

SB 390

**TESTIMONY OF CARLITO P. CALIBOSO
CHAIRMAN, PUBLIC UTILITIES COMMISSION
DEPARTMENT OF BUDGET AND FINANCE
STATE OF HAWAII
TO THE
SENATE COMMITTEE ON ENERGY & ENVIRONMENT
FEBRUARY 03, 2009**

MEASURE: S.B. No. 390
TITLE: Relating to Energy Resources.

Chair Gabbard and Members of the Committee:

DESCRIPTION:

This bill proposes to clarify provisions of Act 204, Session Laws of Hawaii ("SLH"), 2008, and section 196-6.5, Hawaii Revised Statutes ("HRS"), with respect to variances for solar water heater systems made available pursuant to solar water heater system standards authorized and developed by the public utilities commission ("Commission") under section 269-44, HRS. The bill also amends section 269-44, by requiring the Commission, to the extent reasonably practicable, to harmonize its standards with those adopted or established by the public benefits fee ("PBF") administrator ("PBF Administrator"), and that the Commission shall use a portion of the PBF to support post system installation verification inspections of systems installed pursuant to section 196.5. In addition, this bill amends section 235-12.5, HRS, relating to tax credits available for solar thermal energy systems.

POSITION:

The Commission supports the intent of this bill to implement the mandatory installation and use of solar water heating systems in new single family dwellings under HRS Section 196-6.5, but has concerns about diverting the attention and resources of the PBF administrator for such mandated solar water heating installations.

COMMENTS:

- Currently, part VII, chapter 269, HRS, provides that the Commission may, by order or rule, require that all or a portion of the moneys collected by Hawaii's electric utilities from its ratepayers through a demand-side management surcharge ("Public Benefits Fee" or "Fee") be transferred to a Commission-contracted PBF Administrator to be used to support energy-efficiency and demand-side management programs and services.

- After conducting a competitive bidding process in 2008 for a PBF Administrator, the Commission made its selection in December 2008 and is scheduled to enter into a contract with the winning bidder, Science Applications International (or "SAIC") by the end of this month. Thus, SAIC will be the PBF Administrator which will provide energy efficiency programs in the HECO Companies' service territories, and is directed to develop new and innovative energy efficiency programs.
- It is important to remember that the PBF Administrator is under contract to the Commission; it is not a governmental agency, and any additional duties and responsibilities to be given to the PBF Administrator by the Commission will require either further contractual negotiations and compensation or the retention of another program administrator. The additional costs cannot be determined at this time.
- HRS Section 196-6.5 provides for the **mandatory** installation of solar water heating systems for new single family dwellings. There is no reason why the function and responsibility of processing and approving variances from the mandatory installation requirements required to obtain a building permit from the counties should be transferred from the DBEDT Energy Resources Coordinator to the PBF administrator. Variances for building permit requirements are more appropriately left with the Energy Resources Coordinator as is or with the counties.
- This mandatory solar water heating installation program should not require the PBF Administrator's services to process variances from the mandatory installation requirement and its time and resources would be better used in developing more innovative incentive and rebate programs. The PBF Administrator's skills and expertise should not be diverted to the ministerial task of processing mandatory installation requirements.
- Similarly, the proposed requirement to have the Commission divert some of the PBF moneys for the Commission to verify the proper installation of solar water heating technology is also misplaced. Under HRS Chapter 269, Part VII, the PBF moneys are not actually collected by the Commission nor deposited into its special fund for disbursement, but remains ratepayer funds, collected and disbursed by a Fiscal Administrator under contract with the Commission. Requiring the Commission now to divert ratepayer funds to implement mandatory building requirements in new single family dwellings would not be the best use of ratepayer funds. Verification of installation according to mandatory installation requirements are more appropriately left with the Energy Resources Coordinator or the counties.

Thank you for the opportunity to testify.



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

LINDA LINGLE
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Statement of
THEODORE E. LIU
Director
Department of Business, Economic Development, and Tourism
before the
SENATE COMMITTEE ON ENERGY AND ENVIRONMENT
Tuesday, February 3, 2009
2:45pm
State Capitol, Conference Room 225

in consideration of

SB390
RELATING TO ENERGY RESOURCES.

Chair Gabbard, Vice Chair English, and Members of the Committee.

The Department of Business, Economic Development, and Tourism (DBEDT) supports SB390 which amends provisions of the mandatory solar water heating measure passed last session. The amendments transfer variance approval to the Public Benefits Fee Administrator, clarify variance request procedures and authority, reduce the tax credit for substitute renewable energy systems installed under the mandate, provides guidance for solar water heater system standards, and allow use of demand-side management surcharge moneys for verification inspections.

We defer to the Department of Taxation on tax matters.

Thank you for the opportunity to offer these comments.

