

**TESTIMONY OF CARLITO P. CALIBOSO
CHAIRMAN, PUBLIC UTILITIES COMMISSION
DEPARTMENT OF BUDGET AND FINANCE
STATE OF HAWAII
TO THE
HOUSE COMMITTEE ON
ENERGY & ENVIRONMENTAL PROTECTION
FEBRUARY 3, 2009**

MEASURE: H.B. No. 432

TITLE: Relating to Energy Efficiency.

Chair Morita and Members of the Committee:

DESCRIPTION:

This bill proposes to amend Section 13 of Act 240, Session Laws of Hawaii 2006, by expanding the Pay As You Save program. The Public Utilities Commission ("Commission") would be required to, among other things 1) implement pilot programs for photovoltaic ("PV") energy systems and refrigerator exchanges; 2) provide partially subsidized energy audits for customers in the pilot programs; and 3) adopt rules, pursuant to Chapter 91, for the purposes of the Pay as You Save program by December 31, 2009.

POSITION:

The Commission supports the intent of this bill, however advises the committee that this bill may not be necessary.

COMMENTS:

- The Commission currently has a Pay as You Save pilot program for residential solar water heaters that is administered by the HECO Companies, pursuant to Act 240, Session Laws of Hawaii 2006. The three-year pilot program which began in June, 2007, recently completed its first evaluation report and is being reviewed by the Commission.
- In addition, Act 151, Session Laws of Hawaii 2008 added a new section to Chapter 269, Hawaii Revised Statutes, relating to the establishment of a PV rebate program. In December 2008, the Commission awarded a contract to a third party administrator ("TPA"), to provide energy efficiency programs in the HECO Companies' service territories. The TPA will be required to develop and propose a PV Rebate Program to the Commission in 2009.

- The TPA will also be required to review and develop new programs, including appliance recycling incentives programs.
- The Commission recommends the committee allow the Commission to work with the TPA to develop these programs and to determine if the programs are in the public interest.

Thank you for the opportunity to testify.

SUNPOWER

Room # 325 9:00 AM February 3, 2009

House Committee on Energy and Environmental Protection
HB432 RELATING TO ENERGY EFFICIENCY

Chair Morita, Vice-Chair Coffman and Committee Members:

Introduction: My name is Riley Saito Senior Manager, Hawaii Projects for the SunPower Systems Corporation. Thank you in advance for accepting these few comments on **HB432**.

SunPower Systems Corporation ("SunPower") has been a member of the Hawaii Energy Policy Forum since it convened in 2003 and a member of the Energy Generation working group for the HCEI over the past year. SunPower is in the business of designing, manufacturing, and delivering the highest efficiency solar electric technology worldwide. One of our latest projects was the 1.2 megawatt La Ola solar farm on Lanai with Castle & Cooke Hawaii.

SunPower supports the intent of this bill, but believes it to be premature given the various dockets that have been open at the Hawaii Public Utilities Commission relating to the deployment of renewable energy in Hawaii. These dockets may change the entire market for PV.

Second, the PAYS solar water heating program in addition, the PAYS solar water heating program may also be expanding from its pilot level of 100 to 2,500. This will present administrative challenges that will make it more difficult to originate a successful PAYS for PV program at the present time.

Third, the Public Benefit Fee Administrator that would be tasked with administering the PAYS for PV program does not yet formally exist and will face a number of challenges in taking on board existing programs, much less starting up new ones

Fourth, PAYS could be confused with the utility's rumored PV Host program, introducing still more uncertainty into the PV market.

In summary, the PV market in Hawaii is already beset by substantial uncertainty as a result of ongoing policy driven changes. These changes have caused the commercial market to pause and search for clarity regarding its future. SunPower is concerned that introducing a PV version of PAYS now will have a similar effect on the residential market and would strongly recommend that we look at this measure during the 2010 legislative session.

Mahalo for the opportunity to submit testimony.



HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION

February 3rd, 2008, 9:00 A.M.

Room 325

(Testimony is 2 pages long)

TESTIMONY IN SUPPORT OF HB 432

Chair Morita and members of the committee:

The Blue Planet Foundation strongly supports House Bill 432, expanding the pay as you save pilot program to include photovoltaic energy systems and refrigerator exchanges. We believe that pay as you save, or "on-bill financing," should be made a regular program administered by the public utilities commission (PUC) or the utilities.

