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TO THE SENATE COMMITTEE ON TRANSPORTATION AND ENERGY
AND
TO THE SENATE COMMITTEE ON PUBLIC SAFETY, INTERGOVERNMENTAL,
AND MILITARY AFFAIRS

THE TWENTY-NINTH LEGISLATURE
REGULAR SESSION OF 2017

WEDNESDAY, MARCH 29, 2017
1:20 P.M.

TESTIMONY OF DEAN NISHINA, EXECUTIVE DIRECTOR, DIVISION OF
CONSUMER ADVOCACY, DEPARTMENT OF COMMERCE AND CONSUMER
AFFAIRS, TO THE HONORABLE LORRAINE R. INOUE, CHAIR,
TO THE HONORABLE CLARENCE K. NISHIHARA, CHAIR
AND MEMBERS OF THE COMMITTEES

SENATE CONCURRENT NO. 122 URGING THE STATE ENERGY OFFICE WITHIN
THE DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT, AND TOURISM,
IN COOPERATION WITH OTHER STATE AND FEDERAL AGENCIES AND
INTERESTED STAKEHOLDERS, TO FACILITATE DISCUSSIONS AND PROVIDE
RECOMMENDATIONS FOR INITIATING AND SUPPORTING THE DEVELOPMENT
OF OFFSHORE RENEWABLE WIND ENERGY PROJECTS

DESCRIPTION:

This resolution urges the State Energy Office within the Department of Business, Economic Development, and Tourism, in cooperation with other state and federal agencies and interested stakeholders, to facilitate discussions and provide recommendations for initiating and supporting the development of offshore renewable wind energy projects.

POSITION:

The Division of Consumer Advocacy (“Consumer Advocate”) offers the following comments.

COMMENTS:

The Consumer Advocate supports efforts to take advantage of available Federal tax credits to help reduce the overall cost of electricity to Hawaii, its residents, and its businesses. Thus, the proposed resolution to encourage cooperation among certain key stakeholders to develop recommendations on how to take advantage of those Federal tax credits that will start to phase-out is reasonable.

The Consumer Advocate respectfully requests, however, that the resolution be modified to make clear that any recommendations developed by the interested stakeholders focus on the development of cost-effective renewable energy from offshore wind projects. The development of renewable energy projects that are not cost-effective will result in unintended consequences where, even though a short-term contribution to the renewable portfolio standards may be achieved, electricity bills will increase more than they should. Besides undesirable increases in customer bills, the deployment of costly or cost-ineffective projects will likely inhibit the ability and opportunity to pursue other cost-effective renewable energy projects in a timely manner.

Thank you for the opportunity to testify on this matter.



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

DAVID Y. IGE
GOVERNOR

LUIS P. SALAVERIA
DIRECTOR

MARY ALICE EVANS
DEPUTY DIRECTOR

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Statement of
LUIS P. SALAVERIA
Director
Department of Business, Economic Development and Tourism
before the
**SENATE COMMITTEES ON
TRANSPORTATION AND ENERGY**
And
PUBLIC SAFETY, INTERGOVERNMENTAL, AND MILITARY AFFAIRS

Wednesday, March 29, 2017
1:20 p.m.
State Capitol, Conference Room 225
in consideration of

SCR 122
**URGING THE STATE ENERGY OFFICE WITHIN THE DEPARTMENT OF
BUSINESS, ECONOMIC DEVELOPMENT, AND TOURISM, IN COOPERATION
WITH OTHER STATE AND FEDERAL AGENCIES AND INTERESTED
STAKEHOLDERS, TO FACILITATE DISCUSSIONS AND PROVIDE
RECOMMENDATIONS FOR INITIATING AND SUPPORTING THE DEVELOPMENT
OF OFFSHORE RENEWABLE WIND ENERGY PROJECTS.**

Chairs Inouye and Nishihara, Vice Chairs Dela Cruz and Wakai, and Members of the Committees.

The Department of Business, Economic Development, and Tourism (DBEDT) **offers comments** on SCR 122, which urges the Hawaii State Energy Office (HSEO) to facilitate discussions and provide recommendations for initiating and supporting the development of offshore renewable wind energy projects.

The need to explore a diversified portfolio of renewable resources is essential to Hawaii's mandate to achieve 100% renewable energy for electricity by 2045. However, DBEDT is also closely monitoring its operational budget and the resources required to conduct the coordination required by SCR 122 may stretch HSEO's existing resources.

