
A BILL FOR AN ACT

RELATING TO ENERGY.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

1 Part I.

2 SECTION 1. The legislature finds that Hawaii became an
3 early leader in the push to develop hydrogen as a fuel when, in
4 1980, United States Senator Spark Matsunaga introduced the first
5 hydrogen legislation in Congress. In 1983, with a \$50,000
6 appropriation from the legislature, the Hawaii natural energy
7 institute at the University of Hawaii established the Hawaii
8 hydrogen program. In September 1985, the Hawaii natural energy
9 institute was awarded a contract from the Solar Energy Research
10 Institute (now the National Renewable Energy Laboratory) to
11 establish the Hawaii hydrogen from renewable resources program.

12 During operation of this program and other subsequent
13 hydrogen projects, the efforts of the Hawaii natural energy
14 institute have focused on developing core technologies for
15 renewable hydrogen production, including direct solar and
16 biological hydrogen production, gasification of biomass, and
17 novel hydrogen storage technologies.



1 In 1990, Congress passed the Spark M. Matsunaga Hydrogen,
2 Research, Development and Demonstration Act of 1990 that set
3 forth for the first time a five-year management and
4 implementation plan for hydrogen research and development in the
5 United States. It created the Hydrogen Technical Advisory Panel
6 that was charged with ensuring consultation and coordination
7 regarding hydrogen research.

8 Also in 1990, the Hawaii natural energy institute hosted
9 the World Hydrogen Energy Conference that drew five hundred
10 fifty specialists from thirty-one nations. In 1996, the United
11 States Department of Energy designated the Hawaii natural energy
12 institute's program as a University Center of Excellence for
13 Hydrogen Research and Education.

14 There has been significant progress in hydrogen research
15 and development in Hawaii. For example, in 1999, University of
16 Hawaii chemists discovered a new way to store hydrogen energy
17 that may result in more economical, pollution-free vehicles.
18 Tackling one of hydrogen's major challenges, the team found a
19 catalyst that will release hydrogen from lightweight materials
20 at a moderate temperature. This has major implications for
21 developing effective fuel cells for vehicles. As a result of
22 these accomplishments, the Hydrogen Technical Advisory Panel and



1 the United States Department of Energy named the Hawaii team as
2 the "1999 Research Success Story."

3 In addition, the 2000 legislature requested a study to
4 recommend options that could result in hydrogen becoming a
5 future ingredient in the State's energy economy. The Hawaii
6 natural energy institute concluded that large-scale hydrogen use
7 for transportation can be competitive. As a result of this
8 study, the 2001 legislature appropriated \$200,000 to establish a
9 private/public partnership to implement the recommendations
10 contained in the Hawaii natural energy institute study that
11 resulted in a more comprehensive analysis entitled, "Nurturing a
12 Clean Energy Future in Hawaii: Assessing the Feasibility of the
13 Large-Scale Utilization of Hydrogen and Fuel Cells in Hawaii."

14 The legislature also finds that, in 2003, the Hawaii
15 natural energy institute opened the Hawaii fuel cell test
16 facility. This state of the art facility houses test equipment
17 and hydrogen infrastructure valued at more than \$2,500,000.
18 Testing and development efforts at this facility are funded by
19 the Office of Naval Research, the United States Department of
20 Energy, and by private companies such as United Technologies,
21 General Motors, Ballard Power Systems, and Arkema, Inc. These
22 activities have helped to attract a major international



1 conference to the Hawaii convention center scheduled for
2 November 2006.

3 The legislature also finds that the Hawaii natural energy
4 institute has also been successful in winning a United States
5 Department of Energy competitively awarded program called the
6 Hawaii Hydrogen Power Park, to demonstrate hydrogen technologies
7 in a real-world environment. Other projects funded by the
8 United States Department of Energy include the production of
9 hydrogen from renewable sources like solar and biomass. Since
10 2000, United States Department of Energy funding to the Hawaii
11 natural energy institute in these areas has exceeded \$6,000,000
12 with more than \$1,250,000 more in non-federal cost matching.
13 Partners in this cost match include limited funding from the
14 State, the City and County of Honolulu, Hawaiian Electric
15 Company, The Gas Company, Stuart Energy Systems (now
16 Hydrogenics), MV Systems, a photovoltaic development company,
17 Worldwide Energy, LLC, and several universities.

18 However, the legislature finds that having world class
19 facilities, a world class team, and a strong industrial
20 partnership is not enough when other states that are willing to
21 commit financial resources are aggressively competing against



1 Hawaii for these types of projects. Accordingly, the purpose of
2 this part is to establish:

- 3 (1) A Hawaii renewable hydrogen program to support
4 research and development and deployment of renewable
5 hydrogen technologies; and
- 6 (2) A hydrogen technologies capital special fund to
7 provide seed capital and venture capital investments
8 for the deployment of renewable hydrogen systems.