LINDA LINGLE
GOVERNOR

JAMES R. AIONA, JR.
LT. GOVERNOR



KURT KAWAFUCHI
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**SENATE COMMITTEE ON ENERGY & ENVIRONMENT
TESTIMONY REGARDING SB 390
RELATING TO ENERGY**

TESTIFIER: KURT KAWAFUCHI, DIRECTOR OF TAXATION (OR DESIGNEE)

DATE: FEBRUARY 3, 2009

TIME: 2:45PM

ROOM: 225

This clarifies application of the required solar-thermal energy system law.

The Department of Taxation **prefers SB 871**, which better accomplishes the renewable energy policy needed to reduce the State's dependence on oil.

SUPPORT FOR ALTERNATIVE ENERGY—The Department strongly supports the encouragement and implementation of alternative energy systems in Hawaii in order to lessen the State's dependence on alternative energy. As fossil fuel and petroleum prices become more volatile, Hawaii's ability to generate its own energy from home will make the State more secure and less reliant on others. The Department concurs that photovoltaic and other sun-related energy generation is particularly beneficial given Hawaii's relative location to the sun.

BUILDING PERMIT LANGUAGE WAS UNCLEAR—The Department prefers the language in SB 871. The Department understands the intent that only "new construction" homes are to be disqualified. However, the law is not that clear. A building permit is necessary for any addition or amendment to a home, as well as installation of the energy system. The issue then, is that the term "building permit" could be interpreted to be any permit, which could disqualify a taxpayer. However, by eliminating the permit language, as this bill does, any single-family home may qualify for the solar thermal credit even newly-constructed homes where the solar water heater is mandated by HRS § 196-6.5.

This bill has a positive impact of about \$0.31 million.



P.O. Box 3000
Honolulu, Hawaii 96802-3000

February 2, 2009

Testimony for SB390 Relating to Energy Resources

Aloha Chair Gabbard, Vice-Chair English and members of the Committee.

My name is Jeffrey Kissel, President and CEO of The Gas Company. Thank you for the opportunity to provide testimony on SB390, related to Energy Resources.

The Gas Company strongly opposes SB390 which clarifies provisions of Act 204 related to solar water heaters and eliminates the option of backup gas water heating systems.

ACT 204 (2008), which requires that, beginning in 2010, only the most energy efficient water heating devices be used in new residential home construction had broadbase support. The final version of the bill (1) addresses the issue of global warming, (2) promotes renewable energy, (3) clearly establishes energy conservation as a critical component of all new residential construction, and (4) recognizes that homeowners and builders should have access to a variety of energy conserving alternatives, thereby promoting innovation and new solutions to provide more renewable energy for Hawaii. This landmark legislation represents a significant and positive step towards achieving the State's vision to promote renewable energy and energy efficiency and reduce Hawaii's dependence on petroleum.

The Gas Company has consistently supported measures that encourage consumer options in seeking energy efficient alternative solutions. However, SB390 does the opposite in that it unreasonably limits energy efficient choices by specifying a single technology. Act 204, as passed last year, is a unique piece of legislation that not only requires solar water heating but rightfully recognizes that renewable and instantaneous gas water heating systems can and should be allowed when proven viable through a variance process. More importantly, it recognizes that the gas distribution system is the most efficient and reliable way to deliver renewable thermal energy for heating water, cooking food and other domestic uses.

It is important to remember that the gas produced in Hawaii, is made from petroleum by-products already produced here today. It does not require the importation of one drop of additional oil. In addition, The Gas Company, LLC is actively developing a renewable energy strategy to produce 50% of its supply from renewable resources such as land fill gas and bio-methane within five years.

SB390
Testimony of Jeffrey Kissel
February 2, 2009

SB390, as currently written, would remove consumer's option to install on demand water heater devices approved by Underwriters Laboratories, Inc., and undermines consumer choice options provided in Act 204 (2008). SB390 completely eliminates consumer choice among high efficient and reliable water heating technologies and ignores that on-demand gas water heaters are an energy efficient alternative that residential homeowners should be given the opportunity to select when deciding how best to heat their water.

With the inclusion of gas, Act 204 (2008) recognizes that homeowners and builders should have access to a variety of energy conserving alternatives. We have attached additional data to our testimony to support these statements.

The Gas Company is proud of its reputation of providing our island residents and businesses with dependable gas energy service. Gas has 1/3rd the carbon footprint as electricity, and is available day and night. When teamed with Solar, it can reduce costs and carbon consumption by more than 80%.

Even after hurricanes, electricity blackouts, and the attack on Pearl Harbor, our customers could always depend on our reliable delivery of gas. It is because of our solid reputation of serving Hawaii as a clean, efficient and reliable energy provider that we believe The Gas Company must continue to have an integral role in Hawaii's sustainable solutions.

We encourage you to hold this bill and retain the consumer choice options for energy efficiency provided in Act 204 (2008).

Thank you for allowing The Gas Company to present these comments.

Heating Up: the Debate about Instantaneous Water Heaters

What is an instantaneous water heater? Sometimes called tankless or demand water heaters, instantaneous water heaters (IWHs) don't have storage tanks, and therefore don't have the standby losses of tank-type conventional water heaters (CWHs). Consequently, they must have enough heating capacity to instantly heat water flowing through at various flow rates and temperatures. More sophisticated models modulate electric or gas input to handle widely fluctuating input water temperatures from solar systems.