DBEDT notes that there are other ongoing initiatives, such as the Bureau of Ocean Energy Management (BOEM)/Hawaii Intergovernmental Renewable Energy

Task Force and the Hawaiian Electric Companies' Power Supply Improvement Plan, involve some of the same stakeholders identified in SCR 122 and seek to address some of the unknowns regarding the development of offshore wind in Hawaii, such as proper siting, regulatory oversight, and utility planning. DBEDT is engaged and supportive of those efforts as well.

Thank you for the opportunity to offer testimony on SCR 122.

**TESTIMONY BEFORE THE SENATE TRANSPORTATION
AND ENERGY COMMITTEE AND THE SENATE PUBLIC SAFETY,
INTERGOVERNMENTAL, AND MILITARY AFFAIRS COMMITTEE**

S.C.R No. 122

Wednesday, March 29, 2017
1:20 pm
State Capitol, Conference Room 225

Rodney S. Chong
Manager, Renewable Acquisition
Hawaiian Electric Company, Inc.

Chairs Inouye and Nishihara, and Members of the Committees:

My name is Rodney Chong and I am testifying on behalf of Hawaiian Electric Company and its subsidiary utilities Maui Electric Company and Hawai'i Electric Light Company (collectively the "Companies") in offering comments to S.C.R. No. 122.

The Companies support the notion that the State Energy Office facilitate discussions with key stakeholders of renewable energy projects to provide recommendations on how the State can promote, initiate, and support the development of renewable energy in time to utilize the federal energy investment tax credits. However, the Companies support such facilitation that allows for an impartial and competitive process to help determine what role various renewable technologies, including offshore wind, will play in Hawaii's energy future to ensure a cost-effective and reliable energy system.

This resolution's sole focus on offshore wind would unfairly promote offshore wind at the expense of other mature, currently available and cost effective renewable energy technologies, such as solar and onshore wind. This resolution would also create unfavorable false market conditions across Hawaii's renewable energy portfolio in a manner that may result in higher Power Purchase Agreement prices and hinder progress towards 100% renewable energy.

The Companies identified offshore wind as a potential resource in their long-term plans but not in the Companies' proposed 5-year action plan. The Companies action plans include the issuance of renewable RFPs to acquire commercially proven and the most cost effective renewable energy resources through a technology agnostic competitive process that would result in the commercial operation of over 500 MW of grid-scale renewable energy by 2021. Offshore wind may bid into these RFPs, but critical attributes will need to be demonstrated including: commercial viability, realistic timing, environmental and ocean permitting, site control, and technical integration.

In light of the State's 100% renewable energy goals and the necessary amount of new renewable energy projects that communities will need to host, early and thorough community engagement is very important to each project's success, regardless of technology.

Thank you for this opportunity to testify.

Progression Hawaii Offshore Wind, Inc. Legislative Testimony

Written Testimony Presented To the
Senate Committee on Transportation and Energy
Wednesday, March 29, 2017 at 1:20 p.m.

by
Chris Swartley, Chief Executive Officer
Progression Hawaii Offshore Wind, Inc.

SCR122 – RELATING TO OFFSHORE WIND ENERGY

Chair Inouye, Vice Chair Dela Cruz and members of the committee:

Progression Hawaii Offshore Wind, Inc. supports this Resolution.

Offshore wind is a critical piece of Hawaii’s clean energy future. The consistent energy produced by turbines harnessing the trade winds would not only meet much of Oahu’s energy needs but also complement and diversify solar installed throughout the island. Yet, the future of offshore wind in Hawaii is at a critical juncture. While offshore wind development poses certain challenges, these challenges are surmountable if the State of Hawaii, led by the Governor’s Office, works together with the offshore wind industry to facilitate the timely deployment of offshore wind.

The value of offshore wind to Hawaii’s energy future cannot be overstated as the state moves from a heavy reliance on oil to a clean, indigenous, and stably-priced energy future. The inherent hurdle to a 100% renewable energy goal on Oahu is the limited land mass available to deploy sufficient renewable resources to meet Oahu’s energy demands. Offshore wind provides the key to unlock this energy puzzle. Offshore wind is critical infrastructure for Hawaii in that it provides substantial jobs, taxes, and community and educational benefits; and it significantly reduces Hawaii’s consumption of oil and the economic, security and environmental risks that consumption entails.

