



UNIVERSITY OF HAWAII SYSTEM

‘ŌNAEHANA KULANUI O HAWAII

Legislative Testimony

Hō'ike Mana'o I Mua O Ka 'Aha'ōlelo

Testimony Presented to the
Senate Committee on Ways and Means
Friday, March 3, 2023 at 10:15 a.m.

by

Vassilis L. Syrmos
Vice President for Research and Innovation
University of Hawai'i System

SB 458 SD1 – RELATING TO GEOTHERMAL ROYALTIES

Chair Dela Cruz, Vice Chair Keith-Agaran, and Members of the Committee:

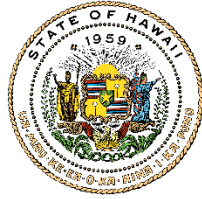
The University of Hawai'i (UH) supports SB 458 SD1, which seeks to further the discovery and development of geothermal resources in the state by establishing the University of Hawai'i Geothermal Exploration Special Fund for the Hawai'i Groundwater and Geothermal Resources Center (HGGRC).

Based in UH Mānoa's heralded School of Ocean and Earth Science and Technology, HGGRC has the knowledge and expertise in geothermal exploration to help secure another clean energy source, as Hawai'i seeks to achieve a more sustainable future.

Thank you for the opportunity to testify.

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII'
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA

P.O. BOX 621
HONOLULU, HAWAII 96809

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CHAIRPERSON
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

**Testimony of
DAWN N.S. CHANG
Chairperson**

**Before the Senate Committee on
WAYS AND MEANS**

**Friday, March 3, 2023
10:15 AM
State Capitol, Conference Room 211**

**In consideration of
SENATE BILL 458, SENATE DRAFT 1
RELATING TO GEOTHERMAL ROYALTIES**

Senate Bill 458, Senate Draft 1 proposes to: (1) require that, for royalties from geothermal resources, ten per cent be paid to the county where the geothermal mining operations are situated, fifty per cent be paid to the Department of Land and Natural Resources (Department), twenty per cent be paid to the Office of Hawaiian Affairs, and twenty per cent be deposited into the University Innovation and Commercialization Initiative Special Fund to be expended by the Hawai'i Groundwater and Geothermal Resources Center to further the discovery and development of geothermal resources and for exploratory geothermal wells; and (2) require the University of Hawai'i to submit an annual report to the Legislature. **The Department supports this measure.**

The Department appreciates the prior Senate Committees' recommendation to maintain the Department's 50% share of the royalties received and removing the cap on the total annual royalties it would receive.

The Department, pursuant to Hawai'i Revised Statutes, Chapter 182, has a statutory obligation to regulate the use of minerals, including geothermal resources, as it is held in public trust. As such, the Department bears all costs for processing, regulating and managing geothermal leases, including oversight and monitoring of well drilling operations for exploration and safe development of the resource. To assist and carry out these responsibilities, the Department receives 50% of the geothermal royalties with the remaining proceeds currently allocated as follows: 30% to the County of Hawai'i, and 20% to the Office of Hawaiian Affairs (OHA), which represents OHA's pro rata share of ceded land revenues. Since Fiscal Year 2008, the Department's Geothermal Mineral Resources Program costs (not

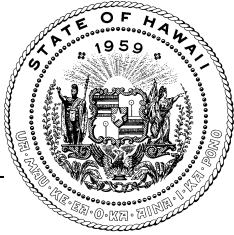
including lease and lease management costs) has roughly equaled the Department's 50% share of the royalties received during the same period.

Maintaining the current 50% allocation of royalties to the Department is essential in carrying out its public trust duties. The geothermal royalties received by the Department are deposited into its Special Land and Development Fund (SLDF)¹ that funds the Geothermal Mineral Resources Program, along with the entire annual operating budget for the Department's Land Division, the Office of Conservation and Coastal Lands, the Dam Safety Program and other critical programs that play important roles in protecting Hawai'i's natural and cultural resources. Such Departmental programs address critical resource and environmental issues such as climate change, watershed protection, invasive species, water resources, coastal erosion and protection of the State's historic and cultural sites. The cumulative impact upon the Department's SLDF caused by any potential reduction in geothermal royalties will have a cascading negative impact on the Department's ability to effectively administer many of these critical programs.