Are IWHs significantly more efficient than conventional water heaters? IWHs, by avoiding standby losses (heat losses to ambient air from storing hot water), are more efficient than conventional water heaters. The question is how much more efficient. Standby losses depend on water heater design, size of the tank, ambient temperature, set point temperature, and hot water draw rate.

To reduce exaggerated claims, GAMA (Gas Appliance Manufacturers Association) rates residential gas water heaters under a standard test procedure. Based on the results of the testing, each model is assigned an Energy Factor (EF) value. The EF represents the fraction of hot water energy delivered (41,045 BTUs) divided by the total energy consumed, including combustion and standby losses. GAMA then calculates the annual water heating cost (at their assumed gas rate) for a typical family using 64.3 gallons a day of 140°F hot water, and publishes the Energy Factor and energy cost information both on their website, www.gamanet.org, and on the yellow "Energy Guide" tags on new residential water heaters. Energy Factors for tank-type water heaters range from .55 to .67, while EFs for instantaneous heaters range from .80 to .92, with the vast majority hanging in the low 80's.

To give a numerical example, let's assume you're comparing energy costs of a conventional water heater model with an Energy Factor of .60 with an IWH which has an EF of .80. Immediately we know the savings will be $(.80-.60)/.60$, or 33%. In dollars per year at an SDG&E gas rate of \$1.20 per therm, this is $(41,045/100,000)/.06 \times .33 \times \$1.20 \times 365\text{days} = \100 per year. Keep in mind that this example is comparing new water heaters, using the GAMA 64.3 GPD (41,045 BTUs a day) profile. If your actual daily draw is much higher or lower than 64.3 GPD, the resulting savings will be somewhat proportional. The savings with higher consumption are not strictly proportional (but close) because higher cold water daily flows through a tank-type heater tend to lower the average tank temperature while it recovers. Therefore the standby losses go down and the Energy Factor goes up.

A large US manufacturer, Bradford White, which makes both tank-type water heaters and tankless water heaters, tested two conventional water heaters versus two instantaneous water heaters. They published the results in PM Engineer Magazine, January 7, 2005. The results showed some interesting conclusions:

- first, tank-type water heaters are becoming more efficient so the savings of tankless models is less,
- second, the constant-burning pilot light on one tankless model nearly wiped out the savings in standby losses,
- third, higher draw rates (107 GPD vs. the GAMA 64 GPD) seemed to raise the Energy Factors of the tank-type water heaters,
- finally (San Diegans take note!) water hardness was more detrimental to tankless water heaters than to tank-type water heaters. The tankless water heaters lost nearly

2% efficiency in only two weeks! This may be explained by higher intensity combustion in the tankless unit, impacting slow-flowing hard water in a constricted passageway. Bradford White recommends periodic de-liming service or water softening in hard water areas.

Is it good to combine IWHs with solar water heating? It's good if your goal is to squeeze out every last bit of savings, such as for a Zero Net Energy home or to fight global warming. But the economic advantages are marginal. The solar system should be sized to save about 70% of water heating energy, which leaves only 30% for the IWH to work on. Given the GAMA example above, with \$1.20 per therm, the IWH savings would be reduced from \$100 per year to $0.33 \times \$100 = \33 a year. Given that installed costs for IWHs can be twice those for conventional water heaters (\$1600 vs. \$850), the payback for the additional investment of \$750 would be $\$750/\$33 = 23$ years. If you're a serious global warming battler, go for it! .

The following chart compares total undiscounted 20-year lifecycle costs for various types of water heaters. It reflects San Diego area gas & electric energy costs, and assumes no inflation of these costs. Note that solar does very well in this comparison because it is highly incentivized through 2008. Also note that if rates rise and if longer periods are evaluated (solar collectors should last 30 years), the comparative benefit of solar is even greater.

Comparing Life Cycle Costs

| Water Heater Type | Energy Factor (EF) | Yearly Cost | Yearly Energy Cost (Years) | Life | 20 Year Total Cost |
|-------------------------------------|--------------------|-------------|----------------------------|------|--------------------|
| Conventional Gas Tank-type heater | 0.6 | \$850 | \$300 | 13 | \$7,700 |
| Electric Tank-type heater | 0.9 | \$750 | \$634 | 13 | \$14,180 |
| Gas Demand heater (no pilot) | 0.8 | \$1,600 | \$225 | 20 | \$6,100 |
| Solar with electric heater (1-tank) | 3 | \$2,660 | \$190 | 20 | \$6,460 |
| Solar with gas heater (2-tank) | 2 | \$3,360 | \$90 | 20 | \$5,160 |

Notes.

