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JOSH GREEN
Lt. Governor



PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

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**TESTIMONY OF PHYLLIS SHIMABUKURO-GEISER
CHAIRPERSON, BOARD OF AGRICULTURE**

BEFORE THE SENATE COMMITTEE ON WAYS & MEANS

**APRIL 1, 2019
10:20 A.M.
CONFERENCE ROOM 211**

**SENATE CONCURRENT RESOLUTION 119 SD1
REQUESTING THE STATE ENERGY OFFICE, IN COLLABORATION WITH THE
DEPARTMENT OF AGRICULTURE, TO CREATE AND IMPLEMENT A STRATEGIC
PLAN TO INCREASE RENEWABLE ENERGY AND LOCAL FOOD PRODUCTION
AND CREATE AN ECONOMIC IMPACT REPORT BASED ON IMPLEMENTATION OF
THE STRATEGIC PLAN.**

Chairperson Dela Cruz and Members of the Committee:

Thank you for the opportunity to testify on SCR 119 SD1 that requests the State Energy Office, in collaboration with the Department of Agriculture, to create and implement a strategic plan to increase renewable energy and local food production and create an economic impact report based on implementation of the strategic plan. The Department offers comments.

By legislative action, Chapter 205 has been amended over the past 10 years to accommodate renewable energy development on agricultural land. In most cases, the legislature had agreed that renewable energy should not adversely impact agricultural resources and agricultural production (see sections 205-4.5(a)(15 wind energy), (16 biofuel processing facilities), and (23 hydroelectric facilities)).

The first instance of integrating renewable energy production with agricultural activity came in 2014 with the passage of legislation (Act 55, 2014) to permit solar energy facility development on "B" and "C" rated agricultural land provided there is a "compatible agricultural activity". To date, four projects totaling 943 acres on "B" and



“C” rated agricultural lands have been approved for solar energy facility development on Kauai and Oahu. In each case the primary use of the “B” and “C” agricultural land is solar energy production, and the “compatible agricultural activity” is but a weed control measure using sheep.

With this 10-year history of agricultural land being made available to renewable energy development in progressively greater amounts, we find it paradoxical that these two resolutions are asking for the development of a strategic plan “that encompasses increasing renewable energy and local food production in a symbiotic relationship” at the same time there is a bill moving forward (HB 593 SD1) that seeks to allow solar energy facilities on the best agricultural lands in the State and displaces active farms.

The Department believes that existing State laws already grant broad flexibility to renewable energy resource development on agricultural land and that a strategic plan “that encompasses increasing renewable energy and local food production in a symbiotic relationship” is not necessary. The Department would be amenable to a policy statement from the Legislature stating that solar energy and other forms of renewable energy development from this point forward not adversely affect agricultural resources, particularly agricultural lands, whether in active production or not.

Thank you for the opportunity to testify on these resolutions.

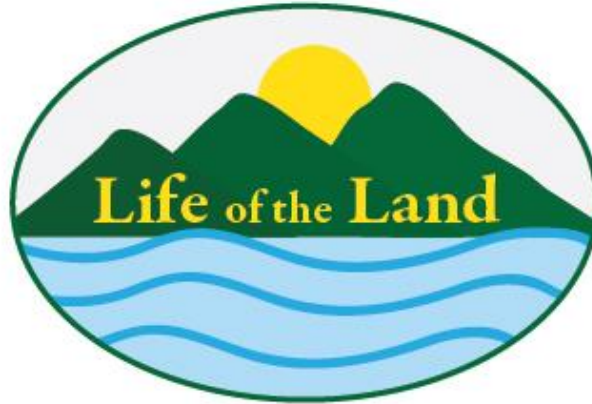
SCR-119-SD-1

Submitted on: 3/31/2019 7:58:21 AM

Testimony for WAM on 4/1/2019 10:20:00 AM

Submitted By	Organization	Testifier Position	Present at Hearing
Brian Miyamoto	Testifying for Hawaii Farm Bureau	Support	Yes

Comments:



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COMMITTEE ON WAYS AND MEANS
Senator Donovan M. Dela Cruz, Chair
Senator Gilbert S.C. Keith-Agaran, Vice Chair

DATE: Monday, April 1, 2019
TIME: 10:20 AM
PLACE: Conference Room 211

RE: SCR 119 SD1 Requesting HSEO & DOA Develop Strategic Plan **COMMENTS**

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

Life of the Land is Hawai`i's own energy, environmental and community action group advocating for the people and `aina for 49 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.

Life of the Land is working with relevant agencies and utilities on low carbon energy sustainability, reliability and resilience, and fully supports developing an agricultural sustainability plan. Such a plan should be for more than 20% of our agricultural needs and should involve all stakeholders.