Any reduction in revenue that the Department currently receives would be counter-productive to the goal of achieving greater self-sufficiency and seeking less reliance on general funds to carry out the goals and mandates of the Department.

Mahalo for the opportunity to provide testimony in support of this measure.

¹ The primary source of revenue for the SLDF are lease rents collected by the Department's Land Division from its 1,000 or so leases and 300 or so permits, including the geothermal mining lease.



HAWAII STATE ENERGY OFFICE STATE OF HAWAII

JOSH GREEN, M.D.
GOVERNOR

MARK B. GLICK
CHIEF ENERGY OFFICER

235 South Beretania Street, 5th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-3807
Web: energy.hawaii.gov

Testimony of
MARK B. GLICK, Chief Energy Officer

before the
SENATE COMMITTEE ON WAYS AND MEANS

Friday, March 3, 2023
10:15 AM
State Capitol, Conference Room 211 and Videoconference

Providing COMMENTS on
SB 458, SD1

RELATING TO GEOTHERMAL ROYALTIES.

Chair Dela Cruz, Vice Chair Keith-Agaran, and Members of the Committee, the Hawai'i State Energy Office (HSEO) offers comments on SB 458, SD1. SB 458, SD1 clarifies the funds deposited into the newly created University Innovation and Commercialization Initiative Special Fund are to be used for geothermal exploration, deletes the royalties cap, reallocates 10% of the royalties to the county where mining operations occur, and makes other changes.

Geothermal exploration, performed in a responsible manner, is an essential part of Hawai'i's strategy for a diversified renewable energy portfolio and is necessary to fully understand the developable resource potential of geothermal energy on each Hawaiian island, including more non-invasive surface explorations and the need for new exploratory wells. Without a full understanding of the geothermal potential on each island, Hawai'i's energy stakeholders and affected communities will lack fundamental information on potential renewable energy resources to make fully informed decisions on how each island can best achieve 100% renewable energy generation by 2045.

HSEO wholly supports funding for the University of Hawai'i's Hawai'i Groundwater and Geothermal Resources Center (HGGRC) to further the discovery and development

of geothermal resources and for exploratory wells. HSEO has collaborated with HGGRC in the past and values HGGRC's experience and expertise in this field.

HSEO also believes it is appropriate to use state funds to better understand Hawai'i's geothermal resource potential as geothermal resources are public trust resources with potential for community benefits, provided other state priorities are not impacted. Greater understanding of Hawai'i's geothermal resource potential reduces geothermal development risk which would be reflected in lower project financing costs that are passed on to ratepayers in the form of lower electricity rates.

HSEO supports efforts by HGGRC and other entities to seek federal and other funding for geothermal research and to engage with affected communities on the results of such research and support associated geothermal development that is widely recognized to be in the public interest.

HSEO is not intimately familiar with how Hawai'i County uses the current revenues it receives from geothermal royalties and defers to the counties on the impacts of reducing the counties' share from 30% to 10%.

Thank you for the opportunity to testify.



LATE

SB458 SD1
RELATING TO GEOTHERMAL ROYALTIES
Senate Committee on Ways and Means

March 3, 2023

10:15 AM

Room 211

The Office of Hawaiian Affairs (OHA) **SUPPORTS** SB458 SD1, which would establish the University Innovation and Commercialization Initiative Special Fund for geothermal royalties. **OHA is appreciative of the Legislature’s recognition of the State’s and OHA’s obligation to the betterment of conditions of Native Hawaiians and further recognition that Native Hawaiians maintain significant socio-political-economic-environmental interests related to tūtū Pele and her connection to the geothermal systems of the Hawaiian Islands.**

