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DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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Statement of
THEODORE E. LIU
Director
Department of Business, Economic Development, and Tourism
before the
HOUSE COMMITTEE ON
CONSUMER PROTECTION AND COMMERCE
Wednesday, February 11, 2009
2:00 pm
State Capitol, Conference Room 325

in consideration of

HB1464,HD1
RELATING TO ENERGY RESOURCES.

Chair Herkes, Vice Chair Wakai, and Members of the Committee.

The Department of Business, Economic Development, and Tourism (DBEDT) does not support the section of HB1464 which directs the Energy Resources Coordinator to accept solar hot water variance requests and outlines procedures for variances. DBEDT does not have the resources required to administer such a requirement. We strongly recommend that the Public Utilities Commission (PUC) is the appropriate agency to administer this variance.

In Section 4 of this bill the PUC is directed to adopt standards for solar water heater systems and may contract with the Public Benefits Fee Administrator (PBFA) for development of standards. Therefore, with the adoption of standards, any variance, including those related to application for mandatory solar water heating installations, should rest with the PUC. For Kauai which would not be served by the PBFA, the Kauai Island Utility Cooperative would be the appropriate entity.

We support SB871, an Administration measure, which directs the PBFA with implementing energy efficiency programs, including solar water heating incentive programs and variances for these programs.

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
DIRECTOR OF TAXATION

SANDRA L. YAHIRO
DEPUTY DIRECTOR

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HOUSE COMMITTEE ON COMSUMER PROTECTION & COMMERCE
TESTIMONY REGARDING HB 1464 HD 1
RELATING TO ENERGY RESOURCES

TESTIFIER: KURT KAWAFUCHI, DIRECTOR OF TAXATION (OR DESIGNEE)
DATE: FEBRUARY 11, 2009
TIME: 2PM
ROOM: 325

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

The House Committee on Energy & Environmental Protection made technical amendments to this measure.

The Department of Taxation **prefers the Administration measure HB 1053**, 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 HB 1053. 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 $0.2 million.

TESTIMONY OF CARLITO P. CALIBOSO
CHAIRMAN, PUBLIC UTILITIES COMMISSION
DEPARTMENT OF BUDGET AND FINANCE
STATE OF HAWAII
TO THE
HOUSE COMMITTEE ON CONSUMER PROTECTION & COMMERCE

FEBRUARY 11, 2009

MEASURE: **H.B. No. 1464 H.D.1**
TITLE: **Relating to Energy Resources.**

Chairs Herkes and Members of the Committees:

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 removing the date certain by which the Commission standards are to be established and allows the Commission to contract with the public benefits fee ("PBF") administrator for the development of those system standards. In addition, this bill amends section 235-12.5, HRS, relating to tax credits available for solar thermal energy systems.

POSITION:

The Commission has no objection to section 4 of this bill as it proposes to amend section 269-44, HRS, relating to the Commission being authorized to contract with the PBF administrator to develop standards for solar water heater systems. The Commission has no comments regarding the remaining sections and elements of this bill.

Thank you for the opportunity to testify.

L E G I S L A T I V E

TAXBILLSERVICE

126 Queen Street, Suite 304 TAX FOUNDATION OF HAWAII Honolulu, Hawaii 96813 Tel. 536-4587

SUBJECT: INCOME, Renewable energy resources

BILL NUMBER: HB 1464, HD-1

INTRODUCED BY: House Committees on Energy and Environmental Protection and Housing

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: Tax years beginning after December 31, 2008

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 renewable energy technology system as defined in HRS section 235-12.5, that is substituted for use as the primary energy source for heating water, it is questionable what is the substitute energy technology system other than a solar thermal energy system that is available to heat water, 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 2/10/09

THE GAS COMPANY

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

February 11, 2009

Testimony for HB 1464 HD1, Relating to Energy Resources

Aloha Chair Herkes, Vice Chair Wakai and Members of the Committee on Consumer Protection and Commerce:

My name is Jeffrey Kissel, President and CEO of The Gas Company. Thank you for the opportunity to provide testimony on HB1464 HD1, related to Energy Resources.

The Gas Company strongly supports HB1464 HD1 which clarifies provisions of Act 204 related to solar water heaters because it proposes to promote more consumer options for energy efficiency in any new construction beginning January 2010, with one revision.

The Gas Company respectfully suggests that the amendment, set forth in Section 5 of HD1, included during the prior hearing, specifying that individual counties may enact more stringent ordinances be removed as unnecessary. Act 204 was landmark legislation for Hawaii, and we believe the best policy is to have it be applied consistently statewide.

HB1464 HD1 promotes energy efficient choices by allowing among other choices, an energy efficient instantaneous gas water heating system as a variance when solar water heating systems cannot be the only energy technology in a new home. Act 204 (2008) not only requires solar water heating but rightfully recognizes that energy efficient instantaneous gas water heating systems can and should be allowed as a back-up option to solar. HB1464 HD1 recognizes that on-demand gas water heaters are an energy efficient alternative that residential homeowners should be given the opportunity to select it as an option when deciding how best to heat their water, cook their food, or dry their clothes.

Solar is only as good as the sunshine that shines on your roof or immediately outside your home during the daytime, and therefore, solar needs a back-up. Gas is the best partner to solar for several reasons:

- It is three times more efficient than electricity at delivering thermal energy to the home for heating water, cooking food and other domestic uses;

- It is available day and night and even on cloudy and rainy days;
- Gas can even be a stand-alone system, especially in rural areas around our Islands where people who live off the grid may opt for gas as a more convenient and cost effective option.

