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# A BILL FOR AN ACT

RELATING TO ENERGY.

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

1           SECTION 1. The legislature finds that the human-induced  
2 global climate crisis requires thoughtful but bold response on  
3 many fronts to make Hawaii communities resilient to the impacts  
4 of climate change that threaten the very survivability of these  
5 fragile islands. Lest Hawaii lose its leadership position in  
6 meeting the future of labor, justice and equity, the legislature  
7 embraces Aloha 'Aina as a green new deal to decarbonize Hawaii's  
8 systems of food, energy, and transportation, and to sequester  
9 carbon through systems of agriculture, waste management, and  
10 ecosystem restoration. This solid foundation finds synergies  
11 with expanded access to health, housing, and education,  
12 multiplying good jobs and ensuring justice and equity for  
13 Hawaii's citizens. This measure represents a forward step in  
14 mitigating and adapting Hawaii to inevitable change.

15           The legislature, as declared in the Hawaii commitments  
16 presented to the World Conservation Congress in 2016, that "[w]e  
17 must undertake profound transformations in how human societies



1 live on Earth, with particular attention to making our patterns  
2 of production and consumption more sustainable. We must  
3 recognize that human health and wellbeing depend on healthy  
4 ecosystems. We must recognize that every form of life has  
5 value - regardless of its worth to humans." Hawaii has been a  
6 leader in conservation efforts for decades, through its  
7 commitment to environmental, and sustainability policies. In  
8 1974, the State enacted the state environmental policy,  
9 chapter 344, Hawaii Revised Statutes, as a mechanism to set  
10 environmental goals. In addition, the laws enacted in Hawaii in  
11 recent decades have served as a starlight for other  
12 jurisdictions and set a global example on how to adopt policies  
13 on sustainability. More recently, several approaches to  
14 sustainability have emerged in Hawaii, including the Aloha+  
15 challenge, the governor's sustainable Hawaii initiative, and  
16 other initiatives inspired by the Malama Honua Worldwide Voyage  
17 and Malama Hawaii.

18 In July 2014, the State launched the Aloha+ challenge: He  
19 Nohona 'Ae'oia, A Culture of Sustainability, a statewide  
20 commitment to sustainability, with the leadership of the  
21 governor, four county mayors, office of Hawaiian affairs,



1 legislature, and Hawaii green growth public-private partners  
2 across the State. The Aloha+ challenge builds on Hawaii's  
3 history of systems thinking, Hawaiian culture and values, and  
4 successful track record on sustainability to outline six  
5 ambitious goals to be achieved by 2030. Among the six goals,  
6 two involved:

7 (1) Clean energy: Achieve seventy per cent clean energy  
8 with forty per cent from renewables and thirty per  
9 cent from efficiency; and

10 (2) Waste reduction: Reduce the solid waste stream prior  
11 to disposal by seventy per cent through source  
12 reduction, recycling, bioconversion, and landfill  
13 diversion methods.

14 To increase the efforts of the Aloha+ challenge, the  
15 governor launched the sustainable Hawaii initiative in 2016,  
16 which encompassed five major goals, the most existential goal  
17 was to achieve one hundred per cent renewable energy in  
18 electricity by 2045.

19 At the global level, the United Nations sustainable  
20 development goals, the Hawaii commitments presented to the World  
21 Conservation Congress in 2016, and the Paris Climate Agreement



1 have been adopted to guide global efforts. The sustainable  
2 development goals, otherwise known as the 2030 Agenda for  
3 Sustainable Development, were born at the United Nations  
4 Conference on Sustainable Development in Rio de Janeiro in 2012,  
5 which came into effect in 2015, are a universal call to action  
6 to end poverty, protect the planet, and ensure that all people  
7 enjoy peace and prosperity. Dealing with the threat of climate  
8 change impacts how people manage the world's fragile natural  
9 resources.

10 During September 2016, more than ten thousand leaders from  
11 government, civil society indigenous communities, faith and  
12 spiritual traditions, private sector, and academia gathered in  
13 Hawaii for a meeting of the International Union for Conservation  
14 of Nature World Conservation Congress. Delegates to the  
15 congress adopted the Hawaii commitments to achieve the  
16 transformation required to promote a "Culture of Conservation".  
17 The Hawaii Commitments consist of seven identified challenges  
18 and proposed solutions, among them included:

- 19 (1) Linking spirituality, religion, culture, and  
20 conservation; and
- 21 (2) The challenge of climate change.