As the principal public agency in the State responsible for the betterment of conditions of Native Hawaiians,¹ OHA continues to advocate the interests of the Native Hawaiian people, as expressed in prior testimony, by emphasizing that Native Hawaiian land claims, which include claims to the natural and cultural resources therein, are still outstanding and have yet to be resolved.² The Legislature, in recognizing the historical special political relationship between the Native Hawaiian people and the United States, as well as understanding the historical injustices that have and continue to create systems of inequity and disparities faced by Native Hawaiians, enshrined, within the Constitution³ and statutes of the State, a series of legal frameworks and instruments to identify the State’s trust obligations to the Native Hawaiian people.⁴ These trust obligations extend to compensatory mechanisms for Native Hawaiians, which include legal mandates to a share of the income and proceeds from the public land trust⁵ and proceeds from natural resources, minerals and income derived from whatever other sources for Native Hawaiians.⁶

¹ Haw. Rev. Stat. §10.

² “Whereas, the indigenous Hawaiian people never directly relinquished their claims to their inherent sovereignty as a people or over their national lands to the United States, either through their monarchy or through a plebiscite or referendum[.]” Pub. Law 103-150 (1993).

³ Haw. Stat. Con. Article XII (1978).

⁴ Haw. Rev. Stat. §10H.

⁵ Pub. L. 86-3, 73 Stat. 4; Hawai‘i Admissions Act of 1959; Haw. Stat. Con. Article XII, Sec. 4-6 (1978).

⁶ Haw. Stat. Con. Article XII, Sec. 6 (1978).



SB458 SD1
RELATING TO GEOTHERMAL ROYALTIES
Senate Committee on Ways and Means

The majority of Native Hawaiian families, in Hawai‘i, are unable to make ends meet,⁷ with 63% of Native Hawaiians reporting that they are finding it difficult to get by.⁸ Native Hawaiians have the lowest household income.⁹ Native Hawaiians have the highest poverty rates for individuals and families.¹⁰ Native Hawaiians make less money,¹¹ with lower average earnings for both men and women.¹² Native Hawaiians have the highest rate of using public assistance and homeless services.¹³ Native Hawaiians are overrepresented among the homeless in Hawai‘i.¹⁴ OHA is deeply concerned with Native Hawaiians being driven out of Hawai‘i by economic instability stemming from socio-political-economic upheaval, which has largely disconnected Native Hawaiians from their ‘āina for more than a century. Today, more Native Hawaiians live outside of the Hawaiian Islands, far beyond the boundaries of their own homeland.¹⁵

OHA acknowledges and appreciates the Legislature’s set-aside of 20% of the geothermal royalties and continues to assert that OHA, on behalf of Native Hawaiians, has a claim to at least 20% of the proceeds from natural energy resources.¹⁶ OHA also continues to express its advocacy for a fair portion of the proceeds and income from the exploitation of geothermal resources to the Native Hawaiian people. Accordingly, the calculation of this fair portion should be representative of the comparative percentage of the Native Hawaiian population to the total resident population (approximately 38%);¹⁷ the Native Hawaiian

⁷ Aloha United Way / United for ALICE, *ALICE in Hawai‘i: 2022 Facts and Figures*, Nob. 2022, p.6.

⁸ *Id.* at 9.

⁹ Dept. of Business, Economic Development and Tourism, *Demographic, Social, Economic, and Housing Characteristics for Selected Race Groups in Hawaii*, Mar. 2018, p.3.

¹⁰ *Id.* at 13.

¹¹ OHA Report, *Affordable Housing for Hawai‘i and Native Hawaiians: Exploring Ideas and Innovation*, Aug. 2020, p.10.

¹² Dept. of Native Hawaiian Health, John A. Burns School of Medicine, *Assessment and Priorities for the Health and Well-Being in Native Hawaiians and Pacific Islanders*, 2020, p.12.

¹³ *Id.*

¹⁴ Partners In Care, *2022 Point In Time Count*, p.7.

