



(Original Signature of Member)

117TH CONGRESS  
1ST SESSION

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

To accelerate research, development, demonstration, and deployment of hydrogen from clean energy sources, and for other purposes.

\_\_\_\_\_  
IN THE HOUSE OF REPRESENTATIVES

Mr. MICHAEL F. DOYLE of Pennsylvania introduced the following bill; which was referred to the Committee on \_\_\_\_\_

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

To accelerate research, development, demonstration, and deployment of hydrogen from clean energy sources, 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 “Clean Hydrogen En-  
5 ergy Act”.

6 **SEC. 2. FINDINGS; PURPOSE.**

7 (a) FINDINGS.—Congress finds that—

1 (1) hydrogen plays a critical part in the com-  
2 prehensive energy portfolio of the United States;

3 (2) the use of the hydrogen resources of the  
4 United States—

5 (A) promotes energy security and resil-  
6 ience; and

7 (B) provides economic value and environ-  
8 mental benefits for diverse applications across  
9 multiple sectors of the economy; and

10 (3) hydrogen can be produced from a variety of  
11 domestically available clean energy sources, includ-  
12 ing—

13 (A) renewable energy resources, including  
14 biomass;

15 (B) fossil fuels with carbon capture, utili-  
16 zation, and storage; and

17 (C) nuclear power.

18 (b) PURPOSE.—The purpose of this Act is to accel-  
19 erate research, development, demonstration, and deploy-  
20 ment of hydrogen from clean energy sources by—

21 (1) providing a statutory definition for the term  
22 “clean hydrogen”;

23 (2) establishing a clean hydrogen strategy and  
24 roadmap for the United States;

1           (3) establishing a clearing house for clean hy-  
2           drogen program information at the National Energy  
3           Technology Laboratory;

4           (4) developing a robust clean hydrogen supply  
5           chain and workforce by prioritizing clean hydrogen  
6           demonstration projects in major shale gas regions;

7           (5) establishing regional clean hydrogen hubs;  
8           and

9           (6) authorizing appropriations to carry out the  
10          Department of Energy Hydrogen Program Plan,  
11          dated November 2020, developed pursuant to title  
12          VIII of the Energy Policy Act of 2005 (42 U.S.C.  
13          16151 et seq.).

14 **SEC. 3. DEFINITIONS.**

15          Section 803 of the Energy Policy Act of 2005 (42  
16          U.S.C. 16152) is amended—

17                 (1) in paragraph (5), by striking the paragraph  
18                 designation and heading and all that follows through  
19                 “when” in the matter preceding subparagraph (A)  
20                 and inserting the following:

21                         “(5) PORTABLE; STORAGE.—The terms ‘port-  
22                         able’ and ‘storage’, when”;

23                 (2) by redesignating paragraphs (1) through  
24                 (7) as paragraphs (2) through (8), respectively; and

1           (3) by inserting before paragraph (2) (as so re-  
2 designated) the following:

3           “(1) **CLEAN HYDROGEN; HYDROGEN.**—The  
4 terms ‘clean hydrogen’ and ‘hydrogen’ mean hydro-  
5 gen produced in compliance with the greenhouse gas  
6 emissions standard established under section 822(a),  
7 including production from any fuel source.”.

8 **SEC. 4. CLEAN HYDROGEN RESEARCH AND DEVELOPMENT**  
9 **PROGRAM.**

10          (a) **IN GENERAL.**—Section 805 of the Energy Policy  
11 Act of 2005 (42 U.S. 16154) is amended—

12           (1) in the section heading, by striking “**PRO-**  
13 **GRAMS**” and inserting “**CLEAN HYDROGEN RE-**  
14 **SEARCH AND DEVELOPMENT PROGRAM**”;

15           (2) in subsection (a)—

16                   (A) by striking “research and development  
17 program” and inserting “crosscutting research  
18 and development program (referred to in this  
19 section as the ‘program’)”; and

20                   (B) by inserting “processing,” after “pro-  
21 duction,”;

22           (3) by striking subsection (b) and inserting the  
23 following:

24           “(b) **GOALS.**—The goals of the program shall be—

1           “(1) to advance research and development to  
2 demonstrate and commercialize the use of clean hy-  
3 drogen in the transportation, utility, industrial, com-  
4 mercial, and residential sectors; and

5           “(2) to demonstrate a standard of clean hydro-  
6 gen production in the transportation, utility, indus-  
7 trial, commercial, and residential sectors by 2040.”;

8           (4) in subsection (c)(3), by striking “renewable  
9 fuels and biofuels” and inserting “fossil fuels with  
10 carbon capture, utilization, and sequestration, re-  
11 newable fuels, biofuels, and nuclear energy”;

12           (5) by striking subsection (e) and inserting the  
13 following:

14           “(e) ACTIVITIES.—In carrying out the program, the  
15 Secretary, in partnership with the private sector, shall  
16 conduct activities to advance and support—

17           “(1) the establishment of a series of technology  
18 cost goals oriented toward achieving the standard of  
19 clean hydrogen production developed under section  
20 822(a);

21           “(2) the production of clean hydrogen from di-  
22 verse energy sources, including—

23           “(A) fossil fuels with carbon capture, utili-  
24 zation, and sequestration;

1           “(B) hydrogen-carrier fuels (including eth-  
2           anol and methanol);

3           “(C) renewable energy resources, including  
4           biomass;

5           “(D) nuclear energy; and

6           “(E) any other methods the Secretary de-  
7           termines to be appropriate;

8           “(3) the use of clean hydrogen for commercial,  
9           industrial, and residential electric power generation;

10          “(4) the use of clean hydrogen in industrial ap-  
11          plications, including steelmaking, cement, chemical  
12          feedstocks, and process heat;

13          “(5) the use of clean hydrogen for use as a fuel  
14          source for both residential and commercial comfort  
15          heating and hot water requirements;

16          “(6) the safe and efficient delivery of hydrogen  
17          or hydrogen-carrier fuels, including—

18                 “(A) transmission by pipelines, including  
19                 retrofitting the existing natural gas transpor-  
20                 tation infrastructure system to enable a transi-  
21                 tion to transport and deliver increasing levels of  
22                 clean hydrogen, clean hydrogen blends, or clean  
23                 hydrogen carriers;

24                 “(B) tanks and other distribution methods;

25                 and

1                   “(C) convenient and economic refueling of  
2                   vehicles, locomotives, maritime vessels, or  
3                   planes—

4                   “(i) at central refueling stations; or

5                   “(ii) through distributed onsite gen-  
6                   eration;

7                   “(7) advanced vehicle, locomotive, maritime ves-  
8                   sel, or plane technologies, including—

9                   “(A) engine and emission control systems;

10                  “(B) energy storage, electric propulsion,  
11                  and hybrid systems;

12                  “(C) automotive, locomotive, maritime ves-  
13                  sel, or plane materials; and

14                  “(D) other advanced vehicle, locomotive,  
15                  maritime vessel, or plane technologies;

16                  “(8) storage of hydrogen or hydrogen-carrier  
17                  fuels, including the development of materials for safe  
18                  and economic storage in gaseous, liquid, or solid  
19                  form;

20                  “(9) the development of safe, durable, afford-  
21                  able, and efficient fuel cells, including fuel-flexible  
22                  fuel cell power systems, improved manufacturing  
23                  processes, high-temperature membranes, cost-effec-  
24                  tive fuel processing for natural gas, fuel cell stack

1 and system reliability, low-temperature operation,  
2 and cold start capability;

3 “(10) the ability of domestic clean hydrogen  
4 equipment manufacturers to manufacture commer-  
5 cially available competitive technologies in the  
6 United States;

7 “(11) the use of clean hydrogen in the trans-  
8 portation sector, including in light-, medium-, and  
9 heavy-duty vehicles, rail transport, aviation, and  
10 maritime applications; and

11 “(12) in coordination with relevant agencies,  
12 the development of appropriate, uniform codes and  
13 standards for the safe and consistent deployment  
14 and commercialization of clean hydrogen production,  
15 processing, delivery, and end-use technologies.”; and

16 (6) by adding at the end the following:

17 “(j) TARGETS.—Not later than 180 days after the  
18 date of enactment of the Clean Hydrogen Energy Act, the  
19 Secretary shall establish targets for the program to ad-  
20 dress near-term (up to 2 years), mid-term (up to 7 years),  
21 and long-term (up to 15 years) challenges to the advance-  
22 ment of clean hydrogen systems and technologies.”.

