

**SB 156**



**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  
**SENATE COMMITTEE ON ENERGY AND ENVIRONMENT**  
Tuesday, February 3, 2009  
2:45 p.m.  
State Capitol, Conference Room 225

in consideration of

**SB156**  
**RELATING TO ENERGY.**

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

The Department of Business, Economic Development, and Tourism (DBEDT) supports the intent of SB156 which requires that all new development projects with over 50 units to install solar water heating systems and that the counties establish related rules. There are exemptions for low and moderate income housing projects. Also proposed in this bill, is the requirement for each county to establish rules that require the installation of solar hot water in the construction of 25% of all new residential single-family residences, condominiums, and townhouses by 2015 and 50% of all new residential single-family residences, condominiums, and townhouses by 2020.

While solar water heating systems are especially technically and economically feasible on buildings three stories and less, problems of insufficient space for solar panels and complex piping can occur in high-rise condominiums. We recommend installing solar water heating systems, as practicable, in residential dwellings of three stories or less, and for all new

development projects installing solar water heating, as practicable, in common areas that utilize hot water such as community areas with kitchens, showers and fixtures that utilize hot water.

The committee also may wish to consider requiring new buildings be built to Leadership in Energy and Environmental Design (LEED) Silver design standards which incorporates not only energy efficiency measures, but also ensuring sustainability of sites, materials and resources used for construction, and indoor environmental quality.

Thank you for the opportunity to offer these comments.



February 3, 2009

Senator Mike Gabbard, Chair  
Committee on Energy and Environment  
Conference Room 225  
State Capitol  
415 South Beretania Street

Chair Gabbard and Members of the Committee:

Subject: **Senate Bills No. SB 151, SB 155, SB 148, SB 156 and SB 554  
relating to Energy; Renewable Energy and Energy Resources**

My name is Jim Tollefson, President of the Chamber of Commerce of Hawaii. The Chamber of Commerce of Hawaii works on behalf of its members and the entire business community to:

- Improve the state's economic climate
- Help businesses thrive

The Chamber of Commerce of Hawaii is opposed to all of the bills listed.

Last session the Senate passed SB No. 644 which effectively:

1. Required all new single family residences constructed after January 1, 2010 to include a solar water heater system;
2. Eliminated the Solar thermal energy systems tax credits on all single-family residential properties after 1/1/2010; and
3. Prohibited a single family residential developer from claiming any renewable energy technologies tax credits for systems installed between now and 2010.

Government "Mandates" that attempts to direct the free market system generally result in penalizing one section of the market. For example, in this case, while the arguments that a \$7,000 thermal solar water heating system can easily be incorporated into the mortgage of the average priced home in Hawaii resulting in the homeowner realizing a net savings as energy cost rise over time, the mandate does not recognize or provide a mechanism to assist buyers seeking units priced for residents making less than 80% and less than 120% of the Housing and Urban Development (HUD) median income levels in Hawaii. For Honolulu, the HUD median income for a family of four is \$77,300. Irrespective of costs, developers are required to provide generally 20% of their total units for families making 120% or less of the HUD median income and 10% of their total units for families making 80% or less of the HUD median income.

Adding the cost of a thermal solar water heating unit to these houses effectively means the buyer gets \$7,000 "less" house.

If the goal was really to significantly reduce our 90% dependency on imported oil, wouldn't it have made more of an impact on our energy dependency to require all existing housing units (approximately 491,000 as of July 2005) to covert to solar water heaters as opposed to requiring only new units to have solar (approximately 5,700 units in 2006). Why do you think the focus was on new units as opposed to existing?

No one disagrees with the intended goal of moving the state toward becoming more energy self sufficient. The concern is in the manner our elected leaders are choosing to accomplish this goal. Building on the mandates from last year, the following is a list that attempts to summarize what is being proposed in each of the five (5) bills being heard.

Bill Number	SB 151	SB 155	SB 148	SB 156	SB 554
<b>Mandatory</b>	Yes	PV--Yes	Yes for 6 or more units	Yes Requires 25% of all new construction by 2015; 50% of all new construction by 2020.	No
<b>Tax Credits</b>					
<b>Solar Thermal</b>	Limited to units with permits issued prior to 1/1/2010	Limited to units with permits issued prior to 1/1/2010	Limited to units with permits issued prior to 1/1/2010	Limited to units with permits issued prior to 1/1/2010	Removes tax credit for developers; but reinstates tax credits for individual units
SFR	<b>50% or \$5,000</b>	35% or \$2,250	35% or \$2,250	35% or \$2,250	35% or \$2,250
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<b>Wind Power</b>					
SFR	20% or \$1,500	20% or \$1,500	20% or \$1,500	20% or \$1,500	20% or \$1,500
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In general, we are concerned because the proposed legislation focuses again on "Mandates" with little or no incentives. In addition, as was the case last session, none of the legislation clearly identifies the specific problem or problems that need to be addressed through the proposed legislation. If the underlying intent is to encourage

more energy efficient perhaps the proposed legislation should be expanded to include an assessment and analysis of the various proposed legislation with clearly articulated criteria for outcomes that unintended consequences of the proposed legislation.