1. Costs are installed costs. Solar gross costs: 2-tank gas backup = \$6,000 Solar 1-tank electric backup = \$5,000
2. Based on 64.3 gallons a day (family of four, 41,045 Btus a day)
3. \$1.20 a therm for gas. \$.13 a kWh for electric
4. No fuel price escalation
5. Solar based on 70% Solar Fraction
6. Solar cost reduced by 30% Federal Tax Credit and CCSE rebate of about \$1,200*
7. The average electricity cost for large homes can reach \$0.20/kWh or more

* SWH rebates and Federal Tax Credits expire Dec. 31, 2008

Resources

1. www.aceee.org/consumerguide/waterheating.htm
2. www.gamanet.org
3. www.eere.energy.gov/consumer

TAXBILLSERVICE

126 Queen Street, Suite 304

TAX FOUNDATION OF HAWAII

Honolulu, Hawaii 96813 Tel. 536-4587

SUBJECT: INCOME, Renewable energy resources

BILL NUMBER: SB 390

INTRODUCED BY: Gabbard and 3 Democrats

BRIEF SUMMARY: Amends HRS section 235-12.5(a)(2)(A) relating to wind energy systems to add the phrase “unless all or a portion of the system is used to fulfill the substitute renewable energy requirement pursuant to HRS section 196-6.5(a)(3), then the credit shall be reduced by 20% of the actual system cost or \$1,500, whichever is less.”

Also amends HRS section 235-12.5(a)(3)(A) relating to photovoltaic energy systems to add the phrase “unless all or a portion of the system is used to fulfill the substitute renewable energy requirement pursuant to HRS section 196-6.5(a)(3), then the credit shall be reduced by 35% of the actual system cost or \$2,250, whichever is less.”

Makes other nontax amendments to HRS sections 196-6.5 and 269-44.

EFFECTIVE DATE: Upon approval, retroactive to January 1, 2009

STAFF COMMENTS: Last year the legislature by Act 204, SLH 2008: (1) provided that after 1/1/10 no building permit shall be issued for a single-family dwelling that does not include a solar water heater system; (2) provided that the income tax credit for solar thermal energy systems shall only be available to single-family residential properties for which a building permit was issued prior to 1/1/10; and (3) provided that the renewable energy technologies tax credit may not be claimed by residential home developers for systems placed in service in 2009. While Act 204 added language to HRS section 196-6.5(a)(3) referring to a “substitute energy technology system, as defined in HRS section 235-12.5” it is questionable what constitutes a substitute energy technology system as there is no such definition in HRS section 235-12.5. Absent such a definition, it is unclear how the credit amount is to be calculated if this measure is enacted.

Digested 2/2/09



Hawaii Solar Energy Association
Serving Hawaii Since 1977

February 1, 2008

SB390: Testimony in Support

Dear Chair Gabbard, Vice Chair English, and Members of the Committee:

Hawaii Solar Energy Association (HSEA) is comprised of more than 30 installers, distributors, manufacturers and financiers of solar energy systems, both hot water and PV, most of which are Hawaii based, owned and operated. Our primary goals are: (1) to further solar energy and related arts, sciences and technologies with concern for the ecologic, social and economic fabric of the area; (2) to encourage the widespread utilization of solar equipment as a means of lowering the cost of energy to the American public, to help stabilize our economy, to develop independence from fossil fuel and thereby reduce carbon emissions that contribute to climate change; (3) to establish, foster and advance the usefulness of the members, and their various products and services related to the economic applications of the conversion of solar energy for various useful purposes; and (4) to cooperate in, and contribute toward, the enhancement of widespread understanding of the various applications of solar energy conversion in order to increase their usefulness to society.

HSEA members manufacture and install the vast majority of solar water heating systems deployed in the State of Hawaii. Our comments on this measure are based on this expertise, and our related experience in other renewable energy technologies.

HSEA would like to begin by noting that there are seven bills in this hearing that attempt to alter, fix, or expand the requirement that new homes use solar water heating systems to heat the water for their homes. Because the seven proposals in many cases overlap and/or implement some of the same changes in different ways, HSEA has decided that it will be most valuable to the committee to provide a comprehensive response to the issues raised in these seven bills, followed by specific testimony on each bill. This comprehensive response unfolds as discussion of the five most important issues raised by these 'solar mandate' bills, followed by a statement of HSEA's position on each issue.

ISSUE #1: Clarifying that the Trigger for Applicability of the Mandate is the Origination of a Permit to Build a New Single Family Home, Rather than the Origination any New Building Permit. Some argue that Act 204 created ambiguity regarding whether the origination of any new building permit (including permits for unrelated activities, such as adding a bathroom) would trigger the requirement that a solar water heater be installed on the dwelling. Others argue that the language is currently

specific enough to avoid this confusion. Several bills attempt to solve the problem definitively by removing any and all ambiguity.

HSEA Position: HSEA supports the goal of restricting the applicability of the solar water system mandate to new dwelling units. Although HSEA members, as installers of the majority of solar water heating systems in the state, would likely benefit from a requirement that anyone who wants to do any form of home improvement must also install a solar water heating system, this seems not to have been the intent of the legislation. HSEA sides here with the public interest in maintaining a clear linkage between legislative intent and legislative consequences.