23 (b) CONFORMING AMENDMENT.—The table of con-  
24 tents for the Energy Policy Act of 2005 (Public Law 109–



1 58; 119 Stat. 599) is amended by striking the item relat-  
2 ing to section 805 and inserting the following:

“Sec. 805. Clean hydrogen research and development program.”.

3 **SEC. 5. ADDITIONAL CLEAN HYDROGEN PROGRAMS.**

4 Title VIII of the Energy Policy Act of 2005 (42  
5 U.S.C. 16151 et seq.) is amended—

6 (1) by redesignating sections 813 through 816  
7 as sections 818 through 821, respectively; and

8 (2) by inserting after section 812 the following:

9 **“SEC. 813. REGIONAL CLEAN HYDROGEN HUBS.**

10 “(a) DEFINITION OF REGIONAL CLEAN HYDROGEN  
11 HUB.—In this section, the term ‘regional clean hydrogen  
12 hub’ means a network of clean hydrogen producers, poten-  
13 tial clean hydrogen consumers, and connective infrastruc-  
14 ture located in close proximity.

15 “(b) ESTABLISHMENT OF PROGRAM.—The Secretary  
16 shall establish a program to support the development of  
17 at least 4 regional clean hydrogen hubs that—

18 “(1) demonstrably aid the achievement of the  
19 clean hydrogen production standard developed under  
20 section 822(a);

21 “(2) demonstrate the production, processing,  
22 delivery, storage, and end-use of clean hydrogen; and

23 “(3) can be developed into a national clean hy-  
24 drogen network to facilitate a clean hydrogen econ-  
25 omy.

1       “(c) SELECTION OF REGIONAL CLEAN HYDROGEN  
2 HUBS.—

3               “(1) SOLICITATION OF PROPOSALS.—Not later  
4 than 180 days after the date of enactment of the  
5 Clean Hydrogen Energy Act, the Secretary shall so-  
6 licit proposals for regional clean hydrogen hubs.

7               “(2) SELECTION OF HUBS.—Not later than 1  
8 year after the deadline for the submission of pro-  
9 posals under paragraph (1), the Secretary shall se-  
10 lect at least 4 regional clean hydrogen hubs to be de-  
11 veloped under subsection (b).

12               “(3) CRITERIA.—The Secretary shall select re-  
13 gional clean hydrogen hubs under paragraph (2)  
14 using the following criteria:

15                       “(A) FEEDSTOCK DIVERSITY.—To the  
16 maximum extent practicable—

17                               “(i) at least 1 regional clean hydrogen  
18 hub shall demonstrate the production of  
19 clean hydrogen from fossil fuels;

20                               “(ii) at least 1 regional clean hydro-  
21 gen hub shall demonstrate the production  
22 of clean hydrogen from renewable energy;  
23 and

1           “(iii) at least 1 regional clean hydro-  
2           gen hub shall demonstrate the production  
3           of clean hydrogen from nuclear energy.

4           “(B) END-USE DIVERSITY.—To the max-  
5           imum extent practicable—

6           “(i) at least 1 regional clean hydrogen  
7           hub shall demonstrate the end-use of clean  
8           hydrogen in the electric power generation  
9           sector;

10          “(ii) at least 1 regional clean hydro-  
11          gen hub shall demonstrate the end-use of  
12          clean hydrogen in the industrial sector;

13          “(iii) at least 1 regional clean hydro-  
14          gen hub shall demonstrate the end-use of  
15          clean hydrogen in the residential and com-  
16          mercial heating sector; and

17          “(iv) at least 1 regional clean hydro-  
18          gen hub shall demonstrate the end-use of  
19          clean hydrogen in the transportation sec-  
20          tor.

