


Informational Briefing for the Senate Committee on Energy and Environment and the House Committee on Energy and Environmental Protection
Thursday, January 18, 2007, 1:30 - 4:30 p.m.

1

Division of Consumer Advocacy's Presentation
for the
Informational Briefing of the House Committee
on Energy and Environmental Protection and
Senate Committee on Energy and
Environment
Thursday, January 22, 2008, 1:00 p.m.


2



*Department of Commerce & Consumer Affairs
Division of Consumer Advocacy*

- The Division of Consumer Advocacy ("DCA"), part of the state Department of Commerce & Consumer Affairs, represents, protects, and advances consumer interests before the Hawaii Public Utilities Commission ("PUC") and other state and federal agencies.
- The DCA assists and represents utility customers as a whole, statewide, as opposed to a single customer or select group.
- The DCA is also commonly referred to as the Consumer Advocate ("CA") or CA's Office.
- The DCA is *ex officio* a party to every PUC proceeding, pursuant to HRS § 269-51 and HAR § 6-61-62.

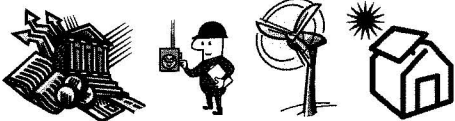
3




About the Division of Consumer Advocacy

So how does the DCA play a part in the electric utilities' plans?

- In Hawaii, utility companies require PUC approval for rate increases, major capital improvement projects, certificates of authority to operate, company buyouts and mergers, financing, and to implement special programs, among other things.

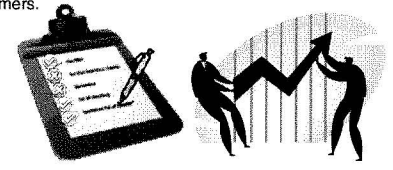


Informational Briefing for the Senate Committee on Energy and Environment and the House Committee on Energy and Environmental Protection
Thursday, January 18, 2007, 1:30 - 4:30 p.m.




About the Division of Consumer Advocacy

- The DCA carefully reviews different aspects of a utility company's request to regulators to determine whether it is reasonable and in the public interest, and then makes recommendations to the PUC or other regulators on behalf of consumers.




4



About the Division of Consumer Advocacy

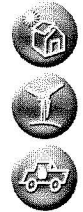
- The DCA focuses its primary review on applications filed or proceedings opened relating to electric, telecommunications, water & wastewater, synthetic natural gas, and some transportation services.

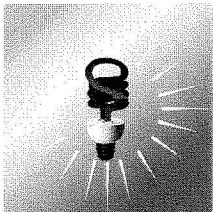


5

DCA's participation in proceedings before the PUC

- Pursuant to State law, the Consumer Advocate must consider the long-term benefits of renewable energy resources in its role as Consumer Advocate.





6

Informational Briefing for the Senate Committee on Energy and Environment and the House Committee on Energy and Environmental Protection
Thursday, January 18, 2007, 1:30 - 4:30 p.m.

*Hawaii Clean Energy Initiative –
Regulatory Energy Agreement with the
HECO Companies, DBEDT*

- On October 20, 2008, the Governor of the State of Hawaii, the Department of Business, Economic Development, and Tourism, the HECO Companies, and the Division of Consumer Advocacy signed an energy agreement to move the State more irreversibly away from fossil fuel use and towards locally produced renewable energy and energy efficiency.
- The U.S. Department of Energy, DBEDT, and the Consumer Advocate will soon engage in discussions with KIUC to determine whether similar agreements can be customized for the cooperative and reached.

7

*Hawaii Clean Energy Initiative –
Regulatory Energy Agreement with the
HECO Companies, DBEDT*

Renewable Portfolio Standard

- The parties agreed that an RPS is an effective structure for the Hawaiian Electric companies' obligation to add renewable energy. Therefore, the parties agreed to seek legislative changes to the existing RPS as follows:
 - RPS goals will be increased to 25% (from 20%) by 2020 and 40% by 2030. However, through 2015 no more than one-third of the companies' total RPS may come from imported biofuels used in utility-owned units. All grid-connected renewable energy generation, both central-station and distributed, shall count towards the RPS goal.
 - Energy savings from energy efficiency, demand response, and renewable displacement shall NOT count toward RPS goals after 2014 but shall be fully counted toward achievement of HCEI goals.

