

HAWAII STATE ENERGY OFFICE STATE OF HAWAII

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Testimony of
MARK B. GLICK, Chief Energy Officer

before the
SENATE COMMITTEE ON ENERGY AND INTERGOVERNMENTAL AFFAIRS

January 28, 2025
3:15 PM
State Capitol, Conference Room 016 and Videoconference

In Support of
SENATE BILL NO. 1068

RELATING TO RENEWABLE ENERGY.

Chair Wakai, Vice Chair Chang, and members of the Committee, I am writing in support of Senate Bill 1068 which requires Hawai'i State Energy Office (HSEO) to conduct a statewide environmental assessment for, and subsequently administer, a Slim-Hole Resource Characterization Program, including required reports to the Legislature and appropriates funding.

HSEO supports SB1068 in its similarity to the Green Administration's preferred bill on slim-hole resource characterization research, SB1339. Both bills amend chapter 196 HRS to include a carbon sequestration and underground water resource characterization program conducted by HSEO, including a statewide environmental assessment and meetings with nearby counties and communities. In addition, both bills require HSEO to submit a progress report, findings, and any proposed legislation to the legislature. In SB1339, HSEO requests \$16,500,000 for fiscal years 2025-2026 and the same sum for fiscal years 2026-2027 to most effectively carry out this program. In addition, SB1339 also includes HSEO's request for \$135,000 for fiscal year 2025-2026 and the same sum for fiscal year 2026-2027 to support one full-time equivalent permanent position to be dedicated to support this program. HSEO finds geothermal essential to Hawai'i's energy self-sufficiency. Foundational to this is the slim-hole research of water resources, and where hot water, sufficient to power electricity generation, may be present in key areas throughout the state. This program will also deliver core samples that may reveal the potential for carbon sequestration.

In 2023, 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.

As a key part of Hawai‘i’s energy strategy, HSEO seeks the State’s investment in a minimum of three slim-hole research wells on each of the Hawai‘i, Maui, and O‘ahu islands in specific geological formations where the potential for such water resources exist. Such resources are proven to exist in the Puna District on Hawai‘i island and research by the Hawai‘i Groundwater and Geothermal Resource Center to date indicates the potential exists throughout the Hawaiian Islands, but the precise locations are currently unknown.

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.

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. Therefore, it is appropriate for the State to provide this initial step in identifying potential specific resource locations that will be necessary for private sector capital to make any subsequent large-scale investments via independent power producers bidding on renewable projects under the Integrated Grid Plan’s procurement process.

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 that can help Hawai‘i, Maui, and O‘ahu meet its 100 percent renewable electricity statutory objectives. Concurrently, HSEO has already put into place necessary funding and put community-based organizations under contract to engage energy stakeholders at the community level during 2025 and beyond to gain insight on how and where geothermal development can appropriately take place in ways that meaningfully benefit the affected communities. SB1068, or the preferred SB1339, provides the impetus towards the ultimate goal of stimulating private sector investment to ensure safe, reliable, acceptable, and affordable firm renewable energy throughout Hawai‘i.

Thank you for the opportunity to testify.



**Hawaiian
Electric**

**TESTIMONY BEFORE THE COMMITTEE ON ENERGY AND
INTERGOVERNMENTAL AFFAIRS**

**SB 1068
Relating to Renewable Energy**

Tuesday, January 28, 2025
3:15pm
State Capitol, Conference Room 016

Rebecca Dayhuff Matsushima
Vice President, Resource Procurement
Hawaiian Electric

LATE

Dear Chair Wakai, Vice Chair Chang, and Members of the Committee,

My name is Rebecca Dayhuff Matsushima and I am testifying on behalf of Hawaiian Electric in **support** of SB 1068, which seeks to have the Hawaii state energy office conduct a statewide environmental assessment for and administer a slim-hole resource characterization program that identifies the location and characteristics of underground geothermal and carbon sequestration resources across the State.

Hawaiian Electric supports the implementation of a slim-hole resource characterization program that identifies the location and characteristics of underground geothermal and carbon sequestration resources across the State. Furthering the research of underground geothermal and carbon sequestration resources as a means to help accelerate the development of renewable energy projects will support the State's Renewable Portfolio Standards requirements, reduce reliance on imported fossil fuels, stabilize and reduce volatility of customers' bills, and reduce greenhouse gas emissions.

Hawaiian Electric defers to policy makers and those impacted on the appropriateness of funding allocations stipulated in the bill, yet generally supports the intent of identifying the State's geothermal resources and renewable energy potential.

Thank you for this opportunity to testify in support of SB 1068.



