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Testimony of
MARK B. GLICK, Chief Energy Officer

before the
HOUSE COMMITTEE ON ENERGY AND ENVIRONMENTAL PROTECTION

February 4, 2025

9:00 AM

State Capitol, Conference Room 325 and Videoconference

In Support of
HOUSE BILL NO. 349

RELATING TO RENEWABLE ENERGY.

Chair Lowen, Vice Chair Perruso and members of the Committee, I am writing in support of House Bill No. 349 which requires Hawai'i State Energy Office (HSEO) conduct a statewide environmental assessment for, and subsequently administer, a Slim-Hole Resource Characterization Program, including required reports to the Legislature and appropriate funding.

Hawai'i State Energy Office (HSEO) supports HB349 in its similarity to the Green Administration's preferred bill on slim-hole resource characterization research, HB1020. 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 HB1020 HSEO requests \$16,500,000 for fiscal years 2025-2026 and the same sum for fiscal years 2026-2027 to carry out this program. In addition, HB1020 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 better understanding of where hot water, sufficient to power electricity generation,

resides throughout the state. This program will also identify water resources and 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. The ultimate goal is to stimulate private sector investment to ensure safe, reliable, and affordable firm renewable energy throughout Hawai'i.

Accordingly, HSEO seeks state funding as a critical first step in understanding how Hawai'i's greatest firm renewable energy source could help Hawai'i, Maui, and O'ahu islands meet their RPS goals.

Concurrently, HSEO is engaging 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.

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 and necessary 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. HB1020 or HB349 provide that needed support.

Thank you for the opportunity to testify.



**TESTIMONY BEFORE THE HOUSE COMMITTEE ON
ENERGY & ENVIRONMENTAL PROTECTION**

**HB 349
Relating to Renewable Energy**

Tuesday, February 4, 2025
9:00am
State Capitol, Conference Room 325

Greg Shimokawa
Director, Renewable Acquisition
Hawaiian Electric

Dear Chair Lowen, Vice Chair Perruso, and Members of the Committee,

My name is Greg Shimokawa and I am testifying on behalf of Hawaiian Electric in support of HB 349, 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 HB 349.



Email: communications@ulupono.com

HOUSE COMMITTEE ON ENERGY AND ENVIRONMENTAL PROTECTION
Tuesday, February 4, 2025 — 9:00 a.m.

Ulupono Initiative strongly supports HB 349, Relating to Renewable Energy.

Dear Chair Lowen 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 HB 349, which requires the Hawai'i State Energy Office (HSEO) 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.

This bill 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

Attachment

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

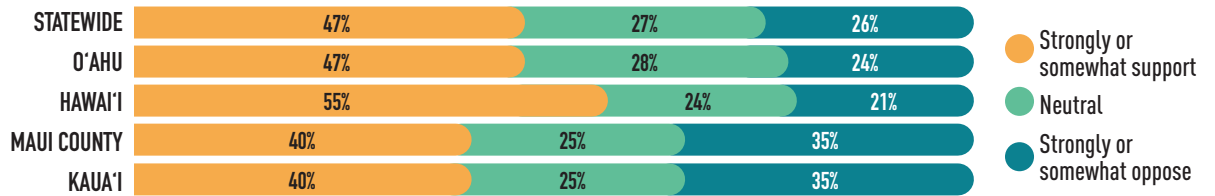


In 2023, Ulupono Initiative commissioned what is believed to be the most extensive and complete public opinion survey on the topic of energy in Hawai'i. The survey was designed to rank how residents perceive various forms of energy technologies, including geothermal.

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?*

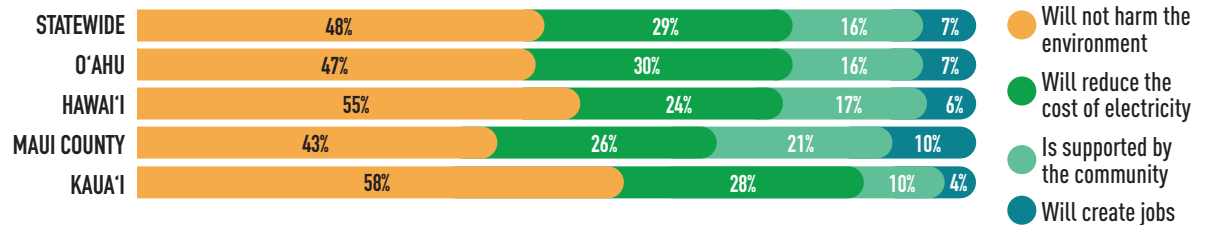
- Support for geothermal rises dramatically when potential electricity bill savings increase

SUPPORT PERCENTAGE INCREASE

	STATEWIDE	O'AHU	HAWAI'I	MAUI COUNTY	KAUA'I
\$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/



Scan QR code for link to survey results online.

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

HB-349

Submitted on: 1/28/2025 8:33:54 PM

Testimony for EEP on 2/4/2025 9:00:00 AM

Submitted By	Organization	Testifier Position	Testify
Andrew Crossland	Individual	Oppose	Written Testimony Only

Comments:

I STRONGLY OPPOSE this unnecessary Bill. I urge all members of the Committee to **VOTE NO** on this Bill.

HB-349

Submitted on: 1/29/2025 9:00:57 AM

Testimony for EEP on 2/4/2025 9:00:00 AM

Submitted By	Organization	Testifier Position	Testify
Lisa Bishop	Individual	Support	Written Testimony Only

Comments:

I support exploration of geothermal potential as a renewable source of energy in Hawaii.