9 SECTION 2. Chapter 196, Hawaii Revised Statutes, is
10 amended by adding a new section to be appropriately designated
11 and to read as follows:

12 "§196-A Hawaii renewable hydrogen program. (a) There is
13 established, within the department of business, economic
14 development, and tourism, a Hawaii renewable hydrogen program to
15 manage the State's transition to a renewable hydrogen economy.
16 The program shall design, implement, and administer activities
17 that shall include:

- 18 (1) Strategic partnerships for the research, development,
19 testing, and deployment of renewable hydrogen
20 technologies;
- 21 (2) Engineering and economic evaluations of Hawaii's
22 potential for renewable hydrogen use and near-term

1 project opportunities for the State's renewable energy
2 resources;

3 (3) Electric grid reliability and security projects that
4 will enable the integration of a substantial increase
5 of electricity from renewable energy resources on the
6 island of Hawaii;

7 (4) Hydrogen demonstration projects, including
8 infrastructure for the production, storage, and
9 refueling of hydrogen vehicles;

10 (5) A statewide hydrogen economy public education and
11 outreach plan focusing on the island of Hawaii, to be
12 developed in coordination with Hawaii's public
13 education institutions;

14 (6) Promotion of Hawaii's renewable hydrogen resources to
15 potential partners and investors;

16 (7) A plan, for implementation during the years 2007 to
17 2010, to more fully deploy hydrogen technologies and
18 infrastructure capable of supporting the island of
19 Hawaii's energy needs, including:

20 (A) Expanded installation of hydrogen production
21 facilities;

- 1 (B) Development of integrated energy systems,
- 2 including hydrogen vehicles;
- 3 (C) Construction of additional hydrogen refueling
- 4 stations; and
- 5 (D) Promotion of building design and construction
- 6 that fully incorporates clean energy assets,
- 7 including reliance on hydrogen-fueled energy
- 8 generation;
- 9 (8) A plan, for implementation during the years 2010 to
- 10 2020, to transition the island of Hawaii to a
- 11 hydrogen-fueled economy and to extend the application
- 12 of the plan throughout the State; and
- 13 (9) Evaluation of policy recommendations to:
- 14 (A) Encourage the adoption of hydrogen-fueled
- 15 vehicles;
- 16 (B) Continually fund the hydrogen technologies
- 17 special fund; and
- 18 (C) Support investment in hydrogen infrastructure,
- 19 including production, storage, and dispensing
- 20 facilities."

1 SECTION 3. Chapter 211F, Hawaii Revised Statutes, is
2 amended by adding a new section to be appropriately designated
3 and to read as follows:

4 **"§211F-A Hydrogen investment capital special fund. (a)**

5 There shall be established the hydrogen investment capital
6 special fund into which shall be deposited:

7 (1) Appropriations made by the legislature to the fund;

8 (2) All contributions from public or private partners;

9 (3) All interest earned on or accrued to moneys deposited
10 in the special fund; and

11 (4) Any other moneys made available to the special fund
12 from other sources.

13 (b) Moneys in the fund shall be used to:

14 (1) Provide seed capital for and venture capital
15 investments in private sector and federal projects for
16 research, development, testing, and implementation of
17 the Hawaii renewable hydrogen program, as set forth in
18 section 196-A;

19 (2) For any other purpose deemed necessary to carry out
20 the purposes of this section."

21 SECTION 4. There is appropriated out of the general
22 revenues of the State of Hawaii the sum of \$, or so

1 much thereof as may be necessary for fiscal year 2006-2007, for
2 the state program on renewable hydrogen, pursuant to section
3 196-A, Hawaii Revised Statutes.

4 The sum appropriated shall be expended by the department of
5 business, economic development, and tourism for the purposes of
6 this part.

7 SECTION 5. There is appropriated out of the general
8 revenues of the State of Hawaii the sum of \$10,000,000, or so
9 much thereof as may be necessary for fiscal year 2006-2007, to
10 be paid into the hydrogen investment capital special fund.

11 The sum appropriated shall be expended by the department of
12 business, economic development, and tourism for the purposes of
13 this part.

14 SECTION 6. There is appropriated out of the hydrogen
15 investment capital special fund the sum of \$10,000,000, or so
16 much thereof as may be necessary for fiscal year 2006-2007, to
17 be used for the purposes of the hydrogen investment capital
18 special fund, pursuant to section 211F-A, Hawaii Revised
19 Statutes.

20 The sum appropriated shall be expended by the department of
21 business, economic development, and tourism for the purposes of
22 this part.