21          “(C) GEOGRAPHIC DIVERSITY.—To the  
22          maximum extent practicable, each regional  
23          clean hydrogen hub—

24          “(i) shall be located in a different re-  
25          gion of the United States; and

1                   “(ii) shall use energy resources that  
2                   are abundant in that region.

3                   “(D) HUBS IN NATURAL GAS-PRODUCING  
4                   REGIONS.—To the maximum extent practicable,  
5                   at least 2 regional clean hydrogen hubs shall be  
6                   located in the regions of the United States with  
7                   the greatest natural gas resources.

8                   “(E) EMPLOYMENT.—The Secretary shall  
9                   give priority to regional clean hydrogen hubs  
10                  that are likely to create opportunities for skilled  
11                  training and long-term employment to the  
12                  greatest number of residents of the region.

13                  “(F) ADDITIONAL CRITERIA.—The Sec-  
14                  retary may take into consideration other cri-  
15                  teria that, in the judgment of the Secretary, are  
16                  necessary or appropriate to carry out this title

17                  “(4) FUNDING OF REGIONAL CLEAN HYDROGEN  
18                  HUBS.—The Secretary may make grants to each re-  
19                  gional clean hydrogen hub selected under paragraph  
20                  (2) to accelerate commercialization of, and dem-  
21                  onstrate the production, processing, delivery, stor-  
22                  age, and end-use of, clean hydrogen.

23                  “(d) AUTHORIZATION OF APPROPRIATIONS.—There  
24                  is authorized to be appropriated to the Secretary to carry

1 out this section \$8,000,000,000 for the period of fiscal  
2 years 2022 through 2026.

3 **“SEC. 814. NATIONAL CLEAN HYDROGEN STRATEGY AND**  
4 **ROADMAP.**

5 “(a) DEVELOPMENT.—

6 “(1) IN GENERAL.—In carrying out the pro-  
7 grams established under sections 805 and 813, the  
8 Secretary, in consultation with the heads of relevant  
9 offices of the Department, shall develop a techno-  
10 logically and economically feasible national strategy  
11 and roadmap to facilitate widescale production, pro-  
12 cessing, delivery, storage, and use of clean hydrogen.

13 “(2) INCLUSIONS.—The national clean hydro-  
14 gen strategy and roadmap developed under para-  
15 graph (1) shall focus on—

16 “(A) establishing a standard of hydrogen  
17 production that achieves the standard developed  
18 under section 822(a), including interim goals  
19 towards meeting that standard;

20 “(B)(i) clean hydrogen production and use  
21 from natural gas, coal, renewable energy  
22 sources, nuclear energy, and biomass; and

23 “(ii) identifying potential barriers, path-  
24 ways, and opportunities, including Federal pol-

1 icy needs, to transition to a clean hydrogen  
2 economy;

3 “(C) identifying—

4 “(i) economic opportunities for the  
5 production, processing, transport, storage,  
6 and use of clean hydrogen that exist in the  
7 major shale natural gas-producing regions  
8 of the United States;

9 “(ii) economic opportunities for the  
10 production, processing, transport, storage,  
11 and use of clean hydrogen that exist for  
12 merchant nuclear power plants operating  
13 in deregulated markets; and

14 “(iii) environmental risks associated  
15 with potential deployment of clean hydro-  
16 gen technologies in those regions, and ways  
17 to mitigate those risks;

18 “(D) approaches, including substrategies,  
19 that reflect geographic diversity across the  
20 country, to advance clean hydrogen based on re-  
21 sources, industry sectors, environmental bene-  
22 fits, and economic impacts in regional econo-  
23 mies;

24 “(E) identifying opportunities to use, and  
25 barriers to using, existing infrastructure, in-

1 including all components of the natural gas infra-  
2 structure system, the carbon dioxide pipeline in-  
3 frastructure system, end-use local distribution  
4 networks, end-use power generators, LNG ter-  
5 minals, industrial users of natural gas, and res-  
6 idential and commercial consumers of natural  
7 gas, for clean hydrogen deployment;

