

# HAWAII STATE ENERGY OFFICE STATE OF HAWAII

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Testimony of  
**MARK B. GLICK, Chief Energy Officer**

before the  
**HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION**

Thursday, February 1, 2024  
9:30 AM  
State Capitol, Conference Room 325 and Videoconference

In Support of  
**HB 2105**

## **RELATING TO RENEWABLE ENERGY.**

Chair Lowen, Vice Chair Cochran, and Members of the Committee, I am writing in support of HB 2105 which provides resources to conduct slim-hole resource characterization to assist identification of geothermal energy throughout Hawai'i.

In 2023, the Hawai'i State Energy Office (HSEO) analyzed market gaps in firm renewable resources and long duration storage, especially geothermal and pumped hydro, and developed policies and pursued funding opportunities to fill those gaps. Geothermal energy is heat that was generated during the planet's formation stored in rocks and fluids and brought as steam to the earth's surface using deep wells. The steam drives turbines to generate electricity.

The Center for Strategic and International Studies notes that like solar and wind energy, modern geothermal power plants have insignificant greenhouse gas (GHG) emissions with life-cycle emissions six to twenty times lower than natural gas and four times lower than solar photovoltaic (PV) energy due to the materials used to construct the plants.

Accordingly, it is HSEO's energy strategy to prioritize slim-hole test wells to understand where geothermal resources might exist on Maui, Hawaii, and Oahu. The ultimate goal is to stimulate private sector investment to ensure safe, reliable and affordable firm renewable energy throughout Hawai'i.

Concurrently, HSEO will engage energy stakeholders at the community level during 2024 and beyond to gain insight on how and where geothermal development can appropriately take place in ways that meaningfully benefit the affected communities.

Several obstacles have limited Hawai'i from fully developing its geothermal potential. Geothermal exploration is commercially risky and expensive. Developers have to drill multiple exploration wells before finding a reliable geothermal resource, and sometimes they do not find one at all. Private investors usually cannot mitigate and manage this risk independently.

Given the importance of geothermal in helping Hawai'i meet its firm renewable needs, government support to identify areas of geothermal potential is an appropriate first step towards incentivizing private sector investment and development of state-of-the-art geothermal resources. HB 2105 provides that needed support.

Thank you for the opportunity to testify.



## HOUSE COMMITTEE ON ENERGY AND ENVIRONMENTAL PROTECTION

February 1, 2024, 9:30am

Room 325

### TESTIMONY IN SUPPORT OF HB 2105

Aloha Chair Lowen, Vice Chair Cochran, and Committee members:

Blue Planet Foundation **supports HB 2105**, which directs the Hawai'i State Energy Office to conduct a statewide environmental assessment and administer a slim-hole geothermal resource program under the direction of the Hawai'i Groundwater and Geothermal Resources Center at the University of Hawai'i.

Blue Planet Foundation is a Hawai'i-based nonprofit organization committed to help Hawai'i cut its carbon emissions and avoid the worst impacts of climate change. Through our advocacy for renewable energy, energy efficiency, and clean transportation, we seek to make our communities stronger, our energy more secure, our environment healthier, and our economy more robust.

Hawai'i is fortunate to have a variety of clean energy options to meet our 100% renewable portfolio standards by 2045. While solar and wind energy face challenges of intermittency, geothermal has the potential to provide low-carbon, firm renewable energy—expanding and diversifying our local energy system as we move our islands closer to 100%.

Blue Planet supports research for geothermal for the following reasons:

**Renewable and Sustainable:** Geothermal energy is a renewable resource, meaning it can be replenished naturally over time. In Hawaii, where there is significant volcanic activity, geothermal energy provides a continuous and reliable source of power without relying on finite fossil fuels.

**Stable and Baseload Power:** Geothermal power plants can provide baseload power, meaning they can generate electricity consistently, unlike some other renewable sources like solar and wind, which depend on weather conditions. This stability helps ensure a reliable electricity supply for Hawaii's residents and businesses.

**Reduced Greenhouse Gas Emissions:** Geothermal energy is a low-carbon energy source, emitting minimal greenhouse gases compared to fossil fuels like coal, oil, and

[info@blueplanetfoundation.org](mailto:info@blueplanetfoundation.org)

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natural gas. By utilizing geothermal energy, Hawaii can reduce its carbon footprint and contribute to mitigating climate change.

**Energy Independence:** Harnessing geothermal energy helps reduce Hawaii's dependence on imported fossil fuels for electricity generation. This enhances energy security and resilience by diversifying the energy mix and reducing exposure to volatile fuel prices and supply disruptions.

Achieving Hawaii's ambitious clean energy and resilience goals will require a diverse mix of renewable, local energy sources and types. A statewide environmental assessment is a first step towards identifying where geothermal energy might be located in Hawai'i, as well as providing an initial opportunity for community outreach and engagement.