Perhaps, as in other Cities or municipalities, government in Hawaii should lead by example. In other Cities, policy makers “mandated” government projects to achieve a certain green or sustainable design standard. In so doing, the design professionals and contractors in these Cities were educated and developed the necessary hands on experience to build a green or sustainable project. AFTER the design professionals and contractors gained this experience, there were incentives created based on their hands on experience, to encourage the private projects to incorporate green or sustainable design.

Finally, we strongly recommend that the Legislature develop a full understanding of the economic impacts created by this type of legislation. Perhaps the Legislature should conduct its own analysis or comparison to determine, at a minimum, the following:

1. What specific outcome or range of outcomes would each of the bills achieve;
2. Discuss the public benefits among the different outcomes and assess whether or not government involvement is necessary;
3. If government involvement is desired, assess the pros and cons of providing incentives or mandating compliance to achieve the desired outcomes.

While we see interest in the market moving toward more energy efficiency and sustainable designs, we believe there is much more that needs to be done before public policy makers “Mandate” any more “green or sustainable” legislation.

Thank you for the opportunity to share our views with you.

**BIA-HAWAII**  
BUILDING INDUSTRY ASSOCIATION

February 3, 2009

Senator Mike Gabbard, Chair  
Committee on Energy and Environment  
Conference Room 225  
State Capitol  
415 South Beretania Street

Senator Gabbard:

Subject: **Senate Bills No. SB 151, SB 155, SB 148, SB 156 and SB 554  
relating to Energy; Renewable Energy and Energy Resources**

I am Karen Nakamura, Chief Executive Officer of the Building Industry Association of Hawaii (BIA-Hawaii). Chartered in 1955, the Building Industry Association of Hawaii is a professional trade organization affiliated with the National Association of Home Builders, representing the building industry and its associates. BIA-Hawaii takes a leadership role in unifying and promoting the interests of the industry to enhance the quality of life for the people of Hawaii.

BIA-HAWAII is opposed to all of the bills listed.

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Thank you for the opportunity to share our views with you.



Executive Vice President & Chief Executive Officer  
BIA-Hawaii



**Hawaii Solar Energy Association**  
*Serving Hawaii Since 1977*

February 1, 2008

**SB156: 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

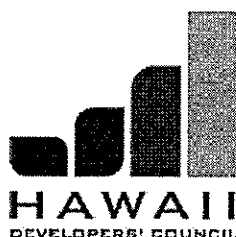
state, including at the PUC, is fully engaged in related dockets. For all of these reasons, HSEA recommends that this proposal not be examined during this legislative session.

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

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#### **Specific Comments on SB156**

1. HSEA supports the extension of the so-called ‘solar mandate’ to townhomes and condominiums, provided that the mandate cannot be complied with using any fossil fuel based technology, such as the current tankless gas loophole. Unintended problems within the tax code currently reduce the ability of market-based measures to achieve significant penetration for these structure types. Requiring clean, efficient solar water heating technology may increase penetration and move Hawaii in the direction of energy independence.
2. HSEA is concerned that SB156 does not make the linguistic change required to clarify the difference between ‘permits for new single-family homes’ and ‘new permits for single-family homes.’ As noted above, this change is important in clarifying that the mandate is not triggered by origination of any building permit on a single-family home, and that the tax credit remains available for installations of solar water heating systems on existing homes.
3. HSEA notes that it may not be wise to exempt low- and moderate-income housing projects from the proposed mandate because solar water heating costs nothing after the initial installation. For this reason a home using solar to heat water will be cheaper to operate than one that receives a monthly bill for either gas or electricity.



February 3, 2009

Senator Mike Gabbard, Chair  
Committee on Energy and Environment  
Conference Room 225  
State Capitol  
415 South Beretania Street

Senator Gabbard:

Subject: **Senate Bills No. SB 151, SB 155, SB 148, SB 156 and SB 554 relating to Energy; Renewable Energy and Energy Resources**

My name is Dean Uchida, Vice President of the Hawaii Developers' Council (HDC). We represent over 200 members and associates in development-related industries. The mission of Hawaii Developers' Council (HDC) is to educate developers and the public regarding land, construction and development issues through public forums, seminars and publications.