Bills in this hearing that successfully clarify the issue are: SB390, SB1198

ISSUE #2: *Variances Developers May Use to Avoid the Requirement for Solar Hot Water and Incentive Parity across Technologies for Heating water.* Act 204 established four categories of variances that could be granted to developers that would allow them not to install solar water system on new homes built under building permits originated after the effective date of the mandate. These are: (1) inadequacy of the solar resource; (2) unreasonable payback period; (3) use of wind or solar photovoltaics to heat water instead; (4) use of a tankless gas water heater to heat water.

Variance categories (1) and (2) are standard approaches to the challenge of granting necessary and reasonable exceptions to avoid unintentionally requiring inappropriate/inadequate systems for heating water that could result in the need to buy an additional water heating system or deal with the inconvenience of water that is not hot enough.

Variance (3) is generally seen as either a more costly way to heat water (PV) or has not achieved any meaningful level of market penetration in Hawaii (wind) for single-family residences. Some have argued that these are not appropriate reasons to forbid developers from using them if they so choose. Others have argued that the issue is not the choice of renewable technology but the tax incentive asymmetry that results from a mandate that eliminates tax incentives for one technology (solar hot water) while other technologies (PV and wind) retain their tax incentives.

Variance (4) is something of a loophole in what is widely referred to as the 'solar mandate act.' Some argue that allowing a gas variance is acceptable on the grounds that burning gas to heat water requires less fossil fuel and, hence, emits less carbon than heating water with electricity. This appears, however, to be a matter of dispute, as others argue that this comparison does not take account of the energy used in transforming petroleum into the synthetic gas that is the only kind of gas available in Hawaii. In addition, HSEA notes that the share of grid power produced by burning fossil fuels varies across utilities and over the course of the day. For instance, HELCO recently hit 60% renewables for a brief period and has averaged over 30% for longer periods.

HSEA Position:

Variance (3). HSEA is strongly in favor of efforts to lower the use of fossil fuels in the state of Hawaii. To this end, HSEA supports the existence of the wind/PV variance.

However, HSEA prefers that solar water heating not have its subsidy reduced while those of other technologies remain in place. HSEA is indifferent as to whether this is achieved by reinstating the subsidy for solar hot water or by reducing the subsidy for PV and wind by an amount equivalent to that lost by solar hot water under Act 204.

Bills that close the subsidy gap across technologies by reinstating tax credits for solar hot water: SB554

Bills that close the subsidy gap across technologies by reducing the tax credit for PV and wind: SB390

Variance (4). HSEA strongly opposes the existence of variance 4. HSEA believes that any pathway that allows compliance with a 'solar mandate' by burning fossil fuels is fundamentally flawed and goes directly against the spirit and intent of the legislation. Further, existence of the gas loophole runs in direct opposition to broader initiatives in Hawaii to achieve energy security by weaning the state off of fossil fuels. The existence of the gas variance is especially problematic because the cost of installing a tankless gas water heater is substantially below that of a solar water heating system, which will lead many developers to choose it in order to keep the selling price of their homes as low as possible, particularly during these difficult economic times.

Bills that eliminate the gas variance: SB390

ISSUE #3: *Extending the Mandate to Structure Types besides Single Family Detached Housing.* If a sound public policy justification exists for requiring solar water heating on single family detached housing it is reasonable to ask why the same justification does not apply to single-family attached housing and other types of non-detached homes. Several bills attempt this extension but do so in various ways (*e.g.*, by requiring adoption of rules in county building codes versus including under existing mandate section of HRS 196-6.5) and with varying project size thresholds for applicability.

HSEA Position: As installers of solar water heating and PV systems, HSEA members are extremely well placed to understand variations in the market for solar after heating systems across single family detached homes, condominiums and townhomes. From this perspective, HSEA notes that very few systems are installed on townhomes and condominiums while the market for such systems on single-family detached homes is strong. HSEA believes that this is a result in many cases of differences in the ability to access tax incentives across different structure types. For this reason, a mandate requiring solar to be sited on such homes may serve an important public policy goal assuming (1) the tax code is not changed to make it easier to finance solar projects on condominiums and (2) compliance by installing fossil fuel-based technologies such as tankless gas heaters is not permitted.

Bills that extend the mandate to townhomes and condos:

SB151 (blanket expansion via §196-6.5);

SB148 (expansion to 6+ single-family unit projects and all multi-family via county building code requirement §46);

SB156 (expansion to projects 50+ units via §196-6.5)

Issue #4: *Changes to the RETITC Level and/or Cap.* In addition to addressing issues about the applicability and/or implementation of the requirement for solar water heating, several of the bills make changes to the amount of a project's cost that can be recovered under the Renewable Energy Technologies Investment Tax Credit. This occurs either by raising the share of the project that is eligible for state tax credits (*e.g.*, by raising the credit share from 35% to 50%) or by raising the per system caps available to the purchaser/investor of the system (*e.g.*, by raising the cap from \$350 to \$1,000).