1 Part II.

2 SECTION 7. The legislature finds that renewable energy
3 resources have the potential to be curtailed when the electric
4 utility does not have sufficient demand to use the electricity.
5 The legislature also finds that, on the island of Hawaii,
6 geothermal resources are curtailed at night, when the
7 electricity load is significantly reduced, to the detriment of
8 the geothermal power facility.

9 The legislature also finds that rising energy costs at the
10 natural energy laboratory of Hawaii authority at Keahole on the
11 island of Hawaii is creating a financial strain on the authority
12 and its tenants.

13 The purpose of this part is to establish a five-year
14 demonstration project at the natural energy laboratory of Hawaii
15 authority to use the under-utilized geothermal resource at night
16 in a distributed energy storage microgrid system via electricity
17 "wheeling" to service the operations of the natural energy
18 laboratory Hawaii authority and its tenants.

19 SECTION 8. Chapter 227D, Hawaii Revised Statutes, is
20 amended by adding two new sections to be appropriately
21 designated and to read as follows:



1 "§227D- Energy storage microgrid. (a) The natural
2 energy laboratory Hawaii authority, Hawaii natural energy
3 institute, and the department of business, economic development,
4 and tourism, in partnership, and in consultation with the public
5 utilities commission and the applicable electric public utility
6 on the island of Hawaii, shall evaluate and design a distributed
7 energy storage microgrid demonstration project at the natural
8 energy laboratory Hawaii authority, to be operable by July 1,
9 2007.

- 10 (b) The energy storage microgrid system shall:
- 11 (1) Be designed under an existing United States Department
 - 12 of Energy federally funded project;
 - 13 (2) Include a large multi-megawatt-hour energy storage
 - 14 system;
 - 15 (3) Be funded with moneys in the hydrogen special capital
 - 16 fund; provided that the funds are matched on a one-to-
 - 17 one basis with federal grants or private funding
 - 18 sources; and
 - 19 (4) Use renewable energy sources as its primary source of
 - 20 energy.

21 §227D- Five-year distributed energy storage microgrid
22 system; public utilities commission. (a) The public utilities

1 commission, by order, shall establish a five-year distributed
2 energy storage microgrid system demonstration project at the
3 natural energy laboratory Hawaii authority, to commence on July
4 1, 2007.

5 (b) The public utilities commission shall:

6 (1) Allow the use of electricity wheeling, using the
7 transmission system of the applicable electric public
8 utility on the island of Hawaii to transmit electrical
9 power from the Puna geothermal ventures facilities to
10 the natural energy laboratory Hawaii authority during
11 evening hours, as determined by the public utilities
12 commission;

13 (2) Establish a special project rate to be charged by the
14 applicable electric public utility on the island of
15 Hawaii for the use of its transmission system;

16 (3) Ensure that the rate for the sale of the electrical
17 power by the Puna geothermal venture to the natural
18 energy laboratory Hawaii authority is just and
19 reasonable;

20 (4) Allow the natural energy laboratory Hawaii authority
21 to distribute electrical power to its tenants, as



1 required to fulfill the objectives of the
 2 demonstration project; and
 3 (5) Mitigate, to the extent practicable, any regulatory
 4 barriers that may impede the demonstration project."

5 SECTION 9. The department of business, economic
 6 development, and tourism in consultation with the Hawaii natural
 7 energy institute, natural energy laboratory Hawaii authority,
 8 public utilities commission, and the electrical public utility
 9 on the island of Hawaii, shall submit a report to the
 10 legislature on the operation of the five-year distributed energy
 11 storage microgrid system demonstration project developed
 12 pursuant to section 8 of this Act twenty days prior to the
 13 convening of each regular session beginning with 2008 through
 14 2013.

Part III.

16 SECTION 10. In codifying the new sections added by
 17 sections 2 and 3 of this Act, the revisor of statutes shall
 18 substitute appropriate section numbers for the letters used in
 19 designating the new sections in this Act.

20 SECTION 11. New statutory material is underscored.

1 SECTION 12. This Act shall take effect upon its approval;
2 provided that sections 4, 5, and 6, of this Act shall take
3 effect on July 1, 2006.



HB 3222
HD1

Report Title:

Energy Resources; Renewable Energy

Description:

(1) Establishes the Hawaii renewable hydrogen program to manage the State's transition to a renewable hydrogen economy; (2) establishes the hydrogen investment capital special fund to seed private and federal projects for the deployment of hydrogen systems; (3) directs DBEDT, Hawaii Natural Energy Institute, and NELHA to design a distributed energy storage microgrid to transport energy to NELHA; (4) directs PUC to regulate the microgrid; and (5) appropriates funds for the program and special fund. (HD1)

