## SB 2858

# TESTIMONY OF CARLITO P. CALIBOSO CHAIRMAN, PUBLIC UTILITIES COMMISSION DEPARTMENT OF BUDGET AND FINANCE STATE OF HAWAII TO THE SENATE COMMITTEE ON ENERGY AND ENVIRONMENT FEBRUARY 4, 2010

MEASURE: \$.B. No. 2858

TITLE: Relating to Retail Wheeling

Chair Gabbard and Members of the Committee:

#### DESCRIPTION:

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This bill would require the Public Utilities Commission ("Commission") to establish policies, and rules for the deployment of retail wheeling to enable independent power producers to sell electricity directly to end users.

#### POSITION:

The Commission takes no position on the bill, and provides the following comments.

#### **COMMENTS:**

- The Commission has an open Docket (Docket No. 2007-0176) investigating the implementation of intra-governmental wheeling of electricity.
- The Commission has suspended that docket until December 1, 2010 in order to allow for the conservation of the limited resources of the stakeholders in the Hawaii energy arena while the necessity of an intragovernmental wheeling proceeding is evaluated in light of the numerous commitments made in the Energy Agreement.
- The Commission could include the investigation of retail wheeling to that docket when its suspension ends.
- There are many complex issues involved in determining whether and how
  electricity should be allowed to be wheeled and under what circumstances,
  conditions and costs. As discussed above, the Commission began the
  investigation of intra-governmental wheeling, but suspended it pending the
  consideration of other means of connecting renewable generation to the
  electrical grid. A more detailed analysis and evaluation of wheeling
  proposals should probably be considered before deciding to require it.

Thank you for the opportunity to testify.



#### 76 North King Street, Suite 203 Honolulu, Hawai`i 96817

Phone: 533-3454; E: henry.lifeoftheland@gmail.com

#### COMMITTEE ON ENERGY AND ENVIRONMENT

Senator Mike Gabbard, Chair Senator J. Kalani English, Vice Chair

DATE: Thursday, February 4, 2010

TIME: 3:00 p.m.

PLACE: Conference Room 225

SB 2858 RELATING TO RETAIL WHEELING.

STRONG SUPPORT

Aloha Chair Gabbard, Vice Chair English and Members of the Committees

<u>Description</u>: SB 2858 would establish retail wheeling, a process whereby independent power suppliers could lease the electric grid and sell renewable electricity directly to end users.

<u>Life of the Land</u> is Hawai'i's own energy, environmental and community action group advocating for the people and 'aina for four decades. Our mission is to preserve and protect the life of the land through sound energy and land use policies and to promote open government through research, education, advocacy and, when necessary, litigation.

#### Wheeling History

The PUC first investigated reinvigorating the electric industry in a regulatory proceeding on competition (Docket 1996-0493). As an outgrowth of that proceeding, the PUC then opened specific regulatory proceedings on various aspects of utility policy, including Distributed Generation (Docket 2003-0371). Several parties, including Life of the Land, advocated for wheeling. The Senate Concurrent Resolution No. 180 (2004) requested that the commission explore ways to implement intragovernmental wheeling to facilitate government wheeling of electricity.

In the summer of 2007 the PUC opened a regulatory proceeding on wheeling and identified 5 initial parties: HECO, MECO, HELCO, KIUC and the Consumer Advocate.

Several other entities applied for and were granted intervention: the US Navy on behalf of the US DOD, DBEDT, the four counties, HREA, Life of the Land, Castle & Cooke, Lanai Sustainability Research, Real Green Power, Sun Edison, and Puna Geothermal Ventures.

In November 2008 HECO requested that the docket be suspended, and the PUC agreed.

#### Life of the Land's Analysis:

The Public Utilities Commission is currently developing and implementing a series of mechanisms and programs to increase the use of indigenous renewable energy. These include competitive bidding for new central station power, the formation of an energy efficiency utility to focus on implementation of demand side management, and feed-in tariffs whereby homeowners can sell electricity to the grid. Retail wheeling is another critical mechanism that deserves to be part of the mix.