Thank you for the opportunity to submit testimony in support.



Email: [communications@ulupono.com](mailto:communications@ulupono.com)

HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION  
Thursday, February 1, 2024 — 9:30 a.m.

**Ulupono Initiative supports HB 2105, Relating to Renewable Energy.**

Dear Chair Lowen and Members of the Committee:

My name is Micah Munekata, and I am the Director of Government Affairs at Ulupono Initiative. We are a Hawai'i-focused impact investment firm that strives to improve the quality of life throughout the islands by helping our communities become more resilient and self-sufficient through locally produced food, renewable energy and clean transportation choices, and better management of freshwater resources.

**Ulupono supports HB 2105**, which requires the Hawai'i State Energy Office to conduct a statewide environmental assessment for, and subsequently administer, a slim-hole resource characterization program under the direction of the Hawai'i Groundwater and Geothermal Resources Center at the University of Hawai'i.

Hawai'i needs all viable forms of renewable energy to meet the 100% renewable portfolio standard by 2045. Furthermore, the Hawai'i State Energy Office in its recently published Hawai'i Pathways to Decarbonization Report identifies, among other things, the significant need for additional renewable energy generation to meet broader economy-wide decarbonization goals.<sup>1</sup> Wind and solar alone are not enough. Firm sources, such as geothermal, will also be necessary. Hawai'i also faces many competing demands for available land, and geothermal projects use the least amount of land per megawatt of renewable power produced. As reported by Hawai'i Public Radio in 2019, “[r]esearch recently presented by graduate student Ted Brennis with the [Hawaii Groundwater and Geothermal Resources Center](#) indicates that where resources are available, geothermal is competitive with wind and solar on both cost and land use.”<sup>2</sup>

Most residents seem to believe the Big Island is the only place in which geothermal energy can be commercially produced, and yet that assumption has never been thoroughly researched

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<sup>1</sup> Hawai'i Pathways to Decarbonization Act 238, Session Laws of Hawai'i 2022, Report to the 2024 Hawai'i State Legislature December 2023. [https://energy.hawaii.gov/wp-content/uploads/2024/01/Act-238\\_HSEO\\_Decarbonization\\_Report.pdf](https://energy.hawaii.gov/wp-content/uploads/2024/01/Act-238_HSEO_Decarbonization_Report.pdf)

<sup>2</sup> <https://www.hawaiipublicradio.org/local-news/2019-07-25/unexplored-geothermal-potential-may-offer-solution-to-renewables-reliability-problem>. Report cited can be found at <https://www.higp.hawaii.edu/hggrc/wp-content/uploads/2019/07/Brennis-Ted-2019.07.23-Thesis-Presentation.pdf>.

*Investing in a Sustainable Hawai'i*



and confirmed. Ulupono supports the work of the Hawai'i Groundwater and Geothermal Resources Center, to further the discovery and development of geothermal resources. This bill will dedicate resources to the staffing and field work necessary for geothermal research into its potential.

Thank you for the opportunity to testify.

Respectfully,

Micah Munekata  
Director of Government Affairs



[www.sustainableenergyhawaii.org](http://www.sustainableenergyhawaii.org)

January 31, 2024

## **STRONG SUPPORT FOR HB2105 – RELATING TO RENEWABLE ENERGY**

Aloha Chair Lowen, Vice Chair Cochran, and Members of the Committee,

**Sustainable Energy Hawai'i (SEH) supports HB2105.**

**Hawai'i has unique resources that, properly utilized will contribute to the State's energy independence and economic resilience, and enable social equity. Importantly, these can allow our State to contribute significantly to critical climate action. HB2105 will help fund efforts to help us properly utilize these resources.**

We have groundwater resources that can sustain our people and support our industry. We have access to a geologic hot spot that can provide our state with energy – electricity and fuels – for generations. We have the geology to enable Hawai'i to contribute to complement our nature-based carbon sequestration and accelerate the draw-down of legacy carbon pollution.

These opportunities are well-known to our institutions, including the Hawai'i Groundwater and Geothermal Resources Center. Their researchers have conducted initial studies on the deep groundwater and heat resources in Hawai'i and have found evidence of water that can quench even the most arid areas and geothermal potential far from the rift zone on Hawai'i Island.

Furthermore, research is progressing on the potential to store carbon in basalt found on our islands, particularly Hawai'i Island. Our ability to properly capture and store legacy carbon in basalt offers not only the opportunity to help reduce planet-warming emissions but also has the potential to generate economic benefit<sup>1</sup>. There are significant incentives for the capture and storage of carbon dioxide.