Time is of the essence to maximize the value of offshore wind to Hawaii ratepayers. Currently, significant tax credits are available for renewable energy. Specifically, the Investment Tax Credit (ITC) would allow developers of offshore wind in Hawaii to obtain up to a 12% tax credit. This credit would reduce the cost of offshore wind, and in turn, reduce the rates paid by Hawaii ratepayers. There is limited time left to take advantage of these credits, and the renewal of these credits is unlikely given the current composition of Congress. To take advantage of these tax credits, offshore wind developers need power purchase agreements that would allow them to secure equipment by 2019, qualifying the project under the ITC’s “safe harbor,” thus generating hundreds of millions of dollars in savings that can be passed on to the Hawaii ratepayer.

Legislative Testimony P. 2

There are three key ways the State can contribute to the success of offshore wind: (1) procure offshore wind expeditiously to, among other things, ensure access to the federal funding available through the ITC; (2) assume a leadership role in the offshore wind siting process with the Bureau of Ocean Energy Management (BOEM) to ensure that projects with the highest likelihood of success obtain leases from BOEM; and (3) assume a lead role in consultations with the Department of Defense and Navy to find a solution that promotes both national security and Hawaii's energy security and clean energy future. Each of these important roles is discussed in turn below.

1. Procurement of Offshore Wind

To ensure the best value for Hawaii from offshore wind, it is critical that the State begin the process to procure offshore wind. Currently, procurement of all renewables been delayed by the PUC's continued consideration of (1) HECO's Power Supply Improvement Plan (PSIP); and (2) HECO's request to open a docket for the issuance of a renewable energy RFP that would allow renewable developers to obtain power purchase agreements (PPAs) within the timeframe needed to obtain savings under the ITC. The delay in the State's renewable procurement is not harming only offshore wind, but *all* wind and solar projects in Hawaii that could secure significant savings through the ITC.

If the PUC does not expeditiously approve the issuance of a renewable RFP, HECO can solicit proposals for near-term offshore wind projects and seek waivers from competitive bidding, as it has with solar projects in the past. HECO could then file an application for a waiver with the PUC by the third quarter 2017, with a potential PUC approval of that waiver by first quarter 2018. This process would enable a PPA(s) to the best offshore wind project(s) by April 1, 2018. With this timeline, project developers could secure ITC savings by June 30, 2019 and bring offshore wind online by the 2022-2023 timeframe. This timing is achievable. Progression has already tendered a proposal to HECO for a PPA that reflects the ITC savings and the ancillary benefits the project would bring to Hawaii. To demonstrate the impact on Oahu's energy supply if this approach is successful: Progression's offshore wind project alone could supply Oahu with at least 25% of its energy demands by 2023 at more than a \$225 million ITC discount for Hawaii ratepayers.

2. Engagement in the BOEM Process

Of equal importance is Hawaii leadership in the BOEM leasing process. While BOEM, as the lead agency, has expertise in the deployment of offshore wind, it does not have the knowledge that the Governor's Office, the PUC, HECO, and other State agencies and community stakeholders have concerning what it takes for a major infrastructure project to be successful in Hawaii. BOEM would welcome the State's involvement, as demonstrated by BOEM's close coordination with interested state governments on the Atlantic Coast and California. The State could provide invaluable guidance to BOEM on best practices for development in Hawaii, including the importance of early and extensive stakeholder outreach and stakeholder-driven siting.

Legislative Testimony P. 3

The State also can shape the results of a potential BOEM auction through its own actions. Most importantly, if the PUC would expeditiously review PPAs between well-developed and competitively-priced offshore wind projects and HECO, such PPAs could be used as an indicator of potential success and rewarded with a credit during the BOEM auction process. BOEM adopted this approach using a multi-factor bidding process that awarded a 25% credit to an offshore wind developer who obtained not only a PPA with the local utility but also had deep support in the community.

If the State were to forego the opportunity to encourage good development practices through direct communication with BOEM and the PPA process prior to a potential BOEM auction, it loses a key opportunity to (1) strongly influence which project(s) would be successful in the BOEM process; (2) weigh in on what technology would work best for HECO's electrical grid through the PPA process; and (3) potentially reduce the price at which the electricity would be sold to Hawaii ratepayers, i.e., the PPA credit effectively reduces the winning auction bid price, which in turn reduces offshore energy pricing.