The Gas Company has several types of gas, Synthetic Natural Gas or SNG and Liquefied Propane Gas or LPG. While both of these gases are made from byproducts of oil, the majority of our gas is made in Hawaii and doesn't require the importation of one drop of additional oil today. Furthermore, our home-grown SNG product already has a 4-6% renewable energy component and we are actively developing a strategy to increase this percentage to 50 percent across all of our fuel sources within five years. Our strategy includes diversifying our fuel supply to include gas from renewable resources such as landfill gas and bio-methane possibly from animal (cow, chicken, and pig) fats.

It is important to point out that all of these activities are being solely financed by our Company, without government subsidy or an added burden on our rate payers. This confirms our Company's commitment toward investing in Hawaii's energy future. In fact, we believe that we can successfully replace at least half of our feedstock supply with renewable sources and actually lower our cost of production from present levels.

I would like to call upon my colleagues in the energy business to focus on the greater objectives - those of reducing our dependence on fossil fuel in every possible way - and urge them to join us in collaboration rather than seek to advance one position over another or one technology in favor of another. Gas is not a complete solution to imported oil, but it is an immediate bridge fuel that can be used to reduce our dependence on oil TODAY. By including gas as part of the solution, it buys the State time to develop other renewable technologies that will ultimately replace fossil fuels. In addition allowing gas as a back-up energy source enables us to conserve the electricity we have. We believe that there is a greater need to move collectively in the right direction especially since no alternative, including solar, has a zero rating for carbon impact. Thus, we should consider all energy efficiency options in moving Hawaii forward in leading the nation in renewable and sustainable energy solutions in the 21st century.

ACT 204 (2008), as passed last year with the inclusion of energy efficient water heating devices, had broad base support. The final version of the bill addressed global warming, (2) promoted renewable energy, (3) established energy conservation and efficiency in all new residential construction, and (4) recognized that homeowners and builders should have access to a variety of energy saving alternatives. This landmark legislation represents a significant and positive step towards achieving the Legislature's vision of promoting energy security and reducing Hawaii's dependence on petroleum.
We believe Act 204 should be given a chance to work. There are adequate safeguards built into the legislation. With the inclusion of gas in Act 204 (2008), the legislature recognized that homeowners and builders should have access to a variety of energy conserving alternatives. We have attached 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. Gas has one-third the carbon footprint as electricity and is available day and night. When teamed with solar, it can reduce cost and carbon consumption by more than 80 percent.

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.

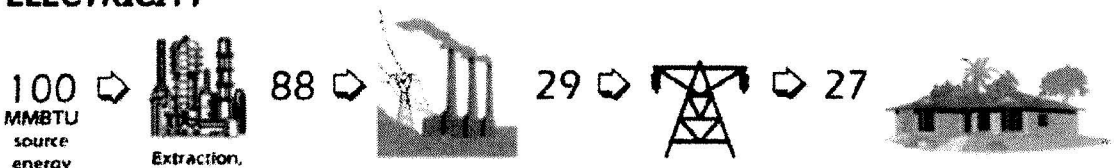
We encourage you to pass this bill to allow consumer choice options by including gas as a variance for energy efficiency provided in Act 204 (2008).

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

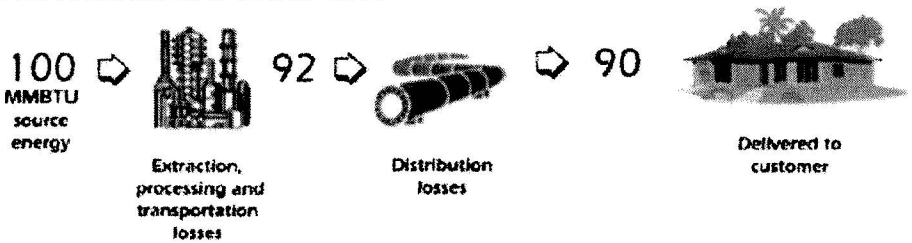
Site vs. Source Efficiency

The truth about efficiency — and what the labels don't tell you

ELECTRICITY



SYNTHETIC NATURAL GAS



Thanks to lower conversion losses, three times more energy reaches the customer with synthetic natural gas than with electricity.

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 1 40°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 x .33 x $1.20 x 365days = $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 x $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)	Cost	Yearly Energy Cost	Life (Years)	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

Testimony Before the House Committee
On
Consumer Protection and Commerce

February 11, 2009 (2:00 PM)

H.B. 1464 H.D. 1 RELATING TO ENERGY RESOURCES

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

Chair Herkes, Vice Chair Wakai 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 H.B. 1464 H.D. 1.

HECO supports the intent of this bill to clarify provisions of Act 204, with respect to variances for solar water heater systems and the effort to strengthen solar water heating system quality assurance through the development of system standards. However, if the intent of Act 204 is to limit the circumstances by which a fossil fuel fired water heater of any type may be substituted; HECO recommends the elimination of the option for gas tankless instantaneous water heaters to replace solar water heaters.

On the other hand, if a gas tankless instantaneous water heater or any other energy efficient water heating technology is considered under a variance, it should be done only in the event the first and second variances are met; that is, the installation of a solar water heater is impracticable due to poor solar resource, or it is cost-prohibitive based upon a life cycle cost-benefit analysis for the new single-family dwelling. Furthermore, in recognition that the purpose of Act 204 is to increase the use of renewable energy to protect our environment, gas should only be allowed if the renewable content of the gas used is equal to or greater than the electric utilities' Renewable Portfolio Standard.

Thank you for this opportunity to testify on this measure.