The utility has argued that Oahu lacks enough renewable energy resources to power the island. If independent power producers are able to find the resources, and assume the development risks, that the ratepayers ought to be able to tap into the renewable electricity generated.

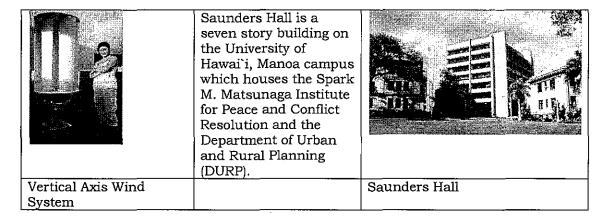
#### Mapunapuna Solar Assessment<sup>1</sup>

A research team led by UH Professor Steven Meder examined the potential of Mapunapuna (the industrial area mauka of the Honolulu Airport) to produce solar electric power. The research team examined the roof area, roof type, the roof slopes (tilt angle or pitch), the orientation or azimuth angle of the rooftop surfaces, overhangs, shadow effects, the clearness index (how much cloud cover should be considered), shading coefficient (produced by rooftop mechanical equipments, adjacent buildings, parapets, etc.), the Albedo factor (ground reflection), the actual average monthly and yearly amount of solar radiation received. The research team relied upon the City and County of Honolulu GIS website, aerial photographs, and DBEDT and the US Department of Energy's National Renewable Energy Laboratory (NREL) "sunshine maps", or solar calorie maps. The research team used walking and driving surveys, Digital Elevation Models (DEM), and the Environmental System Research Institute's Image Analysis, a GIS-driven image recognition program. The Mapunapuna Area can create 60-64 million kWyr per year, or 60-64 thousand MWyr. There are 8760 hours in a year. Thus a 7 MW baseload energy system would produce about 60 thousand **MWyr.** The significance of this research is that it was the first detailed analysis of the ability of rooftops to provide significant amounts renewable energy.

<sup>&</sup>lt;sup>1</sup> Assessment of solar energy potential on existing buildings in a region (US Patent 7305983 granted in 2007) By Stephen E. Meder, Olivier A. Pennetier, David M. Ansberry, Meco Indriaja Marcus Brunner.www.freepatentsonline.com/7305983.html

#### Wind Power

There are significant source of wind on Oahu, from large central station windfarms in Kahuku and Haleiwa to rooftop micro-wind systems.



#### Wave Energy

The Electric Power Research Institute (EPRI) is a national utility think tank. Its members represent over 90% of the electricity generated by shareholder-owned utilities in the United States. In 2004 EPRI examined wave power, and more specifically, looked in detail at Hawai`i's potential wave power. EPRI found that wave energy off Molokai could produce 200 times Molokai's needs, whereas waves off O`ahu could produce just 100% of O`ahu's total electrical demand. Each island could meet its electricity needs through wave energy. Wave energy is more predictable than wind energy. Small ocean swells of just 6 inches can be captured and converted to electricity.

EPRI Offshore Wave Power in the US: Environmental Issues (2004): 'Like any electrical generating facility, a wave power plant will affect the environment in which it is installed and operates. ... We conclude that, given proper care in site planning and early dialogue with local stakeholders, offshore wave power promises to be one of the most environmentally benign electrical generation technologies. We recommend that early demonstration and commercial offshore wave power plants include rigorous monitoring of the environmental effects of plants and similarly rigorous monitoring of a nearby undeveloped site in its natural state."