1           The Hawaii commitments build on the Paris Climate Agreement  
2 and sustainable development goals to allow different global  
3 voices to come together and find common ground in the spirit of  
4 partnership, collaboration, and sustainability.

5           In 2018, Governor David Ige issued Executive Order No. 18-  
6 06, which directed all state agencies to implement practices to  
7 assist the State in achieving the United Nations sustainable  
8 development goals. Additionally, four counties have expressed  
9 support for the sustainable development goals. In particular,  
10 the county of Maui adopted Resolution No. 18-18, supporting "the  
11 Hawaii State Senate's efforts to enact legislation to attain the  
12 United Nations Sustainable Development Goals."

13           In order for Hawaii to continue to serve as a starlight for  
14 the rest of the world in setting policies on sustainability and  
15 to serve as global leader on issues of conservation and  
16 sustainability, it is essential that the State demonstrate its  
17 full commitment to its own policies and goals as well as the  
18 goals set on the international stage at United Nations  
19 conferences and summits on sustainability. In particular, the  
20 legislature has identified seven of the seventeen United Nations



1 sustainable development goals that are most immediately vital to  
2 the State including:

- 3 (1) Sustainable cities and communities;
- 4 (2) Responsible consumption and production; and
- 5 (3) The formation of partnerships for the sustainable  
6 development goals.

7 The legislature further finds and acknowledges that  
8 municipal solid waste, particularly non-recyclable plastics, has  
9 become a significant threat to Hawaii's environment, ecosystems,  
10 and beaches, on which the State's economy, culture, and native  
11 species rely.

12 Plastic waste and debris can be increasingly found on every  
13 island and in every watershed and protected area in the Hawaiian  
14 archipelago. Hawaii's forests, streams, and beaches are strewn  
15 with plastic debris, including micro plastic debris smaller than  
16 grains of sand which are consumed by a spectrum of animals from  
17 the smallest of endangered birds to the largest of humpback  
18 whales.

19 The Washington Post reported that an estimated five million  
20 to thirteen million tons of plastic debris enter the ocean every  
21 year, which has contributed to creating the Pacific garbage



1 patch, a mass of plastic debris larger than the state of Texas  
2 floating north of Hawaii. If nothing changes, it is estimated  
3 that by 2050, there will be more plastic in the Pacific Ocean,  
4 by weight, than fish.

5 The legislature additionally finds that there is  
6 opportunity to create clean energy, reduce waste management  
7 costs to taxpayers, and protect Hawaii's environment from  
8 greenhouse gas emissions from municipal solid waste, including  
9 plastic waste, through landfill diversion, using recycling,  
10 reusing, composting, and conversion technologies. Hawaii  
11 residents generate 2.8 tons of waste per person per year, more  
12 waste per capita than residents of any other state. More than  
13 eighty per cent of plastic waste entering the Pacific Ocean come  
14 from preventable land-based waste and pollution.

15 The legislature also finds that as a result of pursuing its  
16 goal to reach one hundred per cent renewable energy by 2045,  
17 Hawaii now leads other states in nearly every category of  
18 renewable energy. Approximately twenty-six per cent of  
19 electricity in the State is generated from renewable energy, and  
20 there are sixty utility-scale renewable energy projects feeding  
21 into the State's power grids. Notwithstanding such progress,



1 the State continues to depend heavily upon imported petroleum  
2 for its energy needs and falling short of its ambitious  
3 renewable energy goals.

4 The legislature additionally finds that the State must  
5 continue to support established renewable energy sources that do  
6 not create significant greenhouse gas emissions and those  
7 emerging from new technological innovations to meet the State's  
8 expansive renewable energy goals, such as clean conversion  
9 technologies that do not release greenhouse gases into the  
10 environment.