8 “(F) identifying the needs for and barriers  
9 and pathways to developing clean hydrogen  
10 hubs (including, where appropriate, clean hy-  
11 drogen hubs coupled with carbon capture, utili-  
12 zation, and storage hubs) that—

13 “(i) are regionally dispersed across  
14 the United States and can leverage natural  
15 gas to the maximum extent practicable;

16 “(ii) can demonstrate the efficient  
17 production, processing, delivery, and use of  
18 clean hydrogen;

19 “(iii) include transportation corridors  
20 and modes of transportation, including  
21 transportation of clean hydrogen by pipe-  
22 line and rail and through ports; and

23 “(iv) where appropriate, could serve  
24 as joint clean hydrogen and carbon cap-  
25 ture, utilization, and storage hubs;

1           “(G) prioritizing activities that improve the  
2           ability of the Department to develop tools to  
3           model, analyze, and optimize single-input, mul-  
4           tiple-output integrated hybrid energy systems  
5           and multiple-input, multiple-output integrated  
6           hybrid energy systems that maximize efficiency  
7           in providing hydrogen, high-value heat, elec-  
8           tricity, and chemical synthesis services;

9           “(H) identifying the appropriate points of  
10          interaction between and among Federal agen-  
11          cies involved in the production, processing, de-  
12          livery, storage, and use of clean hydrogen and  
13          clarifying the responsibilities of those Federal  
14          agencies, and potential regulatory obstacles and  
15          recommendations for modifications, in order to  
16          support the deployment of clean hydrogen; and

17          “(I) identifying geographic zones or re-  
18          gions in which clean hydrogen technologies  
19          could efficiently and economically be introduced  
20          in order to transition existing infrastructure to  
21          rely on clean hydrogen, in support of  
22          decarbonizing all relevant sectors of the econ-  
23          omy.

24          “(b) REPORTS TO CONGRESS.—



1           “(1) IN GENERAL.—Not later than 180 days  
2 after the date of enactment of the Clean Hydrogen  
3 Energy Act, the Secretary shall submit to Congress  
4 the clean hydrogen strategy and roadmap developed  
5 under subsection (a).

6           “(2) UPDATES.—The Secretary shall submit to  
7 Congress updates to the clean hydrogen strategy and  
8 roadmap under paragraph (1) not less frequently  
9 than once every 3 years after the date on which the  
10 Secretary initially submits the report and roadmap.

11 **“SEC. 815. CLEAN HYDROGEN MANUFACTURING AND RECY-**  
12 **CLING.**

13           “(a) CLEAN HYDROGEN MANUFACTURING INITIA-  
14 TIVE.—

15           “(1) IN GENERAL.—In carrying out the pro-  
16 grams established under sections 805 and 813, the  
17 Secretary shall award multiyear grants to, and enter  
18 into contracts, cooperative agreements, or any other  
19 agreements authorized under this Act or other Fed-  
20 eral law with, eligible entities (as determined by the  
21 Secretary) for research, development, and dem-  
22 onstration projects to advance new clean hydrogen  
23 production, processing, delivery, storage, and use  
24 equipment manufacturing technologies and tech-  
25 niques.

1           “(2) PRIORITY.—In awarding grants or enter-  
2           ing into contracts, cooperative agreements, or other  
3           agreements under paragraph (1), the Secretary, to  
4           the maximum extent practicable, shall give priority  
5           to clean hydrogen equipment manufacturing projects  
6           that—

7                   “(A) increase efficiency and cost-effective-  
8                   ness in—

9                           “(i) the manufacturing process; and

10                           “(ii) the use of resources, including  
11                   existing energy infrastructure;

12                   “(B) support domestic supply chains for  
13                   materials and components;

14                   “(C) identify and incorporate nonhaz-  
15                   ardous alternative materials for components  
16                   and devices;

17                   “(D) operate in partnership with tribal en-  
18                   ergy development organizations, Indian Tribes,  
19                   Tribal organizations, Native Hawaiian commu-  
20                   nity-based organizations, or territories or freely  
21                   associated States; or

22                   “(E) are located in economically distressed  
23                   areas of the major natural gas-producing re-  
24                   gions of the United States.