Email: communications@ulupono.com

SENATE COMMITTEE ON ENERGY & INTERGOVERNMENTAL AFFAIRS
Tuesday, January 28, 2025 — 3:15 p.m.

Ulupono Initiative strongly supports SB 1068, Relating to Renewable Energy.

Dear Chair Wakai and Members of the Committee:

My name is Mariah Yoshizu, and I am the Government Affairs Associate 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 strongly supports SB 1068, which requires the Hawai'i State Energy Office to conduct a statewide environmental assessment for, and subsequently administer, a Slim-Hole Resource Characterization Program.

Hawai'i needs all viable forms of renewable energy to meet the 100% renewable portfolio standard by 2045. New data underscores the widespread support among residents for this transition. Between October 2023 and January 2024, Ulupono Initiative partnered with Anthology Research to conduct a statewide public opinion survey on energy in Hawai'i involving 1,985 surveys across all four counties. With a margin of error +/- 2.21%, this is arguably the most extensive and comprehensive study on the topic to date. The findings are compelling.

A staggering 91% of respondents expressed their support for the expansion of renewable energy resources throughout the islands. Moreover, the importance of developing Hawai'i's own energy resources was emphasized across all counties by the residents. This resounding endorsement from the community validates the strong support for continued investment and advancement in renewable energy solutions to meet our collective energy goals.

SB 1068 is a forward-looking initiative that prioritizes scientific research and environmental stewardship. By identifying geothermal and carbon sequestration resources, this measure supports Hawai'i's broader goals of achieving energy resilience and combating climate change. Resource characterization through slim-hole bores offers a minimally invasive method for gathering critical data, ensuring that these activities are conducted responsibly and with minimal environmental disruption. This approach reflects a commitment to balancing energy

Investing in a Sustainable Hawai'i

development with environmental protection.

The bill also emphasizes robust community engagement, which is essential for building trust and ensuring that local concerns and priorities are considered throughout the program. Engaging with counties, individuals, and civic organizations allows for the incorporation of valuable insights, ensuring the program aligns with community needs and aspirations. This commitment to collaboration can foster public support, create opportunities for education about renewable energy and carbon sequestration, and pave the way for sustainable resource management. Effective community engagement has been shown to enhance the success of similar initiatives by promoting transparency and inclusivity.

Finally, the legislation's provision for progress and final reports to the legislature, as well as making findings publicly accessible, highlights its dedication to accountability and knowledge-sharing. The use of mapping software and publicly available data ensures that the information gathered will be a resource for policymakers, researchers, and the public. This transparency will strengthen public confidence in the program and provide a foundation for informed decision-making. The proposed funding and staffing allocations are essential to make certain that the program is adequately supported, enabling Hawai'i to advance its renewable energy and sustainability goals effectively for the benefit of its residents.

Thank you for the opportunity to testify.

Respectfully,

Mariah Yoshizu
Government Affairs Associate

Beneath the Surface: Support for Geothermal Energy Emerges as Residents See Direct Benefits

For Hawai'i to provide secure, resilient and sustainable electricity for its residents and businesses, we need a diverse mix of renewable energy sources. Geothermal energy can play a greater, vital role in helping our state achieve our renewable and decarbonization goals.

Geothermal Benefits

RELIABLE

Unlike other renewables like solar and wind, geothermal provides firm power – meaning it can generate electricity consistently, day or night, regardless of weather conditions. This reliability makes it invaluable in ensuring a stable and continuous energy supply, especially since the electric grids serving each island are not interconnected.

SMALL FOOTPRINT

According to the U.S. Department of Energy, a geothermal facility is much smaller in size than a fossil-fuel coal plant or a solar farm. For a land-constrained place like Hawai'i, the footprint of a structure significantly affects its community and residents.

ENVIRONMENTAL BENEFITS

Over its lifetime, a modern geothermal plant produces among the lowest greenhouse gas emissions of any energy source and typically uses less water compared to most other power generation technologies.

Geothermal in Hawai'i

With only one geothermal energy plant on Hawai'i Island, the state's geothermal potential remains largely untapped, highlighting the need for increased exploration, funding, and communication efforts to understand this resource. In addition, investing in locally produced geothermal energy can ensure that the economic benefits of this sustainable power source remain within the state, contributing to a more resilient and self-sufficient energy future.