¹⁵ “Estimates from the American Community Survey showed that in 2011, there were about 296,400 Native Hawaiians in Hawai‘i and about 221,600 on the continental U.S. Just a decade later, those numbers flipped. In 2021, there were about 309,800 Native Hawaiians in Hawai‘i and about 370,000 in other states,” Hawaii Public Radio, *More Native Hawaiians Flock to mainland cities and leave Hawai‘i*, Jan. 23, 2023, *citing high costs*, citing the US Census Bureau’s American Community Survey 2021.

¹⁶ Haw. Stat. Con. Article XII, Sec. 6 (1978).

¹⁷ There are approximately 309,807 Native Hawaiians living in the State of Hawai‘i. The total estimated Native Hawaiian population is 680,353. The U.S. Census Bureau 2022 Population Estimates of the State of Hawai‘i is 1,440,196. Based on these numbers, the State population would be 1,810,742 if Native Hawaiians lived in their



SB458 SD1
RELATING TO GEOTHERMAL ROYALTIES
Senate Committee on Ways and Means

population should be calculated in its totality, as the “only indigenous, aboriginal, maoli people of Hawai‘i, who should not be counted out for being driven out of these Islands.”¹⁸ Finally, the respective percentages of the income and proceeds from geothermal resource exploitation from public lands should be managed and administered by OHA in accordance with the State Constitution.¹⁹

OHA appreciates this opportunity to support this measure and asks the Legislature to **PASS** SB458 SD1 with the hope that the State will continue to uphold its trust obligations to the Native Hawaiian people. Mahalo nui loa.

own homeland. Accordingly, the Native Hawaiian population percentage would be approximately 38%.

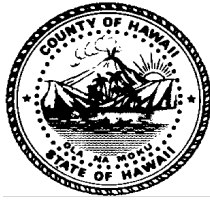
¹⁸ Haw. Rev. Stat. §10H-1.

¹⁹ Haw. Stat. Con. Art. Sec. 4-6 (1978).

LATE

Ashley L. Kierkiewicz
County Council District IV

*Policy Committee on Planning,
Land Use and Development – Chair*



(808) 961-6265
ashley.kierkiewicz@hawaiiicounty.gov

*Policy Committee on Infrastructure
and Assets – Vice-Chair*

HAWAI‘I COUNTY COUNCIL

25 Aupuni Street • Hilo, Hawai‘i 96720

March 3, 2023

Senate Committee on Ways & Means

Senator Donovan Dela Cruz, Chair
Senator Gilbert Keith-Agaran, Vice-Chair

RE: Opposition to SB 458 SD1, Relating to Geothermal Royalties

Aloha, Chair Dela Cruz, Vice Chair Keith-Agaran, and Members of WAM:

I write in **strong opposition** to SB 458 SD1. This proposed measure would significantly decrease the royalties paid to the County of Hawai‘i for geothermal operations that occur in the district of Puna, which I represent.

At 30%, the County currently receives approximately \$464,000 a year in royalties. These monies support our County’s Geothermal Relocation Fund and Community Benefits Fund, which has and is being used to support public safety, security, and recreational projects in the community directly impacted by geothermal activities.

Decreasing the County’s share to 10% is unacceptable when you consider that you are taking away critical support funds from one of the most socio-economically distressed communities in the State. We are still recovering from the 2018 Kīlauea eruption, and the impacts of the COVID-19 pandemic. We have plans to leverage these funds to support community-driven projects that increase resilience, opportunities, and improve quality of life.

In this time of abundance, I humbly ask that the Committee look to other sources to fund geothermal exploration and research. Please do not take from a community that has historically not received its fair share.