3. Leadership in Consultations with Offshore Wind Developers and the Navy

Hawaii has a critical interest in the success of naval operations within the State. The Navy depends on the waters around Oahu for training and operations. The development of offshore wind for Hawaii's energy security and resilience not only benefits the Navy, but can also be sited in a manner that is compatible with the Navy's operations around Oahu. To strike this balance, it is important that the State take a leadership role in the ongoing consultations between the Navy and the offshore wind industry to ensure that a fact-based, site- and technology-specific study process is conducted to reconcile Navy interests with Hawaii's energy security and resilience interests, and the interests of all Hawaii stakeholders in the siting of offshore wind projects. DBEDT and the State Energy Office in particular are perfectly positioned to play a key role in this process. Without more state involvement, federal agencies, including BOEM and the Navy, may delay the leasing process to a point that results in the loss of the ITC for Hawaii ratepayers, and delays the realization of the economic, security and grid benefits of offshore wind. In addition, the University of Hawaii's Applied Research Laboratory is perhaps the best institution in the nation to handle the classified and technical aspects of the studies. These tremendous assets of the State of Hawaii could play an invaluable role in promoting the development of offshore wind and make significant strides towards Hawaii's 100% renewable energy mandate.

Thank you for the opportunity to testify on this Resolution.



Statement of Theodore A. Peck
CEO and Lead Developer, Holu Energy

before the SENATE COMMITTEES ON TRANSPORTATION AND ENERGY
and PUBLIC SAFETY, INTERGOVERNMENTAL, AND MILITARY AFFAIRS

Wednesday, March 29, 2017 1:20 p.m.
State Capitol, Conference Room 225

in consideration of SCR 122 URGING THE STATE ENERGY OFFICE WITHIN THE DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT, AND TOURISM, IN COOPERATION WITH OTHER STATE AND FEDERAL AGENCIES AND INTERESTED STAKEHOLDERS, TO FACILITATE DISCUSSIONS AND PROVIDE RECOMMENDATIONS FOR INITIATING AND SUPPORTING THE DEVELOPMENT OF OFFSHORE RENEWABLE WIND ENERGY PROJECTS.

Chairs Inouye and Nishihara, Vice Chairs Dela Cruz and Wakai, and Members of the Transportation and Energy, and Public Safety, Intergovernmental, and Military Affairs Committees:

Holu Energy strongly supports the objective of this resolution, which is to exhort the State Administration via the State Energy Office to engage with the Federal government, specifically with the Department of Defense and Department of the Navy as well as the Bureau of Ocean Energy Management.

While Holu Energy is under contract with Progression Wind for developing an offshore wind project off of Oahu, this resolution rightly is not specific to any one project.

Offshore wind will be key to Oahu reaching our state's goals for energy independence. Siting any offshore wind turbines with modest or little viewplane impact requires siting them in federal waters. Currently, there are no sites the US Navy considers acceptable which will provide energy at an acceptable price and size to be impactful for Hawaii's energy goals.

The Department of Defense has a process in place for siting land-based renewable energy projects which has been successfully used numerous times since 2010. That process or one similar ought to be employed to assist the DoD with the stakeholders in determining an appropriate location for siting a wind farm off the shores of the island of Oahu, to serve Oahu's energy needs.

It is imperative that the State of Hawaii demonstrate to the Federal government the importance to Hawaii of pursuing this fact-based process. Without the engagement of the State, the Federal government is unclear of the State's intent and priorities.



The development process for such projects is lengthy, complex, and encompasses many years siting activities, stakeholder engagement, environment studies, permitting, securing a Power Purchase Agreement (PPA), project financing, engineering, design, procurement, construction, and commissioning, more so compared to other renewable energy projects.

Even though offshore wind is a component of HECO's Power Supply Improvement Plans (PSIP) which are under review by the Hawaii Public Utilities Commission (PUC), it is in the State's best interest to act in parallel to insure that not only our State goal of 100% RPS can be met by 2045, but that our intermediate RPS goals in the 2020 to 2030 timeframe may also be met. In addition, taking action now provides an opportunity to take advantage of the remaining available federal Investment Tax Credits which could result in saving Oahu energy ratepayers over \$200 million if a PPA can be secured and approved by the PUC in the 2018 timeframe and commitments made on equipment procurement to secure the tax credits. Finally, such action will ensure that those resources are available for consideration and selection for use by HECO by whatever process they and the PUC deem appropriate.

As a former Naval officer in submarine and joint operations, and the former Hawaii State Energy Administrator, this kind of advocacy for technology siting and coordination with the Federal government is exactly the kind of role the State Energy Office should take. Action now is timely and imperative.