Life of the Land has serious concerns with the assumptions used in SCR 119 SD1 as well as the solutions proposed.

(1) “The State has not yet developed a long-term strategic plan to achieve one hundred percent renewable electricity to achieve the State's renewable portfolio standard and policies.”

Life of the Land notes that the 100% goal is further into the future than the pre-internet is in our past. Imagine the Legislature requiring anyone back the to plan for the internet world we currently live in.

The Public Utilities Commission attempted to require the HECO Companies to plan for decades ahead, but found that in rapidly changing technological periods like we are experiencing now, transformations are measured in months not decades.

What is needed is to move forward on a flexible path rather than to define all of the parameters of some future that will never occur.

(2) “The State has thousands of acres of agricultural land that is classified by the Land Study Bureau with B, C, D, and E land-based productivity ratings, but these lands are fallow and not being utilized for farming.”

Life of the Land asserts that **IF** a farm returns 1-4% profit per year, **AND** leaving the land fallow for a decade or operating a failing operation allow the land to be upgraded to a renewable energy facility, residential, commercial, or resort, for a return of 100-10,000%, **THEN** it is economically profitable to destroying agriculture. This doesn't mean that agriculture can't work, it means that the government is unwilling to close loopholes.

(3) “The Department of Agriculture has not yet developed a strategic plan that incorporates renewable energy development in its plans and policies to increase local food production.”

The Legislature defined the roles and purpose of the Department of Agriculture in HRS §141-1. The word “energy” does not appear in that text.

(4) “The majority of Hawaii's commercially farmed produce is grown on lands owned by non-farmers who issue short-term leases to farmers, who therefore are unable to make the capital investments necessary to upgrade and modernize Hawaii's food production.”

If the Legislature is serious about agriculture, it has the power to require long-term leases, to prevent land upzoning and to encourage capital investments.

(5) “Renewable energy developments such as utility-scale solar developments will require thousands of acres of flat land that are close to major transmission lines to keep infrastructure costs low.”

Life of the Land is unsure what is meant by major transmission line: is it capacity, criticality for resilience, major load center or something else? The term has no definition and no common sense meaning. The majority of existing Hawai`i-based renewable energy systems do not interconnect to the highest voltage transmission lines on each island. The only thing we can think of is that this refers to a Korean multinational corporation`s assumption re Ho`ohana Solar, promulgated solely to violate state law.

(6) “The Netherlands has embraced new agricultural technology, shifted away from land-based farming, and utilizes low cost renewable energy to power greenhouse and vertical farms, leading the Netherlands to become one of the largest producers of agricultural exports in the world.”

Life of the Land`s review of current literature found that modern vertical farms are new, risky, high greenhouse gas emitting facilities that, as energy hogs, will require vast new amounts of energy.

While various forms of verticle farming have occurred over 4,000 years, the the world's first modern commercial vertical farm was opened in Singapore in 2012. The value of the Global Vertical Farming Market is still miniscule, it represented a mere 0.07% of global agriculture in 2017. The Global GDP was \$75 Trillion. Agriculture accounts for one-third of global GDP.¹ Global Vertical Farming Market was valued at \$1.78 billion.²

¹ World Bank <https://www.worldbank.org/en/topic/agriculture/overview>

² <https://www.alliedmarketresearch.com/vertical-farming-market>

“Vertical farming in the Netherlands is also known as plant factory with artificial light (PFAL).”³
The fad is growing and venture capital is being acquire. “Vertical farming is hot. The idea that we should grow food under highly-controlled conditions in urban high-rises is getting plenty of media attention, along with pleas for public and private investment.”⁴

National Geographic, 2017. “The Netherlands has become an agricultural giant by showing what the future of farming could look like. The great indoors provides optimal growing conditions for lettuce and other leafy greens at Siberia B.V. Each acre in the greenhouse yields as much lettuce as 10 outdoor acres and cuts the need for chemicals by 97 percent. ... The Netherlands is a small, densely populated country, with more than 1,300 inhabitants per square mile. It’s bereft of almost every resource long thought to be necessary for large-scale agriculture. Yet it’s the globe’s number two exporter of food as measured by value, second only to the United States, which has 270 times its landmass. How on Earth have the Dutch done it? Seen from the air, the Netherlands resembles no other major food producer—a fragmented patchwork of intensely cultivated fields, most of them tiny by agribusiness standards, punctuated by bustling cities and suburbs. In the country’s principal farming regions, there’s almost no potato patch, no greenhouse, no hog barn that’s out of sight of skyscrapers, manufacturing plants, or urban sprawl. More than half the nation’s land area is used for agriculture and horticulture.”⁵