However, this process is challenging. It will require a significant energy commitment, the right technology, community acceptance and sufficient investment. There are also critical considerations:

- Carbon capture must not hamper our efforts to deliver affordable, clean electricity for our people.
- It must not delay our goal to decarbonize electricity.
- It must not prolong our dependence on fossil fuel imports.

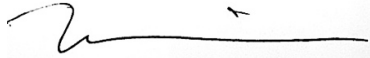
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<sup>1</sup> <https://climate.mit.edu/ask-mit/how-much-captured-co2-worth>

**More must be done to fully understand the various environmental, cultural, and economic considerations before we can realize the benefits of our groundwater, geothermal, and basaltic carbon capture opportunities. HB2105 will enable this understanding by investing in the efforts of the Hawai'i Groundwater and Geothermal Resources Center.**

Please support HB2105.

Thank you for the opportunity to testify,



Noel Morin

Chair, Board of Directors

Sustainable Energy Hawai'i

[noel@sustainableenergyhawaii.org](mailto:noel@sustainableenergyhawaii.org)

*Sustainable Energy Hawai'i is a 501(c)3 non-profit dedicated to improving the quality of life for Hawai'i residents. Our mission is to enable an economic, social, and environmental revival in Hawai'i through a just transition to sustainable, locally sourced renewable energy and, to that end, the creation of a thriving clean hydrogen economy.*



**HB-2105**

Submitted on: 1/29/2024 5:15:10 PM

Testimony for EEP on 2/1/2024 9:30:00 AM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Douglas Perrine	Individual	Support	Written Testimony Only

Comments:

I support HB2105. Hawaii's best chance of developing firm carbon-free energy sources is through geothermal. The single producing geothermal facility in the state is located in an active volcanic rift zone, which puts it at risk during eruptions (as was demonstrated in 2018). Hawaii should be moving full speed ahead with exploring for geothermal resources in more stable areas, and at locations a safe distance from human habitations. Further characterization of our water resources is also important.

**HB-2105**

Submitted on: 1/30/2024 5:31:31 PM

Testimony for EEP on 2/1/2024 9:30:00 AM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Virginia Tincher	Individual	Support	Written Testimony Only

Comments:

I support HB2105. Geothermal energy is an importance contribution to our energy independence.

Mahalo for introducing this bill.

Virginia

**HB-2105**

Submitted on: 1/30/2024 11:26:43 PM

Testimony for EEP on 2/1/2024 9:30:00 AM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Alice Kim	Individual	Support	Written Testimony Only

Comments:

As the State of Hawai‘i should encourage geothermal and groundwater exploration and carbon sequestration, I strongly support HB 2105.

As Hawai‘i is the only U.S. state without an official geological survey, the University of Hawai‘i (UH) contributed a bulk of what we know about Hawai‘i’s geology. Since producing Hawai‘i’s first geothermal well (HGP-A) in the 1970s, UH has led Hawai‘i’s geothermal research. From the 1980s to now, UH contributed to two statewide geothermal resource assessments.

As a UH research unit, the Hawai‘i Groundwater and Geothermal Resources Center (HGGRC) is well equipped for geothermal exploration. Through HGGRC, the state’s most prominent earth scientists are researching Hawai‘i’s geothermal and groundwater resources. HGGRC obtained land access for research from dozens of landowners across the state. For research equipment, HGGRC has access to \$1 million worth of geophysical equipment and a \$3 million drill rig.

HGGRC is now exploring carbon sequestration with Hawai‘i’s basaltic rocks, which make up almost all of Hawai‘i’s land mass. As the first organization in Hawai‘i to conduct this research, HGGRC is collaborating with research institutions outside of Hawai‘i. One of the institutions, Lawrence Berkeley National Laboratory, has already developed considerable expertise in this type of carbon sequestration.

This project will involve geotechnical and hydrological research, engineering, and application and may bring the state to net zero or negative carbon emissions. The project will improve the understanding of Hawai‘i’s groundwater resources and will promote the state’s sustainability goals.

HGGRC has also provided students and new professionals hands-on research experiences and education. Over the years, HGGRC sponsored employment of dozens of employees, and HGGRC scientists provided academic advising for undergraduate and graduate students.

Please invest in developing Hawai‘i’s geothermal and groundwater resources and knowledge of carbon dioxide storage and mineralization in Hawaiian basalt. We must also invest in highly skilled, educated professionals and infrastructure for Hawai‘i’s future livelihood and sustainability. Please support HB 2105.

Statement of  
**Peter Sternlicht**  
Involved Stakeholder  
**House Committee on Energy & Environmental Protection**  
1 February 2024  
9:30 am  
State Capitol Conference Room #325  
In consideration of **HB2105**  
**Relating to Renewable Energy**  
Chair Lowen  
Vice Chair Cochran and Distinguished Committee Members:

January 31, 2024

I stand in strong support of this bill.