Lastly, I respectfully request a change in the language of SCR122, P. 2, Lines 14-16, to properly recognize the appropriate agency. At present, these lines read:
"WHEREAS, the Department of Land and Natural Resources is responsible for leasing areas of federal waters for siting potential offshore wind projects; and"

I request that you change these lines to read:

"WHEREAS, the United States Department of Interior, Bureau of Ocean Energy Management is responsible for leasing areas of federal waters for siting potential offshore wind projects; and"

Thank you for your consideration of this important issue for Hawaii's clean energy future.

A handwritten signature in black ink, appearing to read "Theodore Peck".

Theodore Peck
Chief Executive Officer
Holu Energy LLC



March 29, 2017

COMMITTEE ON TRANSPORTATION AND ENERGY

Sen. Lorraine Inouye, Chair; Sen. Donovan Dela Cruz, Vice Chair; and Committee Members

COMMITTEE ON PUBLIC SAFETY, INTERGOVERNMENTAL, AND MILITARY AFFAIRS

Sen. Clarence Nishihara, Chair; Sen. Glenn Wakai, Vice Chair and Committee Members

Public Hearing, March 29, 2017 at 1:20 p.m., Conference Room 225

**TESTIMONY of WILLIAM F. ANONSEN
MANAGING PARTNER/PRINCIPAL of THE MARITIME GROUP, LLC
IN SUPPORT of SCR 122**

My name is William Anonsen and I am the Managing Partner/Principal of THE MARITIME GROUP, LLC. We support SCR 122 which encourages the State Energy Office to facilitate discussions and provide recommendations for initiating and supporting the development of offshore renewable wind energy projects in Hawaii. Offshore wind energy development promises to be a significant domestic renewable energy source, especially for Hawaii's energy loads with no access to interstate grid transmission.

For hundreds of years, wind energy has been utilized by humans. Farmers and ranchers used windmills for pumping water or grinding grain. In modern times, wind energy is mainly used to generate electricity, primarily through the use of wind turbines. The newest wind turbines are highly technologically advanced, and include a number of engineering and mechanical innovations to help maximize efficiency and increase the production of electricity.

Offshore wind turbines are being used by a number of countries to harness the energy of strong, consistent winds that are found offshore over the oceans. Abundant offshore wind resources have the potential to supply immense quantities of renewable energy to supplement other power generating sources. Offshore winds tend to blow harder and more consistently than on land. The potential energy produced from wind is directly proportional to the cube of the wind speed. As a result, increased wind speeds of only a few miles per hour can produce a significantly larger amount of electricity. As an example an offshore turbine with an average wind speed of 16 mph would produce approximately 50% more electricity than a land-based same turbine and average wind speeds of 14 mph. This is one of the reasons that renewable energy developers are interested in pursuing offshore wind energy resources as part of Hawaii clean energy alternatives.

Mahalo for the opportunity to comment in support of this measure.

Sincerely,

William F. Anonsen

William F. Anonsen

Managing Partner/Principal

**1221 Kapiolani Blvd., Suite 1032, Honolulu, Hawaii, 96814
Tel: (808) 589-1223 www.The-Maritime-Group.com**

Statement of Richard R. Wilson
Operations Manager, Young Brothers LTD

Before the SENATE COMMITTEES ON TRANSPORTATION AND ENERGY and PUBLIC SAFETY,
INTERGOVERNMENTAL and MILITARY AFFAIRS

Wednesday, March 29 2017 1:20 p.m.
State Capitol, Conference Room 225

In Consideration of SCR 122 URGING STATE ENERGY OFFICE WITHIN THE DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT, AND TOURISM, IN COOPERATION WITH OTHER STATE AND FEDERAL AGENCIES AND INTERESTED STAKEHOLDERS, TO FACILITATE DISCUSSIONS AND PROVIDE RECOMMENDATIONS FOR INITIATING AND SUPPORTING THE DEVELOPMENT OF OFFSHORE RENEWABLE WIND ENERGY PROJECTS.

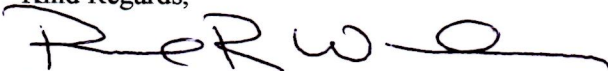
Committee Members,

Young Brothers LTD is an Independent Subsidiary of Foss Maritime Company with over 100 year history in Hawaii.