1           “(3) EVALUATION.—Not later than 3 years  
2 after the date of enactment of the Clean Hydrogen  
3 Energy Act, and not less frequently than once every  
4 4 years thereafter, the Secretary shall conduct, and  
5 make available to the public and the relevant com-  
6 mittees of Congress, an independent review of the  
7 progress of the projects carried out through grants  
8 awarded, or contracts, cooperative agreements, or  
9 other agreements entered into, under paragraph (1).

10          “(b) CLEAN HYDROGEN TECHNOLOGY RECYCLING  
11 RESEARCH, DEVELOPMENT, AND DEMONSTRATION PRO-  
12 GRAM.—

13           “(1) IN GENERAL.—In carrying out the pro-  
14 grams established under sections 805 and 813, the  
15 Secretary shall award multiyear grants to, and enter  
16 into contracts, cooperative agreements, or any other  
17 agreements authorized under this Act or other Fed-  
18 eral law with, eligible entities for research, develop-  
19 ment, and demonstration projects to create innova-  
20 tive and practical approaches to increase the reuse  
21 and recycling of clean hydrogen technologies, includ-  
22 ing by—

23           “(A) increasing the efficiency and cost-ef-  
24 fectiveness of the recovery of raw materials  
25 from clean hydrogen technology components

1 and systems, including enabling technologies  
2 such as electrolyzers and fuel cells;

3 “(B) minimizing environmental impacts  
4 from the recovery and disposal processes;

5 “(C) addressing any barriers to the re-  
6 search, development, demonstration, and com-  
7 mercialization of technologies and processes for  
8 the disassembly and recycling of devices used  
9 for clean hydrogen production, processing, de-  
10 livery, storage, and use;

11 “(D) developing alternative materials, de-  
12 signs, manufacturing processes, and other as-  
13 pects of clean hydrogen technologies;

14 “(E) developing alternative disassembly  
15 and resource recovery processes that enable effi-  
16 cient, cost-effective, and environmentally re-  
17 sponsible disassembly of, and resource recovery  
18 from, clean hydrogen technologies; and

19 “(F) developing strategies to increase con-  
20 sumer acceptance of, and participation in, the  
21 recycling of fuel cells.

22 “(2) DISSEMINATION OF RESULTS.—The Sec-  
23 retary shall make available to the public and the rel-  
24 evant committees of Congress the results of the  
25 projects carried out through grants awarded, or con-

1 tracts, cooperative agreements, or other agreements  
2 entered into, under paragraph (1), including any  
3 educational and outreach materials developed by the  
4 projects.

5 “(c) AUTHORIZATION OF APPROPRIATIONS.—There  
6 is authorized to be appropriated to the Secretary to carry  
7 out this section \$500,000,000 for the period of fiscal years  
8 2022 through 2026.

9 **“SEC. 816. CLEAN HYDROGEN ELECTROLYSIS PROGRAM.**

10 “(a) DEFINITIONS.—In this section:

11 “(1) ELECTROLYSIS.—The term ‘electrolysis’  
12 means a process that uses electricity to split water  
13 into hydrogen and oxygen.

14 “(2) ELECTROLYZER.—The term ‘electrolyzer’  
15 means a system that produces hydrogen using elec-  
16 trolysis.

17 “(3) PROGRAM.—The term ‘program’ means  
18 the program established under subsection (b).

19 “(b) ESTABLISHMENT.—Not later than 90 days after  
20 the date of enactment of the Clean Hydrogen Energy Act,  
21 the Secretary shall establish a research, development,  
22 demonstration, commercialization, and deployment pro-  
23 gram for purposes of commercialization to improve the ef-  
24 ficiency, increase the durability, and reduce the cost of  
25 producing clean hydrogen using electrolyzers.

1 “(c) GOALS.—The goals of the program are—

2 “(1) to reduce the cost of hydrogen produced  
3 using electrolyzers to less than \$2 per kilogram of  
4 hydrogen by 2026; and

5 “(2) any other goals the Secretary determines  
6 are appropriate.