To generate the volume of electricity that will be needed to replace what we use today, to electrify our transportation fleet, supply fresh water to our population and to pursue all economically viable options to decarbonize our community, it is our responsibility become knowledgeable about our state's groundwater & geothermal resources.

Relating specifically to power generation, Hawaii needs baseload power to support its transition away from fossil fuels. Solar, wind, and batteries cannot provide the energy security we need to meet the demands the electrification of our economy requires. Geothermal power is one of the few options that can deliver baseload, dispatchable, firm power to our grid. To allow informed decision making in the future, I strongly encourage you to pass this legislation.

Peter Sternlicht  
Pepeekeo, HI 96783

**HB-2105**

Submitted on: 1/31/2024 9:02:42 AM

Testimony for EEP on 2/1/2024 9:30:00 AM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Richard Ha	Individual	Support	Written Testimony Only

Comments:

Aloha Chair Lowen

Desmon Haumea, Kanani Aton and Richard Ha very strongly support geothermal and water exploration funding for HGGRC.

We represent Keoki and Malia.Org., whose mission is to make life better for future generations of Keoki' and Malia's.

Since Hawai'i Island will be located over the "hot spot" for 1-2 million years and the rising steam is free. Generating electricity will become more competitive over time as finite energy sources and rare earth metals and minerals for batteries rise in cost.

in addition, Artificial Intelligence will utilize great amounts of electricity as we move into the future, giving Keoki's and Malia's added advantages.

We must do the best we can with the resources available to us. We are their ancestors!

Aloha

Richard Ha

Keoki and Malia. Org.

**HB-2105**

Submitted on: 1/31/2024 10:04:21 AM

Testimony for EEP on 2/1/2024 9:30:00 AM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Keith Neal	Individual	Support	Written Testimony Only

Comments:

**Aloha Chair Lowen and members of the EEP**

**I strongly support HB2105**

**Hawaii must develop it's abundant, ubiquitous geothermal energy resource that is available on every island. Geothermal energy is always available around the clock, around the year, and just below our feet.**

**The oil market shocks of the Ukraine invasion is a warning that Hawaii must become energy sovereign and resilient. While continuing to add wind and solar generation, Hawaii must urgently develop geothermal energy resources. Current blackouts exemplify the need to develop 24 X 7 X 365 local geothermal energy.**

**Should Hawaii agencies or universities are unable to respond urgently to subsurface geothermal development please seeks out the expertise of the following:**

**Eavor Inc.  
475 Washington Blvd  
Marina del Ray, CA 90292  
1 (650) 690-8759  
[info@eavor.com](mailto:info@eavor.com)**

**Thank you for consideration,**

**Keith Neal**

**Waimea**

January 31, 2024

Testimony for HB 2105 Relating to REWEWABLE ENERGY

He Mele komo a he mele aloha no na kupuna o ke au i hala Aloha mai kakou.

Aloha,

My name is Cindy Freitas and I'm a Native Hawaiian descended of the native inhabitants of Hawai'i prior to 1778 and born and raised in Hawai'i.

I am also a practitioner who still practice the cultural traditional customary practices that was instill in me by my grandparents at a young age from mauka (MOUNTAIN TO SEA) to makai in many areas.

I'm in OPPOSITION to HB 2105 for the following reasons:

This Slim hole resource to identifies underground gedthermal and carbon sequestration resources across the State is unacceptable.

In view of the Hawaii State Supreme Court's " PASH" and " Ka Pa' akai O Ka 'Aina" decisions, the issue relative to native Hawaiian gathering and fishing rights must be addressed. These rights must be addressed in terms of the cultural, historical, and natural resources and the associated traditional and customary practices of the site.

Act 50, enacted by the Legislature of the State of Hawaii (2000) with House Bill 2895, relating to Environmental Impact Statements, proposes that: ...there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawai'i's culture, and traditional and customary rights... [H.B. NO. 2895].

Act 16, enacted by the Legislature of the State of Hawaii (2020) with S.B. No. 2060

Section 3; (2) Historic resources;

(A) Protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Therefore HB 2105 should not pass to do unforeseen issues with Hawaiian cultural.

Mahalo,

\_\_\_\_\_/s/\_\_\_\_\_  
Cindy Freitas

**HB-2105**

Submitted on: 1/31/2024 11:36:57 PM

Testimony for EEP on 2/1/2024 9:30:00 AM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Cory Harden	Individual	Comments	Written Testimony Only

Comments:

Aloha legislators,

Please require that any geothermal development avoid the impacts of past projects: hazardous hydrogen sulfide emissions, day-and-night drilling noise, lack of emergency planning, and vulnerabilty to disruption by lava flows and changes in conditions underground.

mahalo, Cory Harden