 *ployer's contribution to any retirement, life insurance, or*  
14 *health benefit plan for an individual appointed for a term*  
15 *of one year or less, which could be extended for no more*  
16 *than one additional year, may be made or reimbursed from*  
17 *appropriations available to the Department.*

Passed the House of Representatives May 2, 1995.

Attest:

ROBIN H. CARLE,

*Clerk.*