E2I/EPRI Offshore Wave Energy Plant Site Assessment - State of Hawaii (2004): "Oahu ... Very good energy resources along its northeast coast from Kahuku to Makapuu Points. ... Honolulu is the best port harbor and port infrastructure in the Islands to support device fabrication and assembly. ... A unique opportunity for a wave energy pilot facility exists off the northeast coast of Oahu, just west of the humpback whale

<sup>&</sup>lt;sup>2</sup> Principal Investigator: George Hagerman. Contributors: Roger Bedard (EPRI) December 21, 2004. www.epri.com/oceanenergy/attachments/wave/reports/007\_Wave\_Envr\_Issues\_Rpt

marine sanctuary boundary. The unique opportunity is the existence of Makai Ocean Engineering's fully instrumented pier and offices."<sup>3</sup>

The total power of waves breaking on the world's coastlines is estimated at 2 to 3 million megawatts. In favorable locations, wave energy density can average 65 megawatts per mile of coastline. Wave power projects generally utilize the up-and-down motion of a device floating in the ocean encountering ocean swells to generate electricity.

#### Conclusion

Hawai'i ought to adopt a wide range of mechanisms, including retail wheeling, in order to rapidly transform from an being an imported fossil fuel state to a indigenous renewable state.

Mahalo,

Henry Curtis Executive Director

<sup>&</sup>lt;sup>3</sup> See also EPRI, Survey and Characterization of Potential Offshore Wave Energy Sites in Hawaii. Principal Investigator: George Hagerman. Contributors: Roger Bedard and Mirko Previsic. June 15, 2004. http://www.epri.com/oceanenergy/attachments/wave/reports/003\_Hawaii\_Site\_Repo

#### TESTIMONY BEFORE THE

#### SENATE COMMITTEE ON ENERGY AND ENVIRONMENT

Thursday, February 4, 2010 3:00 p.m. Conference Room 225, State Capitol

S.B. NO. 2858 RELATING TO RETAIL WHEELING

By Kevin Katsura
Associate General Counsel, Legal Department
Hawaiian Electric Company, Inc.

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

My name is Kevin Katsura providing testimony in opposition to S.B. No. 2858 on behalf of Hawaiian Electric Company, Inc. and our subsidiary companies, Hawaii Electric Light Company, Inc. and Maui Electric Company, Ltd. (collectively, the Hawaiian Electric Companies).

This bill requires that, no later than July 1, 2011, the Public Utilities Commission (PUC) establish the necessary policies and rules for the deployment of retail wheeling to enable independent power producers to sell electricity directly to end users.

The Hawaiian Electric Companies strongly oppose this bill because it requires the implementation of "retail wheeling" without first determining whether "retail wheeling" is feasible, has definite benefits in Hawaii, and is in the public interest. "Retail wheeling" is a complex process which raises many operational, regulatory, legal, and ratemaking issues. The PUC has initiated a proceeding to examine the feasibility of intra-governmental wheeling, a more focused investigation, in response to the 2004 Legislature's Senate Concurrent Resolution No. 180 ("S.C.R. No. 180"), which requested that the Commission explore ways to implement intra-governmental wheeling to facilitate government wheeling of electricity, and other regulatory measures to support the development of renewable energy systems by federal, state, and county agencies. While intra-governmental wheeling is more specific than "retail wheeling", "retail wheeling" raises many of the same complex issues.

#### These issues include:

(1) identifying what impact, if any, wheeling will have on Hawaii's electric industry;

- (2) addressing interconnection matters (for safety and reliability);
- (3) identifying the costs to the utilities of implementing wheeling;
- (4) identifying any rate design and cost allocation issues amongst customers associated with wheeling;
- (5) the financial cost and impacts of wheeling on non-wheeling customers of a utility;
- (6) identifying any power back-up issues;
- (7) addressing how rates for wheeling would be set.

Given the many activities ongoing to promote renewable energy and the limited resources of the PUC, the Consumer Advocate and many other stakeholders, the PUC determined it is wiser to delay further consideration of intra-governmental wheeling until other issues are resolved. This delay was recommended by the State of Hawaii, including the Consumer Advocate, along with Hawaiian Electric in signing the energy agreement under the Hawaii Clean Energy Initiative in October 2008.