Vertical Farms Are Risky. Urban Farmers bankruptcy 2018-19. "Vertical farming is difficult in the Netherlands." Greenhouse five-eight times more expensive than open land. Plantagon International with headquarters in Sweden and offices in Shanghai, Mumbai & Singapore opened its first Plantagon vertical farm was opened in 2018. During the crowdfunding, the

³ VertiFarm 2019 in The Netherlands

<https://urbanagnews.com/events/vertifarm-2019-in-the-netherlands/>

⁴ <https://energyfarms.wordpress.com/2010/12/02/energy-and-vertical-farms/>

⁵ <https://www.nationalgeographic.com/magazine/2017/09/holland-agriculture-sustainable-farming/>

company declared plans to open 10 large-scale farms.⁶ The company grew vegetables and fish in a Dutch rooftop farm. From the start, the project was met scepticism and the bankruptcy generated a lot of reactions. UF de Schilde in The Hague was declared bankrupt in 2018. The company grew and sold vegetables and provided guided tours of the rooftop farm. Another major vertical farming bankruptcy occurred in 2019.

Vertical Farms Are Energy Hogs. Study: Pot Growers Inhale 1% of U.S. Electricity, Exhale GHGs of 3M Cars, [New York Times](#), April 11, 2011 Indoor marijuana cultivation consumes enough electricity to power 2 million average-sized U.S. homes, which corresponds to about 1 percent of national power consumption, according to a study by a staff scientist at the Lawrence Berkeley National Laboratory. The resulting contribution to greenhouse gas emissions equals about 3 million cars on the road. Narrowing the implications even further reveals some staggering numbers. Mills said a single marijuana cigarette represents 2 pounds of CO2 emissions, an amount equal to running a 100-watt light bulb for 17 hours.⁷

The carbon footprint of indoor Cannabis production, Energy Policy, Volume 46, July 2012, Pages 58-67 “The emergent industry of indoor Cannabis production utilizes highly energy intensive processes to control environmental conditions during cultivation. This article estimates the energy consumption for this practice in the United States at 1% of national electricity use, or \$6 billion each year. One average kilogram of final product is associated with 4600 kg of carbon dioxide emissions to the atmosphere, or that of 3 million average U.S. cars when aggregated across all national production.”⁸

More Analysis Needed. The Princeton Vertical Farming Project (PVFP), led by Paul P.G. Gauthier, an associate research scholar in plant physiology and environmental plant metabolism, researches what the most optimal growing conditions are for indoor farming and

⁶ <https://www.igrow.news/news/swedish-vertical-farming-company-plantagon-international-bankrupt>

⁷ <https://archive.nytimes.com/www.nytimes.com/gwire/2011/04/11/11greenwire-study-pot-growers-inhale-1-of-us-electricity-e-62219.html?scp=2&sq=indoor%2520cannabis&st=cse>

⁸ <https://www.sciencedirect.com/science/article/pii/S0301421512002285>

how to produce the best crop yield while using the fewest amount of resources (e.g., water, electricity). Gauthier asserts that right now, leafy greens and cannabis are the most successful crops grown in vertical farms; neither make for a meal by themselves, particularly when you look at them in the context of food-insecure populations who need higher-calorie food as fuel.⁹

(7) “BE IT RESOLVED ...that the State Energy Office, in collaboration with the Department of Agriculture, is requested to create and implement a strategic plan that encompasses increasing renewable energy and local food production in a symbiotic relationship.”

The purpose of the Hawaii state energy office is to track data and to promote energy efficiency, renewable energy, and clean transportation to help achieve a resilient clean energy economy. As a recent audit of the DBEDT Energy Office found, the office is floundering and energy stakeholders don't understand the office and don't work with it.

By contrast, the Public Utilities Commission currently has several major multi-year stakeholder-involved proceedings involving grid planning, renewable energy acquisition, incentive ratemaking, resilience and reliability. These proceedings form the basis of Hawai'i's strategic energy path. DBEDT opted recently to drop out of all PUC dockets it was participating in.

Mahalo

Henry Curtis
Executive Director

⁹ <https://thespoon.tech/why-vertical-farming-wont-grow-without-more-data/>

SCR-119-SD-1

Submitted on: 3/29/2019 3:18:49 PM

Testimony for WAM on 4/1/2019 10:20:00 AM

Submitted By	Organization	Testifier Position	Present at Hearing
Nancy Redfeather	Testifying for Ka Ohana O Na Pua	Support	No

Comments:

Interesting Idea....I hope there is appropriate funding for Staff time, Consultants, etc..to make this a meaningful exercise.