11 The legislature further finds that landfills are a major  
12 producer of greenhouse gas emissions. Landfilled waste is the  
13 largest source of human-generated methane. In addition, if not  
14 properly built and maintained, harmful leachate contaminates can  
15 seep out of landfills and seep into local streams, soil, and  
16 groundwater. Landfills are an unsustainable approach to waste  
17 management as they impact native species, cause the release of  
18 methane and carbon dioxide greenhouse gases effecting climate  
19 change, and pollute the State's environment. The need for  
20 landfills can be significantly reduced, if not eliminated,





1 through recycling, reusing, composting, and clean conversion  
2 technologies.

3       Municipal solid waste can be converted into clean energy,  
4 including clean electricity, diesel, hydrogen, and ammonia  
5 without burning. Recent state-of-the-art technologies allow  
6 gasification with zero greenhouse gas emissions. This includes  
7 closed loop systems that convert waste into syngas which is  
8 processed into clean energy.

9       This Act authorizes the natural energy laboratory of Hawaii  
10 authority to establish a microgrid demonstration project and  
11 requires the public utilities commission to consider findings  
12 and data from public agency microgrid evaluations and pilots  
13 into its current or future proceedings, such as the microgrid  
14 services tariff docket, to evaluate ways to incentivize the  
15 installation of renewable energy systems in public facilities  
16 that can provide backup power in the event the broader electric  
17 grid cannot provide power.

18       The legislature finds that production of clean electricity  
19 may be encouraged if government agencies, as sellers of clean  
20 electricity, are allowed to engage in intra-governmental  
21 wheeling, in which electric power is transmitted from one



1 agency's power of generation to the facilities of other  
2 governmental agencies over the existing transmission lines of a  
3 third-Party electric public utility. The State and other  
4 government entities such as the counties could acquire clean  
5 electricity by purchasing it from a clean electricity project  
6 developer and then transmit it, across utility lines owned and  
7 maintained by an existing electric utility, to the government  
8 agency or another government agency. This Act would allow  
9 wheeling from the microgrid natural energy laboratory of Hawaii  
10 demonstration project.

11 The purpose of this Act is to:

- 12 (1) Establish a zero net energy and zero net waste  
13 initiative program with the mission of achieving the  
14 one hundred per cent renewable energy goal;
- 15 (2) Establish a zero net energy and zero net waste  
16 advisory council;
- 17 (3) Designate property controlled by the natural energy  
18 laboratory of Hawaii authority as a microgrid  
19 demonstration project, which prohibits the use of  
20 fossil fuels as an energy source in the project;



1 (4) Authorize the transmission of electric power from one  
2 governmental agency's point of generation to the  
3 facility of another governmental agency's existing  
4 transmission lines within the boundaries of the Hawaii  
5 ocean science and technology park; and

6 (5) Appropriate funds for the zero net energy and zero net  
7 waste initiative program.

8 SECTION 2. The Hawaii Revised Statutes is amended by  
9 adding a new chapter to be appropriately designated and to read  
10 as follows:

11 "CHAPTER

12 ZERO NET ENERGY AND ZERO NET WASTE INITIATIVE

13 § -1 Definitions. As used in this chapter:

14 "Clean electricity" means electricity not generated from  
15 fossil fuel and not produced by a combustion method that  
16 releases greenhouse gases into the environment.

17 "Clean energy" means energy not generated from fossil fuel  
18 and not produced by a combustion method that releases greenhouse  
19 gases into the environment.



1 "Combustion" means a high-temperature chemical reaction  
2 between a fuel and an oxidant, usually, atmospheric oxygen, that  
3 produces light, heat, smoke, and can produce electricity.

4 "Commission" means the public utilities commission.

5 "Dirty electricity" means electricity generated from fossil  
6 fuel or produced by a combustion method that releases greenhouse  
7 gases into the environment.

8 "Fossil fuel" means coal, natural gas, petroleum and non-  
9 compostable plastic.

10 "Microgrid" means an interconnected system of loads and  
11 energy resources, including, but not limited to, distributed  
12 energy resources, energy storage, demand response tools, or  
13 other management, forecasting, and analytical tools,  
14 appropriately sized to meet customer needs, within a clearly  
15 defined electrical boundary that can act as a single,  
16 controllable entity, and can connect to, disconnect from, or run  
17 in parallel with, larger portions of the electrical grid, or can  
18 be managed and isolated to withstand larger disturbances and  
19 maintain electrical supply to connected critical infrastructure.