Cheers,

Ashley Lehualani Kierkiewicz
COUNCIL MEMBER, DISTRICT IV



**TESTIMONY BEFORE THE SENATE COMMITTEE
ON WAYS AND MEANS**

S.B. 458 S.D. 1

Relating to Geothermal Royalties

Friday, March 3, 2023
10:15 a.m., Agenda Item #1
State Capitol, Conference Room 211 & Video Conference

Rebecca Dayhuff Matsushima
Vice President, Resource Procurement
Hawaiian Electric

Chair Dela Cruz, Vice Chair Keith-Agaran, and Members of the Committee:

My name is Rebecca Dayhuff Matsushima and I am testifying on behalf of Hawaiian Electric in **support** of S.B. 458 S.D. 1, which seeks to expand the discovery and development of geothermal resources.

Hawaiian Electric supports furthering the exploration and development of geothermal resources and establishment of exploratory wells for geothermal energy as a means to help accelerate the development of renewable energy projects, support the State's Renewable Portfolio Standards ("RPS") requirements, reduce reliance on imported fossil fuels, stabilize and reduce volatility of customers' bills, reduce greenhouse gas emissions, and assist with post-pandemic economic recovery.

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 researching and developing the State's geothermal resources and renewable energy potential.

Thank you for this opportunity to comment on S.B. 458 S.D. 1.



Email: communications@ulupono.com

SENATE COMMITTEE ON WAYS & MEANS
Friday, March 3, 2023 — 10:15 a.m.

Ulupono Initiative supports SB 458 SD1, Relating to Geothermal Royalties.

Dear Chair Dela Cruz 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 SB 458 SD1, which requires that, for royalties from geothermal resources, ten per cent be paid to the county where the geothermal mining operations are situated, fifty per cent be paid to the Department of Land and Natural Resources, twenty per cent be paid to the Office of Hawaiian Affairs, and twenty per cent be deposited into the University Innovation and Commercialization Initiative Special Fund to be expended by the Hawaii Groundwater and Geothermal Resources Center to further the discovery and development of geothermal resources and for exploratory geothermal wells; and requires the University of Hawai'i to submit an annual report to the Legislature.

Hawai'i needs all viable forms of renewable energy to meet the 100% renewable portfolio standard by 2045. 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.

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 and confirmed. This bill seeks to dedicate resources to the staffing and field work necessary for geothermal research and potential. It makes good sense to use a modest amount of geothermal royalties to see if there is an opportunity to expand this firm, minimal land-impact form of renewable energy.

Thank you for the opportunity to testify.

Respectfully,

Micah Munekata
Director of Government Affairs

Investing in a Sustainable Hawai'i

Written Statement of
David H. Molinaro
HCATT Manager
Hawaii Center for Advanced Transportation Technologies
before the
Senate Committee on Ways and Means
Friday, March 3, 2023
10:15 AM
State Capitol, Conference Room 211
In consideration of

SB 458 SD1
RELATING TO GEOTHERMAL ROYALTIES

Chair Dela Cruz, Vice Chair Keith-Agaran, and Members of the Committee.

The Hawaii Center for Advanced Transportation Technologies (HCATT) **supports** SB458 SD1 to fund the innovation and development of geothermal technologies by the University of Hawaii Groundwater and Geothermal Resources Center (HGGRC) through the distribution of royalties from geothermal resources. Geothermal energy is a principal renewable energy resource for the expansion of utility scale renewable energy and the production of hydrogen, which will help Hawaii fulfill its commitment to significantly reduce carbon emissions.

The use of geothermal energy further provisions Hawaii Revised Statute §196-10, Hawaii renewable hydrogen program legislative guidance to design, implement, and administer hydrogen projects, including infrastructure for the production, storage and refueling of hydrogen vehicles and in adopting hydrogen technologies in support of Hawaii's 2045 RPS mandate and foster a new renewable energy industry in this State. Additionally, that geothermal exploration, and research will also provide information on Hawaii's fresh groundwater resources and carbon capture storage potential. Finally, the development of geothermal capabilities supports a United States Air Force Office of Energy Assurance priority to develop geothermal energy for its critical installations.

HCATT acknowledges the potential impact to the distribution of royalties to the Department of Land and Natural Resources and encourages the Legislature to consider the testimony of the agency.