HSEA Position: HSEA's members are well placed to understand the current market place impediments to the broader penetration of solar. In a commercial context, the most important of these by a significant margin is the inability to monetize the RETITC. That is, the 35% level of the credit is not the problem; the inability to turn the credit into money at any level is the problem. To this end, HSEA notes that increasing the credit level on commercial systems is unlikely to markedly increase penetration of renewable energy, though some benefit would undoubtedly result. HSEA therefore supports these measures to increase the credit amount and cap limit.

For single-family residential systems, increasing the credit would increase penetration of PV if it were paired with an increase in cap levels. HSEA therefore favors increasing the credit levels for residential PV and especially increasing the cap level.

Under current rules, the multi-family credit is useless for PV and of marginal importance for solar hot water (HSEA is not aware of any multi-family wind systems). Increasing the cap level from \$350 to \$1,000 would be an important step in the right direction. Increasing the credit level would have little effect for PV because all systems would run into the cap. Depending on project size/design and scope, it may have an impact for solar hot water. HSEA therefore favors increasing credit level multi-family property and especially favors increasing the multi-family tax credit per system cap.

Bills that change RETITC levels and caps: SB151, SB155,

Issue #5: *Expanding the Mandate to PV.* Despite all of the discussion about clean energy in Hawaii, little has been said about the need to require PV on new or existing homes. As a result, there is little background debate to summarize here.

HSEA Position: HSEA notes that there are many open dockets and dozens of legislative initiatives that would potentially bear on the need for such a mandate. In addition, there are marketplace developments that may substantially reduce the need for such a mandate, including at least one firm that is working with DBEDT to come to Hawaii in the second quarter of 2009. In addition, HSEA notes that the establishment of such a PV mandate would require a very involved docket for standards and specifications development. (Such a docket was required even for solar water heating where the state has had a standard approach since 1996.) Devising standards and specifications for PV will be far more difficult, and time consuming at a time when most of the relevant expertise in the state, including at the PUC, is fully engaged in related dockets. For all of these reasons, HSEA recommends that this proposal not be examined during this legislative session.

Bills that would mandate PV for new single family homes: SB155

Specific Comments on SB390

1. Of all the bills in this session, SB390 goes farthest to addressing HSEA's concerns with Act 204. This includes addressing what HSEA viewed as administrative problems with the implementation of the mandate; adding quality inspections; and lodging responsibility for the variance granting with the public benefits fee administrator.
2. SB390 also attempts to harmonize standards and specifications for mandated systems (*i.e.*, new homes) with those for retrofits (*i.e.*, those that are govern the utility rebate program). This has a number of advantages, the two most important of which are: (a) it would subject mandated systems to a set of standards that is crafted specifically for the Hawaii market rather than applying a national standard, and (b) it would make life easier for solar contractors who will be installing both types of systems.
3. SB390 also achieves incentive parity across qualifying renewable technologies. It does this by lowering the value of the credits available for PV and wind by the amount lost by solar hot water by virtue of being mandated. HSEA notes that SB554 achieves the same result with a substantial economy of changes to the statute by simply reinstating the tax credit for solar hot water systems.
4. SB390 eliminates the gas variance, which goes against the spirit of the legislation.

Note: on Page 8 near the top in point (2) the word 'deposition' should be 'disposition.'

**Testimony Before the Senate Committee
On
Energy and Environment**

February 3, 2009 (2:45 PM)

S.B. 390 RELATING TO ENERGY RESOURCES

**By: Joanne Ide
Energy Services Department
Hawaiian Electric Company, Inc.**

Chair Gabbard, Vice Chair English and Members of the Committee:

My name is Joanne Ide, and I represent Hawaiian Electric Company (HECO) and its subsidiary utilities, Hawaii Electric Light Company (HELCO) and Maui Electric Company (MECO). I appreciate the opportunity to present testimony on S.B. 390.

HECO supports language in this bill to clarify the continued eligibility of retrofit installations of solar water heating systems for renewable energy technology tax credits. HECO also supports the elimination of the option for gas tankless instantaneous water heaters to replace solar water heaters. The inclusion of that option in Act 204 contradicts claims that the Act supported renewable energy.

HECO also appreciates the effort in the bill to strengthen solar water heating system quality assurance as buyers of new homes deserve to receive effective and reliable renewable energy systems. Thus, HECO supports post-installation inspections of the systems to verify that the standards have been met or exceeded.

However, HECO recommends that the moneys to fund the inspections be collected through the Public Benefits Fund Surcharge rather than through the DSM surcharge. The Public Benefits Fund Surcharge was established specifically to fund the activities of the PBF Administrator. Therefore, the system inspections that will be conducted to ensure compliance with standards set by the PBF Administrator should be funded through the PBF Surcharge.

Thank you for this opportunity to testify on this measure.



SENATE COMMITTEE ON ENERGY AND ENVIRONMENT

February 3rd, 2008, 2:45 P.M.