Moreover, since this bill does not restrict wheeling to renewable energy, this bill may affect the amount of renewable energy that can be taken on the Hawaiian Electric Companies' respective systems.

For these reasons, we oppose S.B. No. 2858. Thank you for the opportunity to testify.

#### TESTIMONY OF TAWHIRI POWER LLC IN SUPPORT OF SB 2858 BEFORE THE SENATE COMMITTEE ON ENERGY AND ENVIRONMENT THURSDAY, FEBRUARY 4, 2010 AT 3p.m.

My name Sandra-Ann Y.H. Wong and I am testifying on behalf of Tawhiri Power LLC ("TPL") in strong support of SB 2858.

TPL is an Independent Power Producer ("IPP") that owns and operates Pakini Nui Wind Farm located in the South Point Area on the Island of Hawaii. The Pakini Nui plant generates renewable energy that is sold to the Hawaii Electric Light Company, Inc. pursuant to a Power Purchase Agreement. TPL is also a party to the Feed-In Tariff Docket currently before the Hawaii Public Utilities Commission.

TPL agrees with the findings of the Legislation, as cited in the bill, that Retail Wheeling "can provide a vehicle for increased competition in energy markets and improved service and customer choice without requiring the utility to divest its own generation assets or lose control over the operation of transmission and distribution." For example, currently electric public utilities are not meeting the demands by consumers for electricity for electric cars. If retail wheeling was implemented, renewable IPPs could provide electricity directly to the consumer without having to wait for the electric public utilities to make the necessary arrangements to procure and/or generate the increased demand for electricity. Enabling retail wheeling to meet electric vehicles energy requirements will immediately yield the following benefits:

- Reduction of the transmission and distribution components of retail electric rates for consumer as a result of increased transmission and distribution revenues due to load growth;
- 2. Total avoidance of stranding prior investments and associated

inequities;

- Reduction of potential curtailment of renewable energy production during low-load conditions (especially at night time) and avoidance of associated economic inefficiencies that would otherwise handicap Hawaii's renewable energy development programs including the FiT;
- 4. <u>Increased competition and efficiency of the renewables energy</u> sector;
- 5. Job creation as the fleet of electric vehicles grows;
- Improved trade balance for the state of Hawaii with the expected shift from growing dependence on imported fuel to greater reliance on indigenous energy resources; and
- 7. Accelerated reduction of criteria emissions and greenhouse gases.

The requested legislative action is truly a win-win-win-win-win reform: for ratepayers, utility shareholders, the environment, Hawaii's economy and IPPs.

Continuation of a blanket ban on retail wheeling without regard to the advantages and opportunities that Hawaii stands to gain from accelerated development of a totally zero-carbon transportation sector serves no purpose other than securing new loads to utilities at great cost to consumers and society. Utility monopoly over future electric vehicles energy sales will not benefit Hawaii for two reasons:

- It will delay growth of the new market because of the procedural and economic inefficiencies inherent with a regulated monopoly.
- It will increase transportation costs to citizens.

Hawaii has embarked itself on a strategy aiming to replace fossil generation with

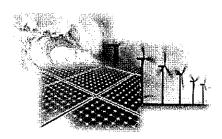
renewable energy to the extent feasible. This implies that all new loads (i.e., any load growth increment) must be served by renewable energy. Such energy would have to come primarily from one of five sources: (i) FiT production; (ii) QF generators; (iii) Individually negotiated IPP supplies; (iv) Utility owned projects; or (v) A mix of supplies from two or more of such sources. Thus, continued blanket banning of retail wheeling amounts to preserving the utilities' role as the sole seller of renewable energy to electric vehicle owners. The cost to consumers of this policy will consist of two:

- The difference between the efficiency of a market of many sellers and many buyers (if retailing wheeling to electric vehicles is permitted) and inefficiency of having a bottleneck monopoly (if the blanket ban on wheeling continues on).
- The economic value of foregoing the seven benefits outlined earlier.