Mahalo for the opportunity to present this testimony.



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Senator Donovan Dela Cruz, Chair
Senator Gilbert Keith-Agaran, Vice Chair
Committee on Ways and Means

**RE: SB 458 SD1 - Relating to Geothermal Royalties – In Support
March 3, 2023; 10:15 A.M.; Conference room 211 & Videoconference**

Aloha Chair Dela Cruz, Vice Chair Keith-Agaran, and Members of the Committee:

Servco is in support of SB 458 SD1, which requires that, for royalties from geothermal resources, ten percent to be paid to the county where the geothermal mining operations are situated, fifty percent be paid to the Department of Land and Natural Resources, twenty percent be paid to the Office of Hawaiian Affairs and twenty percent be deposited into the University Innovation and Commercialization Initiative Special Fund to be expended by the Hawaii Groundwater and Geothermal Resources Center to further the discovery and development of geothermal resources and for exploratory geothermal wells.

Servco supports cost effective geothermal exploration. This measure will help the State move forward with a diversified renewable energy portfolio and help achieve its 100% renewable policy goal by 2045.

Thank you for the opportunity to offer comments in support.

Peter Dames
Executive Vice President

SB-458-SD-1

Submitted on: 3/1/2023 1:53:04 PM

Testimony for WAM on 3/3/2023 10:15:00 AM

Submitted By	Organization	Testifier Position	Testify
Peter Sternlicht	Individual	Support	Written Testimony Only

Comments:

It is essential that Hawaii State funding for geothermal exploration be maximized. SB458 is a start but is insufficient to meet the minimum required to support needed development. Please vote yes on this bill and please sponsor stand-alone legislation that will meaningfully (in the 10's of Millions of dollars) fund the research required to locate the only indigenous source of firm, baseload renewable energy accessible in our State.

Respectfully,
Peter Sternlicht
96783

SB-458-SD-1

Submitted on: 3/1/2023 9:00:16 PM

Testimony for WAM on 3/3/2023 10:15:00 AM

Submitted By	Organization	Testifier Position	Testify
Richard Ha	Testifying for DaRubbahSlippahGroup.com	Support	Written Testimony Only

Comments:

Aloha Chair Delacruz

i very strongly support SB458 SD1. It is very impactful and effective to support the Hawai'i Ground Water and Geothermal Resource Center (HGGRC). They are the most knowledgeable organization in the world dealing with Hawai'i geothermal issues. And, until this bill, their potential was vastly underused.

Hawaii will be above the "hot spot" for 1-2 million years according to Dr Don Thomas and Dr Nicole Lautze, Co founders of HGGRC.

Hawaii Island is made up of five volcanoes. There is free heat which is easily transported by water underneath the island through porous rock. That free heat rises as steam and turns a turbine generating electricity.

This free heat is very significant when it is used to make hydrogen. Ninety plus % of the hydrogen produced today is made from natural gas. That natural gas is a finite resource. Its cost will rise while Hawai'i geothermal cost will not rise.

The longer we look into the future the more Hawai'i produced geothermal becomes cost competitive.

DaRubbahSlippahGroup asks, what can we do to make life better for Keoki and Malia, who are toddlers today, when they reach 25 years old?

The answer is geothermal. The cost of the heat will not change for 1-2 million years.

Aloha

Richard Ha

Pres

DaRubbahSlippahGroup.Com.

SB-458-SD-1

Submitted on: 3/2/2023 12:00:29 AM

Testimony for WAM on 3/3/2023 10:15:00 AM

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

Comments:

The State of Hawaii should encourage further discovery and development of geothermal resources. As Hawaii is the only U.S. state without an official geological survey, the University of Hawaii (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 Hawaii's geothermal research. From the 1980s to now, UH contributed to two statewide geothermal resource assessments.