HB-349

Submitted on: 2/1/2025 10:55:29 AM

Testimony for EEP on 2/4/2025 9:00:00 AM

Submitted By	Organization	Testifier Position	Testify
Flormelyn Ruaburo	Individual	Support	Written Testimony Only

Comments:

Testimony in Strong Support of HB 439
International Visiting Teacher License

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

My name is Flormelyn, and I am a parent of a student at Lāna‘i High & Elementary School. I am writing in strong support of HB 439, which would create an International Visiting Teacher License. As a parent, I have seen firsthand the positive impact that international teachers have on my child’s education and overall school experience.

The international teachers at my child’s school bring unique perspectives, teaching methods, and cultural knowledge that enrich the learning environment. They foster curiosity, global awareness, and a deeper appreciation for diversity among students. My child has benefited not only academically but also personally by learning from teachers who bring experiences from different parts of the world. Their dedication, patience, and passion for teaching have helped students build confidence, stay engaged, and develop a love for learning.

HB 439 is essential because it allows these amazing teachers to stay in Hawai‘i for up to five years if licensed, ensuring continuity and stability in the classroom. Students thrive when they have consistent, caring educators who understand their needs, and this bill will help retain the international teachers who have already formed strong connections with their students and school communities.

Additionally, this bill ensures fairness by granting international teachers equal pay for equal work. These educators have the same responsibilities and workload as their local counterparts, and they deserve access to differentials that recognize their qualifications. They have already proven their expertise through internationally recognized credentials and years of experience, and they should not have to take costly and unnecessary Praxis exams just to continue teaching here. Instead of facing bureaucratic hurdles, they should be able to focus on what truly matters—supporting our students and improving our schools.

Hawai‘i is experiencing a teacher shortage, and schools, especially in rural communities like Lāna‘i, need dedicated educators now more than ever. The international teachers who have stepped in to fill these gaps have become invaluable members of our school community, and losing them due to licensing barriers would be a disservice to our children.

As a parent, I want the best possible education for my child. That means keeping passionate, highly qualified teachers in the classroom. I urge you to support HB 439 so that our schools can continue to benefit from the dedication, experience, and cultural diversity that international educators bring.

Mahalo for your time and consideration.

Sincerely,
Flormelyn Ruaburo
Parent of a Student at Lānaʻi High & Elementary School

HB-349

Submitted on: 2/1/2025 2:24:10 PM

Testimony for EEP on 2/4/2025 9:00:00 AM

Submitted By	Organization	Testifier Position	Testify
Aurora Raqueño	Individual	Support	Written Testimony Only

Comments:

Testimony in Strong Support of HB 439
International Visiting Teacher License

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

My name is Aurora, and I am a proud member of the Lāna‘i community. I am writing in strong support of HB 439, which would establish an International Visiting Teacher License. As a community member, I have witnessed the invaluable contributions that international teachers bring to our schools, students, and overall community.

Education is the foundation of a strong and thriving community, and our schools rely on dedicated, passionate teachers to shape the future of our keiki. The international teachers who have come to Lāna‘i are not just educators; they are mentors, role models, and community builders. They bring fresh perspectives, innovative teaching methods, and cultural diversity that broaden our students’ understanding of the world beyond our island.

HB 439 is critical because it allows these hardworking teachers to stay in Hawai‘i for up to five years if licensed, providing much-needed stability for both students and schools. In small communities like ours, teacher retention is a challenge, and losing qualified educators due to unnecessary licensing barriers only makes it harder for our schools to provide consistent, high-quality education.

This bill also ensures fairness by granting international teachers equal pay for equal work. These educators carry the same responsibilities as local teachers, and their credentials, experience, and dedication should be recognized with proper compensation. Additionally, requiring them to take costly and burdensome Praxis exams—despite already holding internationally recognized degrees and certifications—creates unnecessary obstacles that discourage talented educators from staying in Hawai‘i. Instead of focusing on bureaucratic hurdles, they should be able to concentrate on what truly matters: teaching our keiki and contributing to our community.

Hawai‘i is already facing a teacher shortage, and in rural areas like Lāna‘i, the presence of international teachers has been a lifeline for our schools. They have stepped in to fill critical vacancies, formed strong connections with students, and helped create a positive and inclusive learning environment. Their dedication extends beyond the classroom—they participate in school events, engage with families, and become an integral part of our island community.

Passing HB 439 is not just about licensing—it is about ensuring that our children continue to receive the best education possible. It is about valuing the educators who have committed themselves to Hawai‘i’s schools and communities. I strongly urge you to support this bill and give international teachers the opportunity to continue making a difference in the lives of our students.

Mahalo for your time and consideration.

Sincerely,
Aurora Raqueño
Community Member, Lāna‘i

HB-349

Submitted on: 2/1/2025 11:50:21 AM

Testimony for EEP on 2/4/2025 9:00:00 AM

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 (HGGRC) 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. HGGRC should execute the Slim-Hole Resource Characterization under the administrative oversight of the Hawaii State Energy Office HSEO. Doing so will enable the State to further benefit from HGGRC's research and expertise.

Statement in Support of HB349
Peter Sternlicht. An individual resident of Hawai'i Island

COMMITTEE ON ENERGY AND ENVIRONMENTAL PROTECTION
Rep Nicole Lowen, Chair
Rep Amy A. Perruso, Vice Chair

Dear Chairman, Lowen, Vice Chairman, Perruso 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 HB349.

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