8

*Hawaii Clean Energy Initiative –
Regulatory Energy Agreement with the
HECO Companies, DBEDT*

Energy Efficiency Portfolio Standard

- The parties agreed to support the development of an EEPS for the State of Hawaii. The parties also agreed to support the achievement of the goals established in the EEPS.

9

Informational Briefing for the Senate Committee on Energy and Environment and the House Committee on Energy and Environmental Protection
Thursday, January 18, 2007, 1:30 - 4:30 p.m.

*Hawaii Clean Energy Initiative –
Regulatory Energy Agreement with the
HECO Companies, DBEDT*

Renewable Energy Commitments

- The parties committed to accelerate the addition of new, clean energy resources on all islands. Specifically, the Hawaiian Electric companies committed to pursue and integrate as much as an additional 1,000 MW of renewable energy resources on Oahu including approximately 400 MW of wind power from Lanai or Molokai; 60 MW on the Island of Hawaii; and 50 MW on Maui. The Consumer Advocate, among other things, will prioritize the review of applications for PUC approval of power purchase agreements.

10

*Hawaii Clean Energy Initiative –
Regulatory Energy Agreement with the
HECO Companies, DBEDT*

Decoupling revenues from sales

- The parties agreed that transition to Hawaii's clean energy future requires that the Hawaiian Electric companies should no longer be compensated under a model which inherently encourages increased electricity usage. Decoupling is a regulatory mechanism that de-links the utilities' revenues and profits from electricity sales. This decoupling of revenues from sales will remove barriers for the utilities to pursue aggressive demand-response, load management and customer-owned or third-party owned renewable energy systems while giving the utilities an opportunity to achieve fair rates of return.
- The PUC initiated a proceeding to review the decoupling of Hawaiian Electric's revenues from sales. At the end of January, the HECO Companies and the Consumer Advocate will file proposals for the docket parties to consider.

11

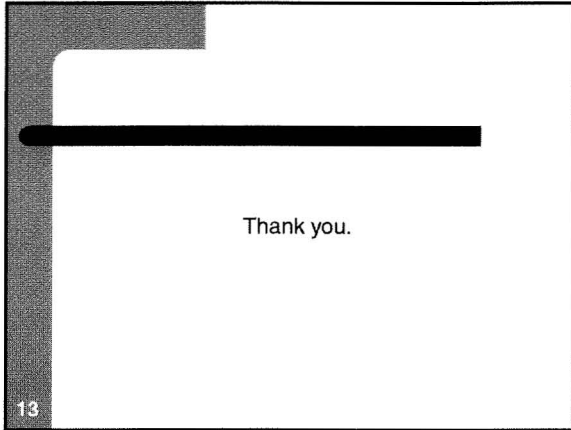
*Hawaii Clean Energy Initiative –
Regulatory Energy Agreement with the
HECO Companies, DBEDT*

Feed-in tariffs

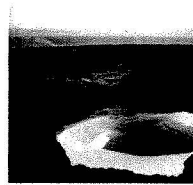
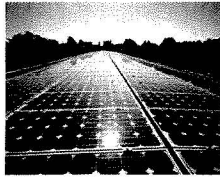
- The parties agreed that feed-in tariffs will encourage development of renewable energy, and requested that the PUC adopt feed-in tariffs by July 2009.
- A feed-in-tariff is set of standardized, published purchased power rates, including terms and conditions, which the utility will pay for each type of renewable energy resource based on project size fed to the grid. This provides developers with certainty of the amount of payment and how much renewable energy the utility will acquire.
- The PUC initiated a docket, and a straw proposal was filed on December 23, 2008 for the PUC's and other docket parties' consideration. Clearly, more work needs to be done before the tariffs can be approved by the PUC.