As a UH research unit, the Hawaii Groundwater and Geothermal Resources Center (HGGRC) conducted research that suggests that all of the major Hawaiian islands may hold geothermal resources. However, much of these resources remain unexplored, and HGGRC needs more funding to reveal more information about them.

HGGRC is well equipped for geothermal exploration in terms of its expertise, land access for research, and physical assets. Through HGGRC, the state's foremost experts in earth sciences are researching Hawaii's geothermal 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.

Beyond expanding the knowledge of Hawaii's geothermal resources, HGGRC has also provided students and new professionals hands-on, collaborative research experiences and educational opportunities. Collectively, their backgrounds include not only earth sciences but also environmental engineering, information technology, library science, history, and community outreach. Over the years, HGGRC sponsored employment of dozens of employees, and HGGRC scientists provided academic advising for undergraduate capstone projects, master's theses, and PhD dissertations.

The state should further tap geothermal--a firm, renewable energy source, should support geothermal research, and should develop researchers. Further development of geothermal will enable the state to transition off of fossil fuels and achieve its 100% renewable policy objective by 2045. Please invest in not only the further development of Hawaii's geothermal resources but also knowledge of Hawaii's geology and highly skilled, educated professionals for Hawaii's future economy. Please invest in HGGRC.

SB-458-SD-1

Submitted on: 3/2/2023 4:04:21 AM

Testimony for WAM on 3/3/2023 10:15:00 AM

Submitted By	Organization	Testifier Position	Testify
Neil Frazer	Individual	Support	Written Testimony Only

Comments:

Aloha,

I support this bill, but I am not a disinterested party. Prior to retirement I was part of a group at UH Mānoa that explored and inventoried the geothermal resources of Hawaii. We were funded by a grant from the US Department of Energy (DoE), and the DoE was very happy with our work, but as you might guess, geothermal exploration is much more expensive in Hawaii than on the mainland, and when the grant ran out the work had to stop.

One of the surprising things that we found, before the work stopped, is that each of the main islands has the potential for geothermal energy. Of course, Hawaii Island has the greatest geothermal potential because several of its volcanoes have magma close to the surface. On the other islands, which are geologically older, the "fossil heat reservoir", as you might call it, is deeper and cooler, but still potentially exploitable.

Why is geothermal exploration so expensive? Surface geophysical exploration techniques, such as gravity and magnetotellurics, are not prohibitively expensive, but test wells are necessary to prove the existence of a resource, and the cost of drilling a test well can run to several million dollars.

Hawaii Geothermal and Groundwater Resource Center (HGGRC), which is part of Hawaii Institute of Geophysics and Planetology at UH Mānoa, has the geological, geophysical and drilling expertise needed for every type of geothermal exploration. All it needs now is the money.

Me ka ha‘aha‘a,

Neil Frazer

Testimony of
Donald Thomas
Before the Senate Committee on
Ways and Means
Senator Donovan M. Dela Cruz, Chair
Senator Gilbert S.C. Keith-Agaran, Vice Chair
Friday, March 3, 2023
10:15 AM
State Capitol Conference Room 229, and Via Videoconference
In consideration of
SENATE BILL 458
RELATING TO THE RESEARCH CORPORATION OF THE UNIVERSITY OF HAWAII

Chair Dela Cruz, Vice Chair Keith-Agaran, and members of the committee, I am presenting my testimony in **SUPPORT** of SB458. Nearly fifty years ago, the University of Hawaii led a project that drilled what was, at the time, the hottest geothermal well in world. Contrary to accepted wisdom, that well proved to be productive and led to the development of a small commercial geothermal power plant in Lower Puna that continues to operate while producing negligible emissions of carbon dioxide (or any of the other pollutants that our dominant electrical power source – petroleum - generates). In spite of the reality that Hawaii’s residents: pay the highest electrical power costs of any other state in the country; that our dominant power source produces six million tonnes of carbon dioxide annually; while it drains billions of dollars from our state’s economy: further development of this less costly, less polluting, indigenous resource remains years-to-decades away. There are many reasons for this, not the least of which is the lack of information on the extent and characteristics of the resource, the difficulty and expense of acquiring that information, and the lengthy regulatory process associated with acquiring that basic information. Passage of this bill will enable the scientists at the University of Hawaii to conduct basic research into Hawaii’s geothermal resources and provide those data to both the state’s regulatory agencies as well as to the private sector to allow both to determine how and where these resources can best be developed – and contribute to reducing: our current dependency on fossil fuels; the cost of electrical power to our residents; and our contribution to global climate change.