It is also the goal of HDC to promote high ethics and community responsibility in real estate development and related trades and professions.

The HDC opposed to all of the bills listed.

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MFR	<b>75% or \$1,000</b>	<b>75% or \$1,000</b>	35% or \$350	35% or \$350	35% or \$350
Commercial	<b>75% or \$1,000,000</b>	<b>75% or \$1,000,000</b>	35% or \$500,000	35% or \$500,000	35% or \$500,000



In general, we are concerned because the proposed legislation focuses again on “Mandates” with little or no incentives. In addition, as was the case last session, none of the legislation clearly identifies the specific problem or problems that need to be addressed through the proposed legislation. If the underlying intent is to encourage more energy efficient perhaps the proposed legislation should be expanded to include an assessment and analysis of the various proposed legislation with clearly articulated criteria for outcomes that unintended consequences of the proposed legislation.

Perhaps, as in other Cities or municipalities, government in Hawaii should lead by example. In other Cities, policy makers “mandated” government projects to achieve a certain green or sustainable design standard. In so doing, the design professionals and contractors in these Cities were educated and developed the necessary hands on experience to build a green or sustainable project. AFTER the design professionals and contractors gained this experience, there were incentives created based on their hands on experience, to encourage the private projects to incorporate green or sustainable design.

Finally, we strongly recommend that the Legislature develop a full understanding of the economic impacts created by this type of legislation. Perhaps the Legislature should conduct its own analysis or comparison to determine, at a minimum, the following:

1. What specific outcome or range of outcomes would each of the bills achieve;
2. Discuss the public benefits among the different outcomes and assess whether or not government involvement is necessary;
3. If government involvement is desired, assess the pros and cons of providing incentives or mandating compliance to achieve the desired outcomes.

While we see interest in the market moving toward more energy efficiency and sustainable designs, we believe there is much more that needs to be done before public policy makers “Mandate” any more “green or sustainable” legislation.

Thank you for the opportunity to share our views with you.



# 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 SB156 WITH AMENDMENTS

Chair Gabbard and members of the Committee:

The Sierra Club, Hawai'i Chapter, with 5500 dues paying members statewide, supports SB 156 with amendments. Although we support expanding last year's historic Solar Roofs Act to include condominiums or townhouses with 50 units or more, the Sierra Club does not support exempting low- and moderate-income housing projects from this requirement, however.

When systems are built into a home during construction—and when any systems are installed simultaneously in a larger subdivision and economies of scale are realized—solar water heaters are less expensive over the life of the residence. When the cost of the solar water heater is rolled into a 30-year mortgage, homeowners 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. These savings should be extended to people of every socioeconomic class.

The Sierra Club also does not support the changes made in SB 156 on page 4 lines 1 through 8. Directing the counties to adopt rules and achieve certain percentages of solar adoption conflicts with the existing law and doesn't make sense. If every new home will be required to have solar starting in 2010, why direct the counties to adopt rules to meet lower percentages in 5 or 10 years from 2010?

In regards to other amendments to last year's Solar Roofs Act, the Sierra Club supports the changes proposed in SB 390.

Thank you for the opportunity to testify.



**SENATE COMMITTEE ON ENERGY AND ENVIRONMENT**

February 3<sup>rd</sup>, 2008, 2:45 P.M.

Room 225

(Testimony is 2 pages long)

**TESTIMONY IN SUPPORT OF SB 156**

Chair Gabbard and members of the committee:

The Blue Planet Foundation supports SB 156, expanding last year's historic Solar Roofs Act to include condominiums or townhouses with 50 units or more. We believe that the environmental and economic benefits provided by the Solar Roofs Law should extend to residents in new townhomes or condominiums.

We do not support exempting low- and moderate-income housing projects from this requirement, however. 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 over the life of the residence. When the cost of the solar water heater is rolled into a 30-year mortgage, homeowners 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.

Blue Planet also does not support the changes made in SB 156 on page 4 lines 1 through 8. Directing the counties to adopt rules and achieve certain percentages of solar adoption conflicts with the existing law and doesn't make sense. If every new home will be required to have solar starting in 2010, why direct the counties to adopt rules to meet lower percentages in 5 or 10 years from 2010?

In regards to other amendments to last year's Solar Roofs Act, Blue Planet supports the changes proposed in SB 390. 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 clean energy devices.

**Jeff Mikulina, executive director • [jeff@blueplanetfoundation.org](mailto:jeff@blueplanetfoundation.org)**

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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. 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.