20 "Program" means a zero-net energy and zero net waste and  
21 initiative, including a microgrid natural energy laboratory of



1 Hawaii demonstration project that allows wheeling between the  
2 boundaries of Hawaii ocean science and technology park.

3 "Wheeling" means transmitting electric power from one  
4 governmental agency's point of generation to the facilities of  
5 other governmental agencies over the existing transmission lines  
6 of a third-party electric public utility.

7 "Zero net energy building" means an energy-efficient  
8 building where, on a source energy basis, the actual annual  
9 consumed energy is less than or equal to the on-site renewable  
10 generated energy.

11 "Zero net energy campus" means an energy-efficient campus  
12 where, on a source energy basis, the actual annual consumed  
13 energy is less than or equal to the on-site renewable generated  
14 energy.

15 "Zero net energy community" means an energy-efficient  
16 community where, on a source energy basis, the actual annual  
17 consumed energy is less than or equal to the on-site renewable  
18 generated energy.

19 "Zero net energy portfolio" means an energy-efficient  
20 portfolio in which, on a source energy basis, the actual annual



1 consumed energy is less than or equal to the on-site renewable  
2 generated energy.

3 "Zero net waste" means no by-products of manufacturing are  
4 sent to landfills and all materials generated in the  
5 manufacturing process are either reused, recycled, composted, or  
6 converted into clean energy.

7 § -2 Zero net energy and zero net waste initiative  
8 program; established. There is established within the  
9 commission a zero net energy and zero net waste initiative  
10 program with the mission of achieving the one hundred per cent  
11 renewable energy mandate using a combination, as applicable and  
12 environmentally feasible, of the following resources:

- 13 (1) Wind;
- 14 (2) Sun;
- 15 (3) Falling water;
- 16 (4) Biogas, including landfill and sewage-based digester  
17 gas;
- 18 (5) Geothermal;
- 19 (6) Ocean water, currents, and waves, including ocean  
20 thermal energy conversion;



1 (7) Biomass, including biomass crops, agricultural and  
2 animal residues and wastes, but not including mono-  
3 cultured wood crops;

4 (8) Biofuels;

5 (9) Hydrogen produced from renewable energy sources; and

6 (10) Other self-replenishing non-fossil fuel, non-nuclear  
7 resources and conversion to clean energy technologies  
8 to achieve zero net energy for zero net energy  
9 buildings, zero net energy campuses, zero net energy  
10 communities, zero net energy portfolios, and zero net  
11 waste by recycling, reusing, composting, and  
12 conversion technologies.

13 § -3 Zero net energy and zero net waste advisory  
14 council; duties; established. (a) There is established the  
15 zero net energy and zero waste advisory council, which shall  
16 consist of the following members:

17 (1) The chairperson of the commission or the chairperson's  
18 designee, who shall serve as the chair of the council;

19 (2) The chief energy officer of the Hawaii state energy  
20 office or the chief energy officer's designee;



- 1           (3) The chairperson of the board of land and natural  
2           resources or the chairperson's designee;
- 3           (4) The executive director of the board of directors of  
4           the natural energy laboratory of Hawaii authority or  
5           the executive director's designee;
- 6           (5) The chairs of the standing committees of the  
7           legislature with subject matter jurisdiction over the  
8           environment;
- 9           (6) A representative from the city and county of Honolulu  
10          department of environmental services;
- 11          (7) A representative from the county of Maui department of  
12          environmental management, County of Maui;
- 13          (8) A representative from the county of Kauai department  
14          of public works;
- 15          (9) A representative from the county of Hawaii department  
16          of environmental management;
- 17          (10) One representative each from four community  
18          organizations that focus on recycling, composting, and  
19          conversion technologies for clean energy, to be  
20          selected by the chair of the council;





- 1       (11) An engineering expert in sustainability, renewable  
2           clean energy, and advanced energy solutions;
- 3       (12) An expert in governmental agencies, including state  
4           government, counties and cities with sustainability  
5           clean energy goals to achieve full zero net energy and  
6           zero net waste status; and
- 7       (13) A representative from the Hawaiian Electric Company.
- 8       (b) The zero net energy and zero net waste advisory  
9 council shall:
  - 10       (1) Be subject to section 26-34;
  - 11       (2) Serve without compensation but shall be reimbursed for  
12           expenses, including travel expenses, necessary for the  
13           performance of their duties;
  - 14       (3) Perform any relevant analysis and develop appropriate  
15           plans or recommendations for the legislature,  
16           counties, and other stakeholders;
  - 17       (4) Obtain from state and county agencies all relevant  
18           data on recycling, composting, landfills, conversions  
19           technologies, any associated waste management costs,  
20           and microgrids and wheeling, as they relate to the  
21           mission of the program;