12

Informational Briefing for the Senate Committee on Energy and
Environment and the House Committee on Energy and
Environmental Protection
Thursday, January 18, 2007, 1:30 - 4:30 p.m.



Technology Issues in Renewable Energy and Energy Efficiency



Presented to Hawaii State Legislature
by
Richard Rocheleau
Hawaii Natural Energy Institute
School of Ocean and Earth Science and Technology
University of Hawaii at Manoa

State Capitol
January 22, 2009



Hawaii Natural Energy Institute

- Research unit in the School of Ocean and Earth Science and Technology (SOEST) at University of Hawaii at Manoa
- Act 253 (2007) established HNEI in statute and tasked HNEI to:
 - Develop renewable sources of energy for power generation and transportation fuels by working in coordination with state and federal agencies and private entities
 - Conduct research and development of renewable sources of energy
 - Demonstrate and deploy efficient energy end-use technologies including those that address peak electric demand issues
 - Aggressively seek matching funding from federal agencies and private entities for its research and development and demonstration issues
 - Administer the Energy Systems Development Special Fund



Energy Systems

- **Electricity**
 - Generation – transmission – distribution – end use
- **Transportation (ground, air, marine)**
 - Vehicle type - fueled, hybrid, plug-in hybrid, electric
 - Fuel type - fossil, biofuels, hydrogen
- **Energy Efficiency**
 - Applicable to all technologies and users
 - More efficient power generation can be as valuable as more efficient end use
 - Efficiency often the most cost-effective and near-term option
- **Commercial vs Demonstration/Research**
 - Proven reliability, cost, availability of technology
 - Tendency to consider technology commercial before it really is



Electricity Generation Some Definitions/Considerations

- **Centralized vs Distributed**
 - Centralized generation is large and grid connected
 - Distributed generation smaller may be grid connected or at end user site
 - Grid transmission (or not) a significant cost factor
- **Baseload vs Peaking Generation**
 - Baseload - higher capital cost, lower operating costs, typically high efficiency
 - Peaking - lower capital cost, higher operating costs, more responsive than baseload
- **Firm vs Intermittent**
 - Firm power available for dispatch when needed
 - Intermittency may include short term fluctuation

Renewable energy technologies may fit into any of the above categories



Renewable & Enabling Technologies

- **Commercial**
 - Wind
 - Solar - photovoltaics, concentrated solar power, and solar thermal
 - Biofuels - combustion, ethanol via fermentation, biodiesel
 - Geothermal
- **Developing/Research**
 - Biofuels - sustainable crops, advanced conversion technology
 - Ocean energy – wave, ocean thermal energy conversion
 - Advanced solar
- **Enabling Technologies**
 - Smart electricity grid and infrastructure
 - Energy storage – important for grid and transportation
 - Electric and hybrid electric vehicles
 - Hydrogen and fuel cells



Solar

- **Current Status**
 - Photovoltaics and solar thermal electricity generation are commercial
 - PV ~ 30 - 40¢ /kWh without tax credits.
 - Solar thermal ~ 20 - 25¢ /kWh without tax credits.
 - PV usually distributed generation (end user site)
 - Solar thermal often centralized (fed into grid for T&D)
 - Effective job creation – generates 70% more than oil & gas sector
 - World market has been growing at ~ 40% per year
- **Issues**
 - Intermittent resource – not dispatchable, loss of power can be sudden with no warning to or control by utility, grid issues may be challenging at high penetrations.
 - Public policy and education. Policies need to be consistent and long-term