7 “(d) DEMONSTRATION PROJECTS.—In carrying out  
8 the program, the Secretary shall fund demonstration  
9 projects—

10 “(1) to demonstrate technologies that produce  
11 clean hydrogen using electrolyzers; and

12 “(2) to validate information on the cost, effi-  
13 ciency, durability, and feasibility of commercial de-  
14 ployment of the technologies described in paragraph  
15 (1).

16 “(e) FOCUS.—The program shall focus on research  
17 relating to, and the development, demonstration, and de-  
18 ployment of—

19 “(1) low-temperature electrolyzers, including  
20 liquid-alkaline electrolyzers, membrane-based  
21 electrolyzers, and other advanced electrolyzers, capa-  
22 ble of converting intermittent sources of electric  
23 power to clean hydrogen with enhanced efficiency  
24 and durability;

1           “(2) high-temperature electrolyzers that com-  
2           bine electricity and heat to improve the efficiency of  
3           clean hydrogen production;

4           “(3) advanced reversible fuel cells that combine  
5           the functionality of an electrolyzer and a fuel cell;

6           “(4) new highly active, selective, and durable  
7           electrolyzer catalysts and electro-catalysts that—

8                   “(A) greatly reduce or eliminate the need  
9                   for platinum group metals; and

10                   “(B) enable electrolysis of complex mix-  
11                   tures with impurities, including seawater;

12           “(5) modular electrolyzers for distributed en-  
13           ergy systems and the bulk-power system (as defined  
14           in section 215(a) of the Federal Power Act (16  
15           U.S.C. 824o(a)));

16           “(6) low-cost membranes or electrolytes and  
17           separation materials that are durable in the presence  
18           of impurities or seawater;

19           “(7) improved component design and material  
20           integration, including with respect to electrodes, po-  
21           rous transport layers and bipolar plates, and bal-  
22           ance-of-system components, to allow for scale-up and  
23           domestic manufacturing of electrolyzers at a high  
24           volume;

25           “(8) clean hydrogen storage technologies;

1           “(9) technologies that integrate hydrogen pro-  
2           duction with—

3                   “(A) clean hydrogen compression and dry-  
4           ing technologies;

5                   “(B) clean hydrogen storage; and

6                   “(C) transportation or stationary systems;

7           and

8                   “(10) integrated systems that combine hydro-  
9           gen production with renewable power or nuclear  
10          power generation technologies, including hybrid sys-  
11          tems with hydrogen storage.

12          “(f) GRANTS, CONTRACTS, COOPERATIVE AGREE-  
13          MENTS.—

14                   “(1) GRANTS.—In carrying out the program,  
15          the Secretary shall award grants, on a competitive  
16          basis, to eligible entities for projects that the Sec-  
17          retary determines would provide the greatest  
18          progress toward achieving the goal of the program  
19          described in subsection (e).

20                   “(2) CONTRACTS AND COOPERATIVE AGREE-  
21          MENTS.—In carrying out the program, the Secretary  
22          may enter into contracts and cooperative agreements  
23          with eligible entities and Federal agencies for  
24          projects that the Secretary determines would further



1 the purpose of the program described in subsection  
2 (b).

3 “(3) ELIGIBILITY; APPLICATIONS.—

4 “(A) IN GENERAL.—The eligibility of an  
5 entity to receive a grant under paragraph (1),  
6 to enter into a contract or cooperative agree-  
7 ment under paragraph (2), or to receive fund-  
8 ing for a demonstration project under sub-  
9 section (d) shall be determined by the Sec-  
10 retary.

11 “(B) APPLICATIONS.—An eligible entity  
12 desiring to receive a grant under paragraph (1),  
13 to enter into a contract or cooperative agree-  
14 ment under paragraph (2), or to receive fund-  
15 ing for a demonstration project under sub-  
16 section (d) shall submit to the Secretary an ap-  
17 plication at such time, in such manner, and  
18 containing such information as the Secretary  
19 may require.

20 “(g) AUTHORIZATION OF APPROPRIATIONS.—There  
21 is authorized to be appropriated to the Secretary to carry  
22 out the program \$1,000,000,000 for the period of fiscal  
23 years 2022 through 2026, to remain available until ex-  
24 pended.