1 (5) Obtain from state and county agencies all relevant  
2 data on energy, electricity, hydrogen, and diesel fuel  
3 generation and any associated costs and benefits as  
4 they relate to the mission of the program;

5 (6) Assist with coordination between the state agencies  
6 and other government agencies with the general public  
7 on the mission of the program; and

8 (7) Submit a report of its progress and any findings and  
9 recommendations, including any proposed legislation,  
10 to achieve zero net energy and zero net waste by 2030  
11 based on the microgrid natural energy laboratory of  
12 Hawaii demonstration project and wheeling within the  
13 boundaries of the Hawaii ocean sciences and technology  
14 park to the legislature no later than twenty days  
15 prior to the convening of each regular session.

16 § -4 **Microgrid demonstration project; natural energy**  
17 **laboratory of Hawaii authority.** Property controlled by the  
18 natural energy laboratory of Hawaii authority, established  
19 pursuant to chapter 227D, is designated as a microgrid  
20 demonstration project. The natural energy laboratory of Hawaii  
21 authority shall plan, design, and implement a microgrid, with



1 the support of the zero net energy and zero net waste advisory  
 2 council, and public and private sector partners, if necessary,  
 3 on property controlled by the natural energy laboratory of  
 4 Hawaii authority. No dirty electricity shall be generated or  
 5 allowed within the microgrid natural energy laboratory of Hawaii  
 6 demonstration project. No fossil fuels shall be used as an  
 7 energy source within the microgrid natural energy laboratory of  
 8 Hawaii demonstration project.

9 § -5 Wheeling; renewable energy; government agencies;  
 10 rules. (a) The commission may allow government agencies to  
 11 engage in wheeling of electricity produced at its own facilities  
 12 from renewable energy resources within the boundaries of the  
 13 Hawaii ocean science and technology park.

14 (b) The commission may disallow a wheeling project if the  
 15 commission determines that the project is either:

- 16 (1) Detrimental to an electric utility company; or
- 17 (2) Not in the public interest.

18 (c) The commission shall adopt rules pursuant to  
 19 chapter 91 to implement this chapter."

20 SECTION 3. There is appropriated out of the general  
 21 revenues of the State of Hawaii the sum of \$ or so



1 much thereof as may be necessary for fiscal year 2020-2021 for  
2 the:

- 3 (1) Establishment of the zero net energy and zero net  
4 waste initiative program;
- 5 (2) Establishment of the zero net energy and zero net  
6 waste advisory council;
- 7 (3) Planning and designing of a microgrid on the natural  
8 energy laboratory of Hawaii property for a renewable  
9 clean energy system capable of providing backup  
10 electrical power in the event the electric grid cannot  
11 provide power; and
- 12 (4) Report on the planning, design, and implementation of  
13 the microgrid natural energy laboratory of Hawaii  
14 demonstration project and wheeling within the  
15 boundaries of the Hawaii ocean science and technology.

16 The sum appropriated shall be expended by the public  
17 utilities commission for the purposes of this Act.

18 SECTION 4. This Act shall take effect on July 1, 2020.

19

INTRODUCED BY:                     *Dean* *Blr*                    

JAN 23 2020



# H.B. NO. 2644

**Report Title:**

Zero Net Energy; Zero Net Waste; Initiative Program; Advisory Council; Public Utilities Commission; Wheeling; Appropriation

**Description:**

Establishes a zero net energy and zero net waste initiative program in the public utilities commission. Establishes a zero net energy and zero net waste advisory council. Designates property controlled by the natural energy laboratory of Hawaii authority as a microgrid demonstration project. Authorizes the transmission of electric power from one governmental agency's point of generation to another governmental agency's existing transmission lines within the boundaries of the Hawaii ocean science and technology park. Appropriates funds for the zero net energy and zero net waste initiative program.

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