On-bill financing is a critical tool to overcome the biggest barrier to energy efficiency and clean energy investment: the up-front cost. Consumers have proven to be terribly myopic in their purchasing decisions when it comes to energy saving technologies. Despite the environmental and long-term economic advantages of converting to photovoltaic power, a miniscule percentage of Hawai'i homes take advantage of this technology. Even less expensive purchases, like high efficiency refrigerators, are passed over because of their initial cost. By eliminating the up-front cost and enabling residents to pay for the investment through the energy savings over time, adoption of efficiency and clean energy will accelerate.

An examination of some of the economic barriers present in the diffusion of energy efficiency technologies provides insight into the challenges of greater adoption of efficient appliances and photovoltaic. Empirical studies examining the purchase of energy-saving devices reveal that high initial investment costs—regardless of the money savings from reduced electricity use—fosters to a tendency to avoid energy saving innovations. These decisions can result in outcomes that are economically suboptimal considering likely investment alternatives available to the decision maker. By foregoing certain energy efficiency investments, individuals demonstrate implied discount rates that are frequently an order of magnitude or higher over the prevailing discount rate. The table on page two of this testimony shows a sample of implied discount rates from a literature review compiled by Sanstad, et al.¹

¹ Sanstad, A. H., Blumstein, C., & Stoft, S. (1995). Viewpoint: How high are option values in energy-efficiency investments? *Energy Policy*, 23, 739-743.

A 1983 study on refrigerators² is notable for being one of the first to use very specific data and a simple technique. They examined two refrigerator models sold by the same national retailer between 1977 and 1979. The two refrigerators were identical in nearly every way except their energy use and cost: one used 410 kilowatt-hour (kWh) per year less electricity but cost \$60 more. Using a 6% discount rate and a 20-year lifetime, the more efficient refrigerator saved energy at an electricity cost of just over one cent per kWh—lower than electricity prices prevailing in every state at the time. Despite being widely advertised and being recommended by a prominent consumer magazine, the energy-efficient refrigerator was purchased by customers less frequently than the less expensive inefficient model. Using regional electricity cost data, Meier and Whittier calculated the implied discount rate by these purchases, which varied between 34% and 59%, depending on the region’s prevailing residential electricity rate.

Average Implicit Discount Rates in Energy Efficient Investments (Sanstad, et al., 1995)

Study	End-use	Average rate
<i>Arthur D. Little (1984)</i>	Thermal shell measures	32%
<i>Cole and Fuller (1990)</i>	Thermal shell measures	26%
<i>Goett (1978)</i>	Space heating system and fuel type	36%
<i>Berkovec, Hausman and Rust (1983)</i>	Space heating system and fuel type	25%
<i>Hausman (1979)</i>	Room air conditioners	29%
<i>Cole and Fuller (1980)</i>	Refrigerators	61-108%
<i>Gately (1980)</i>	Refrigerators	45-300%
<i>Meier and Whittier (1983)</i>	Refrigerators	34-58%
<i>Goett (1983)</i>	Cooking and water heating fuel type	36%
<i>Goett and McFadden (1982)</i>	Water heating fuel type	67%

The issues that give rise to the “energy-efficiency paradox” are likely to be more pronounced in the decision to purchase a photovoltaic system, with high initial investment costs and lengthy payback times. Expanding the on-bill financing program to energy efficient appliances (such as high efficiency refrigerators) and residential photovoltaic systems will help to eliminate this barrier and make these money-saving technologies more accessible to local residents.

Thank you for the opportunity to testify.

² Meier, A., and Whittier, J. (1983). Consumer Discount Rates Implied by Purchases of Energy-Efficient Refrigerators. *International Journal of Energy*, 8(12), 957-962.



Sierra Club Hawai'i Chapter

PO Box 2577, Honolulu, HI 96803
808.537.9019 hawaii.chapter@sierraclub.org

HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION

February 3, 2009, 9:00 A.M.

(Testimony is 2 page long)

TESTIMONY IN SUPPORT OF HB 432

Chair Morita and members of the Committee:

The Sierra Club, Hawai'i Chapter, with 5500 dues paying members statewide, supports HB 432, expanding the pay as you save pilot program to include photovoltaic energy systems and refrigerator exchanges. Energy efficiency is the low hanging-fruit in the range of options necessary to reduce Hawai'i's energy costs and greenhouse gas emissions.

The Sierra Club acknowledges a recent editorial opinion¹ that addresses this subject in a humorous manner, but effectively makes a point.