Thank you for this opportunity to offer testimony. The opinions expressed above are mine alone and do not reflect an official position of the University of Hawaii.

LATE

SB-458-SD-1

Submitted on: 3/2/2023 12:43:41 PM

Testimony for WAM on 3/3/2023 10:15:00 AM

Submitted By	Organization	Testifier Position	Testify
Nicole C. Lautze	Individual	Support	Written Testimony Only

Comments:

Statewide geothermal resource assessments authored by University of Hawai'i faculty and published in 1985 and 2017 found prospective geothermal resources on all islands in the State of Hawai'i. Despite this, from a geothermal perspective, Hawai'i remains largely unexplored outside of Kīlauea's East Rift Zone. UH has led geothermal exploration in Hawai'i since the 1970s - including exploration that led to the operation of a 2.5MW discovery well adjacent to the state's only currently-active power plant. Given current ownership of ~\$1M of geophysical equipment and a drill rig for exploration - essential elements for groundwater, geothermal and carbon storage research - UH is well poised to continue geothermal exploration, but currently lacks any funds to do so.

I write in **support of SB458**, which will (in the short-term) enable UH/HGGRC to 1) perform geophysical surveys to target ideal drilling locations, 2) maintain a small trained and dedicated staff, and 3) demonstrate to federal funding agencies that the State of Hawai'i is serious about its pursuit of more geothermal.

In Hawai'i, we pay 2-3 times the national average for electricity and we maintain an >50% reliance on fossil fuels for our electricity. Our fossil fuel usage equates to a polluting output of ~6,000,000 tons annually of CO2 into the atmosphere. This situation is bad for our pocketbooks and the planet! Geothermal electricity is firm (24/7), low cost (cheapest of all renewables over time), safe (operated safely since the early 1900s), and has the lowest footprint of all renewables (one study shows that on 20% of the land geothermal can generate 5 times as much electricity as a solar farm). Please move SB 458 forward. It will be a step in the right direction for Hawai'i's residents and the planet.

LATE

SB-458-SD-1

Submitted on: 3/3/2023 5:03:59 AM

Testimony for WAM on 3/3/2023 10:15:00 AM

Submitted By	Organization	Testifier Position	Testify
Dylan P. Armstrong	Individual	Support	Written Testimony Only

Comments:

If the state was actually serious about the increasinly likely climate dystopia we are ushering in, it would do whatever it took to seriously address both greenhouse gas contributions and permissiveness to other political and corporate entities that contribute emissions.

Geothermal is one of the most obvious sources of divestment from hydrocarbon energy. I cannot find a compelling reason to oppose this incentive measure.

LATE

SB-458-SD-1

Submitted on: 3/3/2023 10:08:09 AM

Testimony for WAM on 3/3/2023 10:15:00 AM

Submitted By	Organization	Testifier Position	Testify
Kuulei Cooper-Springer	Individual	Oppose	Written Testimony Only

Comments:

The purpose for my testimony is in strong opposition to the proposed reduction in Geothermal Royalties Hawai'i County receives. The district of Puna is the source of these royalties, and continues to be the most underserved community on our island of Hawai'i.

As we continue to recover from the historic eruption of 2018, and Covid, the reduction of a funding source is totally unacceptable. I support Councilperson Ashley Kierkewitz's testimony, along with my 'ohana who reside in Puna.

Mahalo for your kind consideration.

Ku'uleiohuokalani Kealoha Cooper-Springer
Trustee, James K. Kealoha Estate