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Public Utilities Commission

Docket No. 05-0145

O`ahu Power Plant

Testimony of

Cynthia Thielen

re: Wave Energy

LOL T-10

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2 My name is Cynthia Thielen. I am a Representative in the State House since 1990

3

4 **Education and Background**

5 I attended Stanford University, the University of Hawaii at Manoa, (BA with High

6 Honors), and the William S. Richardson School of Law (JD)

7

8 I received the Outstanding Lawmaker of the Year, 1999, from Small Business Hawaii;

9 Legislator of the Year Award, 1998, from the Hawaii Ophthalmologists; Legislator of the

10 Year Award 1995 from the Hawaii Psychological Association; Hawaii Women Lawyers

11 President's Award 1994; Common Cause Legislative Award 1992

12

13 I Attended the Fifth European Wave and Tidal Energy Conference in Cork, Ireland

14 (September 17-20, 2003) and the Sixth European Wave and Tidal Energy Conference in

15 Glasgow, Scotland (August 2005)

16

17 I am an Attorney, specializing in Land Use and Environmental Law (Retired). I

18 represented Protect Kaho'olawe 'Ohana in its successful efforts to return the island to the

19 people of Hawaii.

20

21 Founding member of Law Review at the William S. Richardson School of Law. I served

22 on the Kailua Neighborhood Board, Vice Chair 1988-90; Board Member on National

23 Conference of State Legislatures Energy and Electric Utilities Committee; Board

1 Member on National Conference of State Legislatures Environment and Natural
2 Resources Committee; Hawaii's Representative on National Women's Network; Former
3 president, Hawaii Children's Museum; Mayor's Task Force on the Environment 1989;
4 State Environmental Council 1984-87

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6 I have written several Opinion Editorials for publications including: "Hawaii: Catch a
7 Wave Energy" (Honolulu Advertiser, September 19, 2005); "Gathering Place: Hawaii
8 should ride the tide of wave energy" (Honolulu Star Bulletin October 3, 2005); Wave
9 Energy is the Wave of the Future (Honolulu Advertiser, January 27, 2006);
10 "Commentary: Just say 'no' to HECO's addiction to oil" (Honolulu Advertiser, June 26,
11 2006); and various wave energy articles for MidWeek.

12

13 **Fossil Fuel**

14 Time magazine's April 3 cover on global warming headlined to readers: "Be Worried. Be
15 Very Worried." Fossil fuel power stations burning oil emit large quantities of greenhouse
16 gases that contribute greatly to global warming. It is irresponsible and, yes, even criminal
17 to continue to add to this world crisis.

18

19 Now is not the time to invest in another costly oil-driven power plant that will only make
20 us even more dependent on fossil fuels. As each day goes by, our further dependence on
21 fossil fuels places our livelihood, our economy and our environment in further danger.

22

1 The PUC should say "no" to HECO's request to build yet another fossil fuel-fired plant.
2 There are better ways to solve this problem. The seas that surround us can provide a
3 clean, plentiful, reliable and cheap source of energy that can serve as a solution to our
4 energy problem without adding to the global warming crisis.

5

6 **Ocean Power**

7 The most powerful and commercially available renewable energy systems use the
8 movements of the ocean to generate power. Called wave energy, this technology is vastly
9 more powerful than wind and solar (but both of the latter still must belong in HECO's
10 renewable portfolio).

11

12 **Wave Power**

13

14 Companies from all over the world are looking into this technology and have found that
15 wave energy is the future.

16

17 Wavegen developed and operates the LIMPET, a commercial scale wave energy system
18 that provides energy for the grid on a Scottish island.

19

20 Ocean Power Delivery, has contracted with the Portuguese government to install several
21 of their "Pelamis" Wave Energy Converters off the Portuguese coast. The units are rated
22 at 750 Kw each, and due to their smaller size, have several advantages over other wave
23 energy systems. Individual units can be detached from the system and towed back to port

1 for repairs and maintenance without compromising the integrity of a multi-system wave
2 farm. Due to its small size and low profile in the water, the Pelamis is also the least
3 visually obtrusive system, a fact which will not escape our discerning residents of
4 Hawaii.

5

6 Perhaps the most powerful single system today is Wavedragon's "Wave Dragon" system.
7 A single unit can produce 7 Mw- enough to power 6,000 homes! Wavedragon is slated to
8 install its first commercial system off the coast of Wales in early 2007, and have a total of
9 11 systems in the area by 2009, giving them 77 Mw capacity and the ability to boast that
10 over 60,000 households will be powered by wave energy!

11

12 Closer to home, Australia-based firm Energetech is also producing power on a
13 commercial scale. Their system is projected to generate 2 Mw of power at its peak, with
14 the huge advantage of simultaneously producing desalinated water. Energetech has
15 shown an interest in developing their technology stateside, and is currently engaged in a
16 pilot project with the state of Rhode Island.

17

18 **Hawai'i wave regime**

19 The potential for this technology in Hawai'i is enormous. The Electric Power Research
20 Institute in Palo Alto, Calif., has identified Hawai'i as a leading site for wave-energy
21 development and says that coastal wave energy has nine to 10 times the energy provided
22 by U.S. hydroelectric dams. Furthermore, studies have found that wave energy could

1 provide 80 percent of the power on O'ahu and all the needed power on the Neighbor
2 Islands at a cheaper price.

3

4 We have already seen some success in developing this technology in Hawai'i. A power-
5 generating buoy anchored near Kane'ohe was able to produce electricity despite relatively
6 calm waters during testing in September 2005 before it was brought ashore for upgrades.

7

8 **Resistance**

9 HECO refuses to move forward in developing wave technology because using oil is
10 easier.

11

12 **Cost**

13 Wave energy can help solve the problem of high energy costs. Once a wave project is
14 developed and in place, it can provide power at more reasonable rates than HECO
15 charges. HECO's cost to consumers on O'ahu is 20.5 cents per kw hour, and on Moloka'i,
16 the cost is 28.8 cents. The low costs associated with the price of wave energy would be a
17 welcome relief to consumers struggling to pay their bills. HECO should now partner with
18 these companies to bring this technology to Hawaiian waters. The economics could work
19 for the companies, as state tax credits exist for investment in non-fossil fuel energy,
20 which is a qualified high-tech business.

21