Public Perception of Geothermal

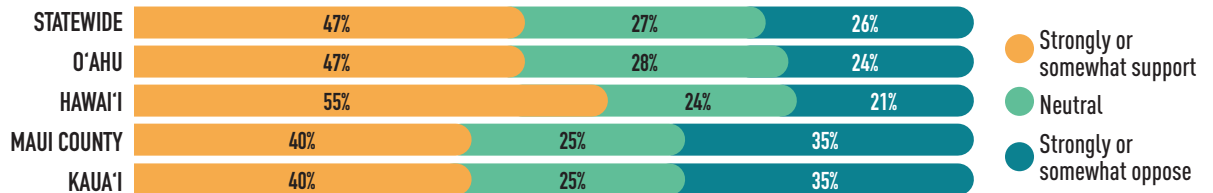


In 2023, Ulupono Initiative commissioned what is believed to be the most extensive and complete public opinion survey on the topic of energy in Hawai'i. The survey was designed to rank how residents perceive various forms of energy technologies, including geothermal.

Overall, 91% of respondents say they support the expansion of renewable energy resources in Hawai'i. Below are some highlights from the geothermal-specific survey questions.

QUESTION: *In general, how do you feel about a utility-scale geothermal power plant as a way to generate electricity on ...?*

- 47% of respondents say they strongly or somewhat support geothermal energy
- Hawai'i Island is the most supportive of utility-scale geothermal plant in their town



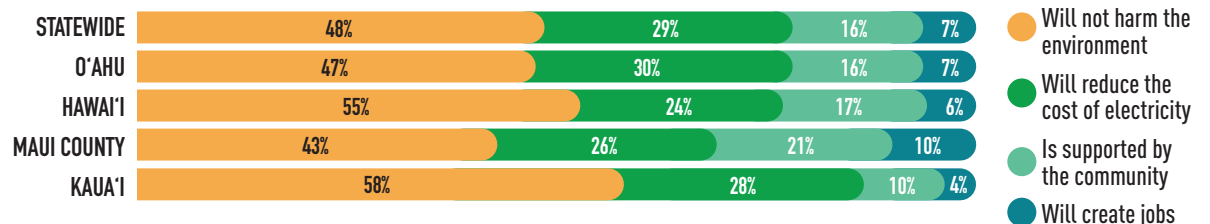
QUESTION: *How would you feel about a utility-scale geothermal power plant being built in your town/community if it meant your electricity bill would be, at least \$30/\$65/\$98 lower each month?*

- Support for geothermal rises dramatically when potential electricity bill savings increase

		SUPPORT PERCENTAGE INCREASE				
SAVINGS PER MONTH		STATEWIDE	O'AHU	HAWAI'I	MAUI COUNTY	KAUAI
	\$30	+19%	+36%	+21%	+18%	+21%
	\$65	+30%	+29%	+32%	+30%	+31%
	\$98	+35%	+36%	+40%	+34%	+40%

QUESTION: *Which one of the following is most important to you in deciding whether to support a utility-scale geothermal plant in your town/community?*

- Environmental impact was the most important factor in support of geothermal



Resources

To learn more about Ulupono Initiative's Energy Survey and geothermal, see below:

Ulupono Initiative's Energy Survey

ulupono.com/project-list/statewide-energy-survey/

Hawai'i State Energy Office

energy.hawaii.gov/what-we-do/energy-landscape/renewable-energy-resources/

U.S. Department of Energy

www.energy.gov/eere/geothermal/geothermal-basics



Scan QR code for link to survey results online.



Sustainable Energy Hawai'i

sustainableenergyhawaii.org
noel@sustainableenergyhawaii.org

January 27, 2025

SUPPORT for SB1068 - RELATING TO RENEWABLE ENERGY

Dear Chair Wakai, Vice Chair Chang, and Committee members.

I'm testifying on behalf of **Sustainable Energy Hawai'i**, a 501(c)(3) non-profit dedicated to improving the quality of life for Hawaii Island residents. Our mission is to enable an economic, social, and environmental revival in Hawaii through a just transition to sustainable, 100% locally sourced renewable energy and the creation of a thriving clean hydrogen economy.

Sustainable Energy Hawai'i supports SB1068, which requires *'Requires the Hawai'i State Energy Office to conduct a statewide environmental assessment for, and subsequently administer, a Slim-Hole Resource Characterization Program. Requires reports to the Legislature. Appropriates funds.'*

This measure will fund much-needed and belated research to help Hawaii understand the nature of our heat and carbon sequestration potential and build upon the body of knowledge already assembled by the UH Hawaii Groundwater and Geothermal Resource Center (HGGRC).