UBJECT: REQUEST FOR URGENT BUSINESS RELATIONSHIP

Please excuse this unsolicited correspondence. I am sure and have confidence of your ability and reliability to prosecute a transaction of this great magnitude. An unusual circumstance on an island in the CENTRAL PACIFIC OCEAN has availed an opportunity for great fortune to be gained. Needed from you is access to investment of \$100,000,000, for which you will be thusly compensated \$50,000,000 annually for the next 10 years. As you see this business transaction provides you a yield of 50 percent annually. Please, note that this transaction is 100 percent SAFE AND GUARANTEED. Time is of the essence, as thousands will continue to suffer without your timely investment. I simply need your full name and also your BANK NAME AND ACCOUNT, where the money will be transfer into ...

¹ Editorial Opinion printed on 8/24/2008 in the Honolulu Star Bulletin, available at <http://archives.starbulletin.com/2008/08/24/editorial/special.html>

...Does this scam sound vaguely familiar? It should. Only this one isn't a scam at all. It's the real-life earnings potential for an energy efficiency investment in Hawaii. Aside from being legitimate, this investment's added benefits include reduced greenhouse gas emissions, local job creation and an infusion of cash locally.

Skyrocketing energy costs have positioned efficiency investments as head-spinning money makers - particularly with this down economy. Yield rates of 25 percent, 50 percent, or higher - unheard of in the financial markets - are possible with properly structured investments in clean technology.

Consider the above example - a salivating 50 percent annual "return" on investment for a 10-year term. How? Imagine you have an energy SWAT team that can go into homes and replace the water heater and light bulbs. The homeowners continue to pay the same average monthly cost for electricity, but instead of sending a check to the utility, they send it to you. You pay the lower actual bill - reaping the savings from the efficiency investments. The homeowners benefit from having a stable electricity cost and new lights and a water heater that they own after time.

Here are the numbers: A residential solar water heater installed will run about \$5,000. After the rebate and state tax credit are taken, the effective cost is about \$2,700 (leaving out the federal tax credit, whose future is currently uncertain). Solar will save about 2,800 kilowatt-hours annually over an electric heater, which means a Kauai resident who pays \$0.44 per kwh will save about \$1,232 every year. Add to that a handful of compact fluorescent light replacements, replacing seven 75-watt incandescent bulbs with 20-watt CFLs. Let's say those cost \$9 each (with labor) for a total cost of \$63 for the lights (they last about 10,000 hours). If those lights are on about three hours a day, the annual savings is 422 kwh per year, or \$185 annually for a Kauai resident.

Add it all up and you have a \$2,763 initial investment that saves (or yields) \$1,417 over the course of each year on Kauai - the equivalent of a 50 percent return on investment. Estimating that 10,000 homes on Kauai could benefit from this retrofitting (of the 30,000 housing units on the island) and you have nearly a \$28 million investment potential. Let's say you include an additional 15,000 retrofits on the Big Island (cost: \$40 million) and 12,000 on Maui (\$32 million). The electricity rates are slightly lower on these islands but the solar rebates are higher. Put them

together and you have a \$100 million investment that has the potential to return about \$50 million every year.

But wait, there's more. This statewide investment would reduce greenhouse gas emissions by about 120,000 tons annually and provide hundreds of local jobs.

So where do you sign up? Good question, because the financing structure for such an investment at this scale isn't in place. Sure, individual homeowners are replacing bulbs and buying solar, but not at a pace that matches their money-making potential. Since these investments are so lucrative and add so much value to Hawaii and the environment, there must be a way to put our brightest business minds to work and figure out how to leverage this massive investment potential across the state.

So where are Hawaii's heavy investors? Where are Hawaii's "local" banks, moneyed institutions like Kamehameha Schools and private investors putting their money? Is it helping local folks in Hawaii? Are they getting a better yield than 50 percent? What do we need to do to focus serious money on vastly improving Hawaii's energy efficiency in the short term?

This proposal just looked at solar water heaters and lights for a limited number of homes. Hundreds of millions of additional energy efficiency investments exist in the form of Energy Star appliances, air conditioning, insulation and commercial equipment, among others.

If we're not maxing out our local energy efficiency investments, we might as well be falling for the spam fraud and sending our hard-earned money overseas to questionable regimes and unscrupulous business interests. With our utter dependency on oil, we already do that every day.

Thank you for the opportunity to testify.