Room 225

(Testimony is 4 pages long)

TESTIMONY IN SUPPORT OF SB 390

Chair Gabbard and members of the committee:

The Blue Planet Foundation supports Senate Bill 390, making clarifying amendments and improvements to Hawaii's historic Solar Roofs Act that. The 2008 Solar Roofs Act, Act 204, was a critical step forward toward Hawaii's clean energy future as it ensures that nearly every new home will be equipped with a solar water heater.

Specifically, Blue Planet supports the following changes to the existing solar requirement:

1. **Blue Planet supports charging the new public benefits fund administrator with the duty to accept and issue variances** instead of the energy resources coordinator at the Department of Business, Economic Development, and Tourism. We understand that there is some discussion about the legality of tasking a private entity with this somewhat regulatory responsibility, but if it is allowed, aligning the existing demand side management entity with this duty makes sense. The public benefits fund administrator should have an up-to-date understanding of the solar technology and the basis for granting or denying waivers.
2. **Blue Planet strongly supports removing the on-demand gas heater variance option.** Such an option should only be allowed (and perhaps required) if the first and second variances are met—that is, the home has poor solar resource and solar would fail the cost-effectiveness test.
3. **Blue Planet strongly supports clarifying that the solar tax credits for homes built prior to January 1, 2010, remain in place.** We believe this was the clear intent of the original Act, but making this policy abundantly clear is critical to provide comfort and certainty in the industry.
4. **Blue Planet supports using a portion of the demand side management surcharge for maintaining a post-installation inspection process.** Such an inspection would verify that the solar water heater was installed in accordance with the quality and performance standards established in §269-44.

Blue Planet has no strong opinions regarding the other amendments suggested in this measure, but we don't think it is necessary to have a retroactive effective date; July 1, 2009 will suffice for the changes specified in this measure.

Our testimony in support of the Solar Roofs Act in general follows.

The 2008 Solar Roofs Law will provide far-reaching environmental and economic benefits for Hawai'i and is the type of transformative policy that will help define our clean energy future. Based on current solar adoption rates, this new policy will reduce the need for thousands of barrels of oil annually and reduce greenhouse gas emissions by thousands of tons from the residential sector. For the first time, the Act established in law the creation of quality and performance standards for new solar water heaters. Starting in 2010, with solar water heaters a standard feature on new homes, residents will be more accustomed to the benefits of solar, turning more of them into potential customers for photovoltaic and other renewable energy devices.

Last year's historic Solar Roofs Act has broad support. People get it. It rings true. Houses should be built with solar up front. To spend more to retrofit a home later just doesn't make as much sense. Last year's bill passed with the support of numerous organizations (including the AIA), many individuals, and the editorial boards of both Honolulu dailies. The law also put Hawai'i on the map as a national leader in clean energy. Being the first state in the nation with such a progressive energy requirement launched Hawaii into the pages of the *New York Times* and *USA Today* and onto MSNBC and CNN.

Solar water heating is a foundation block in building Hawaii's clean energy future. A solar water system is the most basic renewable energy device to harness the clean energy from the sun. The technology is mature, tested, and works (the Romans, in fact, used solar energy to heat the water flowing to baths in aqueducts). Solar water heaters provide the greatest energy savings per dollar for reducing substantial residential energy demand. The Solar Roofs Act ensures that the vast majority of new homes come equipped with this clean energy device, and helps to smooth the transition toward zero-energy homes of the future.

With 60,000 new homes planned for O'ahu alone over the next 20 years, the Solar Roofs Act is critically needed to ensure that we build them energy-smart and minimize the need for additional electricity demand. The first step toward zero-energy homes is the use of solar water heaters (the next step is to reduce electricity demand with efficient appliances and lighting, and the final step is to meet the remaining electricity demand with solar photovoltaic or other clean energy device). New homes, of course, are only part of the picture—hundreds of thousands of existing housing units in Hawai'i need to be retrofit with solar water heaters as well.

While Hawai'i leads the nation in the percentage of installed residential solar water heaters, some 75% of homes still lack this basic amenity. That means hundreds of thousands of housing units in Hawai'i rely on fossil fuel to keep their showers hot. Some local builders are starting to offer solar water heating as an option for new home buyers, but the majority of new homes built

in Hawai'i do not use solar. Even with the established solar industry in Hawai'i and ample incentives, the most new homes are not converting to solar. Considering that we are adding around 5,000 new homes in Hawai'i annually, the Solar Roofs Act will go a long way to reduce fossil fuel use and greenhouse gas emissions.

Solar water heating is the single best "clean" energy alternative for residences in Hawai'i. A typical family home with solar water heating avoids over 2.5 tons of carbon dioxide from being emitted annually (about 3000 kilowatt-hours avoided). If approximately 5000 new homes are built annually and only 25% eventually have water heaters installed, the Solar Roofs Act prevent nearly 10,000 tons of greenhouse gases additionally from being emitted every year and over 3 million tons after 25 years. What's more, the energy from the sun is stored in the form of hot water, offsetting the electrical system peak that occurs in the evening. This helps offset the need for expensive new power plants—another societal benefit from increased residential solar energy use.