1 **“SEC. 817. LABORATORY MANAGEMENT.**

2 “(a) IN GENERAL.—The National Energy Tech-  
3 nology Laboratory shall be the lead National Laboratory  
4 for purposes of carrying out the programs established  
5 under sections 813, 815, and 816.

6 “(b) COLLABORATION; CLEARINGHOUSE.—In car-  
7 rying out subsection (a), the National Energy Technology  
8 Laboratory shall—

9 “(1) collaborate with—

10 “(A) other National Laboratories;

11 “(B) institutions of higher education;

12 “(C) research institutes;

13 “(D) industrial researchers; and

14 “(E) international researchers; and

15 “(2) act as a clearinghouse to collect informa-  
16 tion from, and distribute information to, the Na-  
17 tional Laboratories and other entities described in  
18 subparagraphs (B) through (E) of paragraph (1).”.

19 **SEC. 6. CLEAN HYDROGEN PRODUCTION QUALIFICATIONS.**

20 (a) IN GENERAL.—The Energy Policy Act of 2005  
21 (42 U.S.C. 16151 et seq.) (as amended by section 5(1))  
22 is amended by adding at the end the following:

23 **“SEC. 822. CLEAN HYDROGEN PRODUCTION QUALIFICA-**  
24 **TIONS.**

25 “(a) IN GENERAL.—Not later than 180 days after  
26 the date of enactment of the Clean Hydrogen Energy Act,

1 the Secretary, in consultation with the Administrator of  
2 the Environmental Protection Agency and after taking  
3 into account input from industry and other stakeholders,  
4 as determined by the Secretary, shall develop an initial  
5 standard for the carbon intensity of clean hydrogen pro-  
6 duction that shall apply to activities carried out under this  
7 title.

8 “(b) REQUIREMENTS.—

9 “(1) IN GENERAL.—The standard developed  
10 under subsection (a) shall—

11 “(A) support clean hydrogen production  
12 from each source described in section 805(e)(2);

13 “(B) define the term ‘clean hydrogen’ to  
14 mean hydrogen produced with a carbon inten-  
15 sity equal to or less than 2 kilograms of carbon  
16 dioxide-equivalent produced at the site of pro-  
17 duction per kilogram of hydrogen produced; and

18 “(C) take into consideration technological  
19 and economic feasibility.

20 “(2) ADJUSTMENT.—Not later than the date  
21 that is 5 years after the date on which the Secretary  
22 develops the standard under subsection (a), the Sec-  
23 retary, in consultation with the Administrator of the  
24 Environmental Protection Agency and after taking

1 into account input from industry and other stake-  
2 holders, as determined by the Secretary, shall—

3 “(A) determine whether the definition of  
4 clean hydrogen required under paragraph  
5 (1)(B) should be adjusted below the standard  
6 described in that paragraph; and

7 “(B) if the Secretary determines the ad-  
8 justment described in subparagraph (A) is ap-  
9 propriate, carry out the adjustment.

10 “(c) APPLICATION.—The standard developed under  
11 subsection (a) shall apply to clean hydrogen production  
12 from renewable, fossil fuel with carbon capture, utiliza-  
13 tion, and sequestration technologies, nuclear, and other  
14 fuel sources using any applicable production technology.”.

15 (b) CONFORMING AMENDMENT.—The table of con-  
16 tents for the Energy Policy Act of 2005 (Public Law 109–  
17 58; 119 Stat. 599) is amended by striking the items relat-  
18 ing to sections 813 through 816 and inserting the fol-  
19 lowing:

“Sec. 813. Regional clean hydrogen hubs.

“Sec. 814. National clean hydrogen strategy and roadmap.

“Sec. 815. Clean hydrogen manufacturing and recycling.

“Sec. 816. Clean hydrogen electrolysis program.

“Sec. 817. Laboratory management.

“Sec. 818. Technology transfer

“Sec. 819. Miscellaneous provisions.

“Sec. 820. Cost sharing.

“Sec. 821. Savings clause.

“Sec. 822. Clean hydrogen production qualifications.”.