Clearly, we **MUST** aggressively transition our economy to locally generated clean energy resources to eliminate our dependence on energy imports. Achieving this independence will allow Hawaii to be more resilient, avoid the export of our capital, and establish new industries. A key energy resource is geothermal. Evidence [\[1\]](#) shows that this resource can be found in locales throughout the state and not just in the rift zones on Hawaii Island. Thus, geothermal energy production might be possible in other locations on Hawaii Island and across Hawaii.

Sustainable Energy Hawaii recommends that SB1068 explicitly calls out the HGGRC to execute this exploration (and to fund the effort). This will allow us to maximize the research conducted to date, the expertise and materials relevant to the exploration, and expedite the characterization effort.

SB1068 will enable critical research into our geothermal resources and speed our transition to a clean and sustainable energy future. Please pass this SB1068.

Thank you for this opportunity to testify.
Respectfully,

Noel Morin, Chairman, Board of Directors and on behalf of the Sustainable Energy Hawai'i Board of Directors: Peter Sternlicht – Treasurer | Kanani Aton – Secretary | David De Luz – Director | Desmon Haumea – Director | Jerry Chang - Director | Stanley Osserman - Director

[\[1\] Assessing Hawai'i's Geothermal Potential](https://research.hawaii.edu/noelo/assessing-hawaiis-geothermal-potential/) - <https://research.hawaii.edu/noelo/assessing-hawaiis-geothermal-potential/>

SB-1068

Submitted on: 1/26/2025 1:14:07 PM

Testimony for EIG on 1/28/2025 3:15:00 PM

Submitted By	Organization	Testifier Position	Testify
Alice Kim	Individual	Support	Written Testimony Only

Comments:

Currently, the Kilauea East Rift Zone on Hawaii Island is the only geothermal system in the Hawaiian archipelago from which geothermal electric power is being produced. Preliminary research by the Hawaii Groundwater and Geothermal Resources Center at the University of Hawaii at Manoa shows that all of the major Hawaiian Islands hold geothermal potential and that much of Hawaii's geothermal resources is unknown. Please support SB 1068.

SB-1068

Submitted on: 1/26/2025 3:43:44 PM

Testimony for EIG on 1/28/2025 3:15:00 PM

Submitted By	Organization	Testifier Position	Testify
Keith Neal	Individual	Support	Written Testimony Only

Comments:

Dear Chairman Wakai, Vice Chairman Chang and members of the Committee.

I strongly support SB1068.

There are only two technologies that provide firm, baseload power; Geothermal and nuclear.

The Geothermal resource is available, on all Hawaii islands. However, we don't have the necessary subsurface geological data to develop the geothermal resource. We must get the data!

This bill is critical to the work needed to develop our abundant, local, clean energy resource.

Furthermore, I recommend that the bill be amended to specify that the Hawaii Groundwater and Geothermal Resource Center (HGGRC) at the University of Hawaii, Manoa be identified as the organization performing the Slim-Hole subsurface characterization and only to be administratively supervised by the Hawaii State Energy Office (HSEO). We have expertise within the University of Hawaii, at Manoa. I strongly urge the legislature appropriate funds to research entities with proven scientific expertise in Hawaii.

Respectfully submitted,

Keith Neal

Waimea

Statement in Support of SB1068
Peter Sternlicht. An individual resident of Hawai'i Island

COMMITTEE ON ENERGY AND INTERGOVERNMENTAL AFFAIRS

Senator Glenn Wakai, Chair
Senator Stanley Chang, Vice Chair

Dear Chairman Wakai, Vice Chairman Chang and members of the Committee,

Energy is the master resource. All economic activity depends upon its availability and its affordability. For these reasons and more, I strongly support SB1068.

We now know that firm, dispatchable and baseload power is needed to effectively decarbonize Hawaii's electrical grid. There are only two technologies that are suited to provide that type of energy: Geothermal and nuclear.

Our first commercial development came online 30 years ago. It is reasonable to believe there is more opportunity than that one site. In fact, we may have geothermal resources available to us statewide yet 30 years later we still don't have the data needed to derisk rational investment in this much needed resource. This bill is an opportunity to finally gather the critical data needed to further Hawaii's energy sovereignty.

Additionally, I suggest that the bill be amended to specify that the Hawaii Groundwater and Geothermal Resource Center (HGGRC) at the University of Hawaii, Manoa be the entity executing the Slim-Hole Resource Characterization under the administrative oversight of the Hawaii State Energy Office (HSEO). We have the expertise within the confines of our state's highest level educational institution. I strongly believe it is the responsibility of the legislature to ensure that any funds appropriated are directed toward research entities with proven scientific expertise in Hawaiian geology.

Respectfully,

Peter Sternlicht
Pepeekeo, HI 96783