The Solar Roofs Act will greatly increase the efficiency and affordability of new homes built in Hawai'i. Solar water heaters are among the most effective means of reducing the high electricity cost burden that residents now endure. The solar roofs bill makes the cost of living more affordable by slashing the electric utility bill of an average new home by 30 to 40 percent—saving over \$1000 annually for an average household on Kaua'i.

With average household use, most solar water heaters will pay for themselves in energy savings between 3 and 7 years. When systems are built into a home during construction—and when many systems are installed simultaneously in a larger subdivision and economies of scale are realized—solar water heaters are less expensive than an electric heater retrofit. When rolled into a 30-year mortgage, homeowners with solar will start saving money on day one. Even with other financing schemes, solar is a no-brainer investment that brings down the monthly cost of living. If current trends continue, the cost of residential electricity will continue to grow, making electric water heating even more expensive—and solar water heating more of a "no-brainer."

The cost of living is a top-of-mind issue for many in Hawai'i. The Solar Roofs Act makes new home ownership more affordable by reducing the monthly utility burden.

Thank you for the opportunity to testify.



Sierra Club Hawai'i Chapter

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SENATE COMMITTEE ON ENERGY AND ENVIRONMENT

February 3, 2009, 2:45 P.M.

(Testimony is 1 page long)

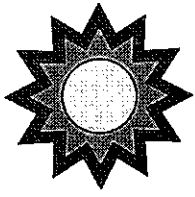
TESTIMONY IN SUPPORT OF SB390 WITH AMENDMENTS

Chair Gabbard and members of the Committee:

The Sierra Club, Hawai'i Chapter, with 5500 dues paying members statewide, supports SB 390 with amendments. The Sierra Club has reviewed the preliminary comments made by the Hawai'i Solar Energy Association ("HSEA") and is in general comports with the statements made therein. Without repeating the same points made by HSEA, the Sierra Club generally observes it supports efforts to increase the penetration of the so-called mandatory solar hot water heater act to townhouses and condominiums. Further the Sierra Club supports removing the gas variance, inasmuch as this would further the intent of the bill, namely to increase the use of solar water heaters and reduce Hawai'i's dependence on fossil fuels.

The solar mandate was a critical step in securing Hawaii's energy future, reducing our contribution to global climate change, and improving the affordability of housing in Hawai'i. As any with any good measure, however, improvements could be made. To the extent these improvements result in a solar water heater on each and every home in Hawai'i, the Sierra Club supports these efforts.

Thank you for the opportunity to testify.



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February 3, 2009

Testimony Before the Senate Committee on Energy and Environment
Senate Bill 390 Relating to Energy Resources

Chair Gabbard, Vice Chair English, Members of the Committee,

My name is Ron Richmond and I represent Inter-Island Solar Supply (IISS), a local wholesale/distributor of solar energy and energy efficiency products for the past 35 years in Hawaii.

Senate Bill 390 proposes to improve upon Act 204 passed last legislative session. Act 204 attempted to mandate solar water heating systems for all newly constructed single-family dwellings beginning 2010.

IISS strongly believes that the best course of action this legislature could take this session is to repeal Act 204. Given that unlikely outcome, IISS believes that SB 390 corrects many of Act 204's deficiencies and therefore, strongly supports this bill.

Upon careful review of SB 390, IISS has identified two areas where the state's objectives of reducing dependence on imported fossil fuels and increasing use of solar and other renewable energy technologies can be enhanced by amending this bill as follows:

Section 2(a)(3) on page 7 at lines 6-7 provides for a variance to the mandated solar water heating system if "a substitute renewable energy technology systems, as defined in section 235-12.5, is used as the primary energy source for heating water." The term "primary" is too general. One definition of primary is "of first rank, importance, or value." Any substitute renewable energy technology system that contributed more than 50% to the water heating load would satisfy the provisions of this variance. Yet the "mandated" solar water heating system is presumed to provide that same level of savings as the current utility grade solar water heating system which, on average, contributes 90% of the water heating load. Therein lies the rub.

To avoid lowering the amount of renewable energy contribution as a result of this variance, IISS respectfully requests that Section 2(a)(3) of SB 390 be amended to read as follows:

A substitute renewable energy technology system, as defined in section 235-12.5, is used ~~[as the primary source]~~ **to produce at least the equivalent amount of energy needed for heating water as a mandated solar water heating system** ~~[or. . .]~~

Section 2(b) on pages 7-8 takes a critically important step at making the variance process transparent. This section, however, does not state the basis for which a variance can be granted and it is silent on what kind of water heater can be used in lieu of a solar water heater. The only other substitute technologies allowed under HRS 235-12.5 are photovoltaics and wind which both produce electricity, and neither store water.

IISS respectfully requests that Section 2(b) of SB 390 be amended by inserting the following between "(a). A" on line 21 of page 7:

"A variance shall be granted for duly accepted applications that meet established criteria, provided that an Energy Star rated water heater is installed."

These proposed amendments may seem tedious and they are. But they are necessary to avoid unintended negative consequences resulting from Act 204. Please pass SB 390 out with amendments.

Thank you for your patience.