In conclusion, there is absolutely no logical argument that can be put forward in defense of barring retail wheeling from renewable energy producers to new loads in the form of electric vehicles.

Thank you for the opportunity to provide testimony in support of SB2858.





#### SENATE COMMITTEE ON ENERGY AND ENVIRONMENT

February 4, 2010, 3:00 P.M. Room 225

(Testimony is 2 pages long)

#### TESTIMONY IN SUPPORT OF SB 2858, SUGGESTED AMENDMENT

Chair Gabbard and members of the Committee:

The Blue Planet Foundation supports Senate Bill 2858, a measure directing the public utilities commission (PUC) develop a retail wheeling policy. Such a policy would allow power that is generated by an independent power producer to be sold directly to an end user.

Blue Planet Foundation's mission is to end the use of fossil fuels on Earth, starting by making Hawai'i a role model for energy independence. To that end, we believe that the role of electric utilities in Hawai'i will shift from a centralized producer-distributor model to a mostly decentralized, distribution manager model—the utility will control and mange the wires of the new smart grid but most of the power will come from independent, clean energy sources.

For example, currently, electricity flows in one direction: from the power plant to your home or business. This is much like television in the 1960s. When you turned on the TV, you watched whatever one of the three networks was broadcasting. You couldn't store the broadcast and you couldn't contribute your own content. That's roughly how our power grid operates today. Our future power grid will resemble today's Internet—where distributed servers both send and receive packets of information—and less like yesterday's commercial television. The role of the utility will be similar to an Internet provider, moving the electrons in the most efficient and effective manner.

Retail wheeling is a step toward that new model for the utility, where independent power producers can enter into agreements with end users and effectively "rent" the transmission and distribution capability from the utility. Such an arrangement would open the doors to innovation and encourage more to invest in clean energy development.

For example, the Kaheawa wind farm on Maui currently does not sell its power at night because the Maui electricity grid can't handle the excess and Maui Electric keeps its baseload fossil-

based generators running. If retail wheeling were allowed, the windfarm could find a potential customer for their wind energy at night—perhaps at a much discounted rate. Perhaps a large resort might be interested in purchasing lower cost electricity at night so they could do ice storage—making ice at night and using it for air conditioning during the day. This would have multiple benefits for the grid, clean energy power producers, and customers.

We note that electricity wheeling—in a more limited form—has been under consideration by the PUC. On June 29, 2007, the PUC initiated an investigation to examine the feasibility of implementing intra-governmental wheeling of electricity in Hawai'i. This was partially the result of Senate Concurrent Resolution 180 adopted on April 30, 2004. This docket was suspended by the PUC until December 2010 to allow for the other regulatory dockets (such as feed-in tariffs and decoupling) to be resolved. While we understand the need to proceed in an orderly way with these significant changes to the utilities' regulatory landscape, Blue Planet believes that further direction to the PUC to examine retail wheeling in a broad sense in warranted.

#### SUGGESTED AMENDMENTS

- Blue Planet believes that retail wheeling should be reserved for clean energy power producers only—not for electricity generated from fossil fuel sources.
- Given the current suspended intergovernmental wheeling docket and the overwhelming workload of the PUC, the adoption date for a retail wheeling policy should be pushed back six months to one year.

Thank you for the opportunity to testify.

Blue Planet Foundation



#### TESTIMONY BEFORE THE SENATE COMMITTEE ON ENERGY AND ENVIRONMENT IN SUPPORT OF S.B. NO.2858 RELATING TO RETAIL WHEELING AND S.B. NO. 2555 RELATING TO GOVERNMENTAL AGGREGATION OF ELECTRICITY USAGE

#### February 4, 2010, 3:00pm, Conference Room 225

Chairman Gabbard and Vice-Chairman English and members of the Committee, I am Keith Avery, President, and testifying on behalf of West Wind Works, LLC (3W) and Oahu Wind Power Partners, LLC (OWP). West Wind is a local wind energy development company that has been originating wind projects in Hawaii for almost 30 years with some connection to most of the wind projects in the State. Our goal continues to be to utilize Hawaii's indigenous renewable resources to provide the people of Hawaii with long-term fixed price energy supply and price security. In maintaining our goal, we support the multiple existing energy self-sufficiency Plans, Policies and Initiatives, as well as new, 21st century legislation, regulation and policy changes for the federal, state and local governments, the State of Hawaii Public Utilities Commission ("PUC"), and the electric utilities to encourage increased use of renewables in Hawaii.