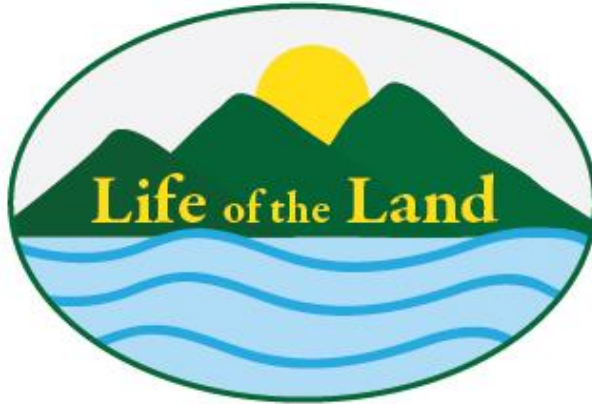
I grew up in Kailua as a child and was privileged to live in Hawaii when it was not so crowded and expensive for my family. We lived in a modest house in Enchanted Lakes that was purchased in 1964 in a new and developing neighborhood. I spent early adulthood traveling for work all over US but always considered Hawaii my home. What has become evident through the years as Oahu population increases is our infrastructure (Electric, Water, Sewer) to support the growth has had a difficult time keeping up. We are Islands in the middle of the Pacific Ocean so obviously have our challenges with some of the luxuries that are available and easily attained on the Mainland. Limited resources such as Fossil fuel means we have to look at alternatives that are more practical and economical for Island living.

I have done research and participated in Conferences and Presentations on Renewable Energy specifically Offshore Wind. I am very much an Ocean Advocate and spend much of my free time in the water enjoying our treasured beaches on Oahu and Neighbor Islands. I have also spent much of my adult career working on the water with tugs and barges in Hawaiian waters and all over the US West Coast, Gulf Coast, and East Coast. As a mariner we are very aware of the benefits of Offshore Energy. We have the technology and assets to provide service and support of offshore structures, anchors, and sub-sea cable. Considering our geographic location, Hawaii is one of the best candidates in the world for Offshore Wind Energy. Since Hawaii has a goal of 100% RPS by 2045 it would be wise to move forward on the planning stages and coordination now since the procurement aspect of large construction projects in Hawaii can be time consuming. Thank you for the opportunity to express my support.

Kind Regards,



Richard R Wilson
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COMMITTEE ON TRANSPORTATION AND ENERGY

Senator Lorraine R. Inouye, Chair
Senator Donovan M. Dela Cruz, Vice Chair

COMMITTEE ON PUBLIC SAFETY, INTERGOVERNMENTAL, AND MILITARY AFFAIRS

Senator Clarence K. Nishihara, Chair
Senator Glenn Wakai, Vice Chair

Wednesday, March 29, 2017

1:20pm

Conference Room 225

Re: SCR 122 DBEDT Facilitate Offshore Wind

COMMENTS

Aloha Chairs Inouye and Nishihara, Vice Chairs Dela Cruz and Wakai and Committee Members

Life of the Land is Hawai`i's own energy, environmental and community action group advocating for the people and `aina for 47 years. Our mission is to preserve and protect the life of the land through sound energy and land use policies and to promote open government through research, education, advocacy and, when necessary, litigation.

There have been a few offshore wind projects proposed in North America and Hawai`i.

2001	Massachusetts	Cape Wind project was proposed.
2005	Hawai`i	Alpha Wind Energy (AWE) and subsidiary AW Hawaii Wind LLC (AWH) start monitoring wind patterns
2008	Hawai`i	Grays Harbor Ocean Energy Company proposed Penguin Bank, Moloka`i wind/wave farm. Life of the Land was the only Hawai`i group to intervene at FERC. NOAA kyboshed the proposal.
2009	Rhode Island	Deepwater Wind proposed Block Island Wind Farm (BIWF)
2016	Hawai`i	O`ahu: Two proposals by AWH and one by Progression Hawai`i.

One comparison can be made between a commercially viable project in Rhode Island, and a theoretical project using future technology in Hawai`i.

Project	Block Island (BIWF)	AWH & Progression
Major Action	RI Supreme Court (2011) On-line: Dec 2016	HECO PSIP: Not needed for 5 yrs.
Max Water Depth (feet)	200	1,000
Nautical miles offshore	3.3	12
Power (MW)	24	400
Initial Cost (2016)	24.4 cents/kWh	
Escalated Cost (2036)	47.9 cents/kWh	

DBEDT should be considering offshore wind and wave energy facilities. But neither will be commercially deployed before 2022 at the earliest.

Mahalo,
Henry Curtis
Executive Director