SB 2555, by requiring the PUC to adopt rules that will enable government entities to purchase directly, through Power Purchase Contracts, aggregated and bulk power from renewable energy producers; partnered with SB 2858, which would establish the basis for a retail wheeling mechanism for renewable energy producers to provide electricity directly to retail consumers, thereby increasing competition, customer choice, and promoting maximum integration of renewables, offers the following additional opportunities and benefits:

- 1. Generates "Renew Revenues" for the State created by the increased market development opportunity of the State's renewable indigenous resources producing the two-fold benefit of monetizing our abundant wind and other renewable resources, while reversing the outflow of balance of trade oil dollars.
- 2. Creates needed "admission" for renewable energy suppliers by providing open access to transmission, supporting and enhancing critically needed local energy supply alternatives.
- 3. The Utility participates by providing transmission access, firming and Through the Renewable Energy Infrastructure ancillary services.

67-287 Kahaone Loop Waialua, Hawaii 96791

Ph: 808.430.9989

1800 Eagle Mill Road Ashland, Oregon 97520

Ph: 541.944.2327



Program, the HECO Companies will be permitted to rate base costs for new transmission, storage, control devices, etc., to incorporate the potential new inflow of renewable Projects and Renewable dollars.

- 4. 3W and OWP are in the process of developing three wind Projects on Oahu: The Na Pua Makani 25MW near Kahuku; a 270MW project off-shore Campbell Industrial; and a 5MW wind-to-renewable hydrogen demonstration project. All the Projects would be on State land and would allow the State to maximize new revenues and develop long-term revenue producing resource assets.
- 5. Total capital costs for our proposed wind projects are above \$2 billion. Lease payments to the State should approach over \$100 million, balance of trade at a conservative \$1 billion, and 20 year fixed price energy and supply security, which provides immeasurable and "priceless" benefits.
- 6. The additional benefit, besides the socio-economic benefits, creation of long term jobs, and environmental stewardship through Habitat Conservation Plans, is that State, federal, and military facilities could receive the twenty year fixed prices directly and secure a sustainable supply of renewable energy. The buyer would be responsible to pay the Utility for its [fixed] wheeling prices.

This legislation is necessary, despite the pending wheeling docket before the PUC. This legislation offers more alternatives to increase renewable energy in Hawaii. Further, there is the possibility that the wheeling docket could be further suspended and result in delays that the State and its people can no longer afford.

West Wind Works, LLC and Oahu Wind Power Partners, LLC appreciates the opportunity to testify in support of Senate Bills Nos. 2858 and 2555, which will be critical and instrumental in bringing Hawaii closer to its goals of 70% self-sufficiency by 2030.

Mahalo Nui Loa

#### HAWAII RENEWABLE ENERGY ALLIANCE

46-040 Konane Place #3816, Kaneohe, HI 96744 - Telephone/FAX: 247-7753 - Email: wsb@lava.net

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Herbert M. (Monty) Richards Kahua Ranch Ltd.

## TESTIMONY OF WARREN BOLLMEIER ON BEHALF OF THE HAWAII RENEWABLE ENERGY ALLIANCE BEFORE THE SENATE COMMITTEE ON ENERGY AND ENVIRONMENT

#### SB 2858, RELATING TO RETAIL WHEELING

February 4, 2010

Chair Gabbard and Vice-Chair English and members of the Committee, I am Warren Bollmeier, testifying on behalf of the Hawaii Renewable Energy Alliance (HREA). HREA is an industry-based, nonprofit corporation in Hawaii established in 1995. Our mission is to support, through education and advocacy, the use of renewables for a sustainable, energy-efficient, environmentally-friendly, economically-sound future for Hawaii. One of our goals is to support appropriate policy changes in state and local government, the Public Utilities Commission and the electric utilities to encourage increased use of renewables in Hawaii.

The purpose of SB 2858 is to require the Public Utilities Commission to establish policies and procedures related to retail wheeling to enable independent power producers to sell electricity directly to end users. HREA <u>strongly supports</u> this bill and offers the following comments in support:

- What are the benefits to End-users? Retail wheeling offers an innovative solution to end-users to who want to reduce their energy bills. It can also help entities, including the military, meet specific agency goals.
- 2. What are the benefits to the State? In addition to the above, retail heeling can help state agencies "lead by example. Furthermore, energy savings translates directly to taxpayer savings. We do recognize that there are implementation issues, but we view these challenges as opportunities to increase "innovation and competition" in the market place. For example, there are "book-keeping" solutions for keeping track of those "green" electrons.
- 3. What are the benefits to the Renewable Industry. Overwhelmingly, retail wheeling will unleash the "innovative" spirit of industry, and offer renewable producers the opportunity to earn a fair return on their investment. Specifically, retail wheeling offers an additional option to for pursuing project opportunities in currently unavailable market segments, e.g., a renewable producer could sell electricity to power: (i) power the City and Counties rail system or (ii) their home and EVs.
- 4. What are benefits the utility and its customers? Retail wheeling can preclude the need for expensive, time-consuming and potentially litigious solicitations, and complement net metering and Feed-In tariffs for acquisition of renewables. The utility would receive a T&D access charge from providers. Moreover, we see this as an opportunity for the utility to focus on T&D and other infrastructure investments which we believe is a key intent of the HCEI
- 5. Recommendations. The PUC initiated a docket on Intragovernmental Wheeling, but has suspended it until December 2010. We recommend that this docket be re-opened and amended, or closed and a new docket on retail wheeling opened as soon as possible.

Thank you for this opportunity to testify.



#### Hawaii Solar Energy Association

Serving Hawaii Since 1977

February 4, 2010 3:00 P.M.

### Senate COMITTEE ON ENERGY AND ENVIRONMENT SB2858

Mark Duda President

#### **TESTIMONY IN STRONG SUPPORT**

Aloha Chair Gabbard and Vice Chair English:

HSEA strongly supports this measure. As noted in the purpose clause, despite Hawaii's ongoing efforts to be a leader in the energy field, we lag behind roughly one-third of other states in restructuring our electricity markets in ways that will promote efficiency throughout the system and lower costs to end users. Retail wheeling is an important step that will help us catch up to these other states. In the process, it will create jobs and develop Hawaii's emerging renewable energy economy.

Retail wheeling is an application of simple economic logic that says that a <u>market</u> in which a large number of producers compete with one another to provide a product to a large number of buyers will result in lower costs to end users and greater systemic economic efficiency than when a single seller serves all customers. Although historically electricity has not been viewed as this kind of market, this paradigm is changing. Vertical integration is no longer necessary and may actually be an impediment to the kind of change that Hawaii so desperately needs to lower its reliance on imported fossil fuels; improve its energy security; and lower the exposure of its economy to oil price spikes and shocks as quickly as possible.

The need for this measure is apparent in the twin facts that Hawaii has both the highest electricity costs and the highest petroleum shares of total generation in the entire country. Retail wheeling is a significant step that is now overdue and which heralds future measures that the legislature can consider to improve the efficiency, lower the cost, and improve the reliability of electrical supply throughout our state.

Thank you for the opportunity to testify on this measure.

Mark Duda President, Hawaii Solar Energy Association

#### **About Hawaii Solar Energy Association**

Hawaii Solar Energy Association (HSEA) is comprised of installers, distributors, manufacturers and financers 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.

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