Wind

- **Current Status**

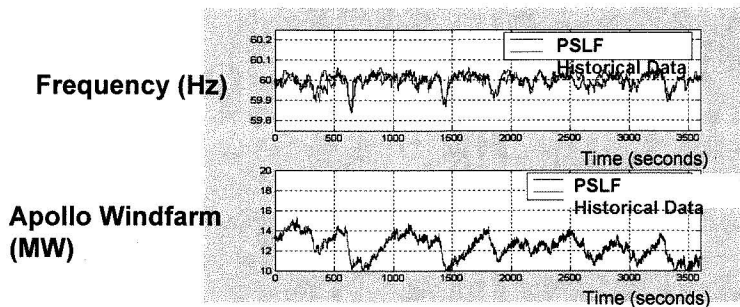
- Commercial - world capacity (Jan08) at ~ 90GW.
- 5 MW turbines entering market.
- ~ 6 - 10¢/kWh at 13 mph without Production Tax Credit (PTC)
- Usually centralized generation at large scale
- National interest in offshore wind farms. Difficult in Hawaii

- **Issues**

- Intermittent resource – integration with the grid is challenging at high penetrations. We are already experiencing this in Hawaii.
- Permitting, land use, view planes
- Availability and long lead times
- Public policy and education. Policies need to be consistent and long-term



Effect of Intermittency

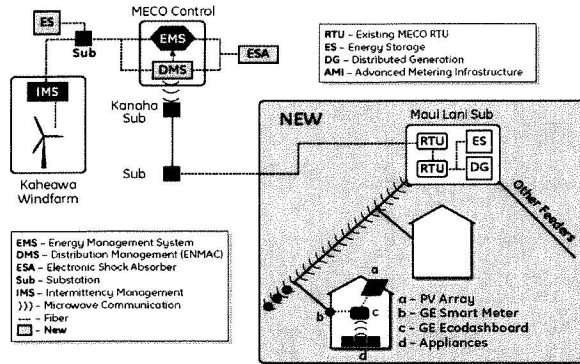


- HNEI working with GE and electric utilities to develop models to address grid stability, and institutional issues for high penetration renewables.
- Validated models used to analyze site specific scenarios incorporating high penetrations of renewable energy (e.g. wind) and advanced technology solutions including forecasting, energy storage, and demand management



Maui Smart Grid Project

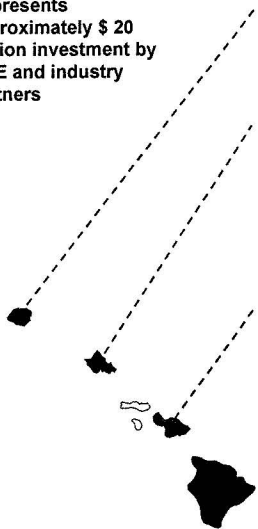
- Objective is to develop and demonstrate a distributed automation system that aggregates distributed generation, energy storage, and demand response technologies in a distribution system to achieve both T&D level benefits.
- Specific goal is “reduction of peak demand by at least 15%”



- Additional effort to identify and validate solutions for mitigating the effects of as-available renewable energy

Current Efforts Being Used to Define Technology Needs for Increasing Renewable Energy Use

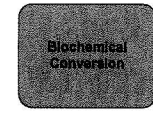
Represents approximately \$ 20 million investment by DOE and industry partners



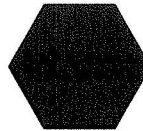
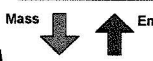
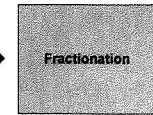
- **Kauai Energy Roadmap**
Develop possible roadmap for increased penetration of renewable energy.
- **Oahu Grid (BIG Wind) Study**
Oahu grid model being developed to address wind projects that could impact the Island
- **Maui Grid Modernization**
Energy storage, generation and demand-side management technologies being deployed to reduce peak load and enable further expansion of renewable energy
- **Maui Grid Study**
Validated power systems model used to address impacts of increased wind and the necessary mitigation technologies
- **Big Island Energy Roadmap**
- Technology approaches to increase energy security and the penetration of renewable energy being evaluated
- Storage demonstration project being negotiated

Needs for Development of Sustainable, Integrated Bioenergy Systems for Hawaii

Develop and validate sustainable crop production systems



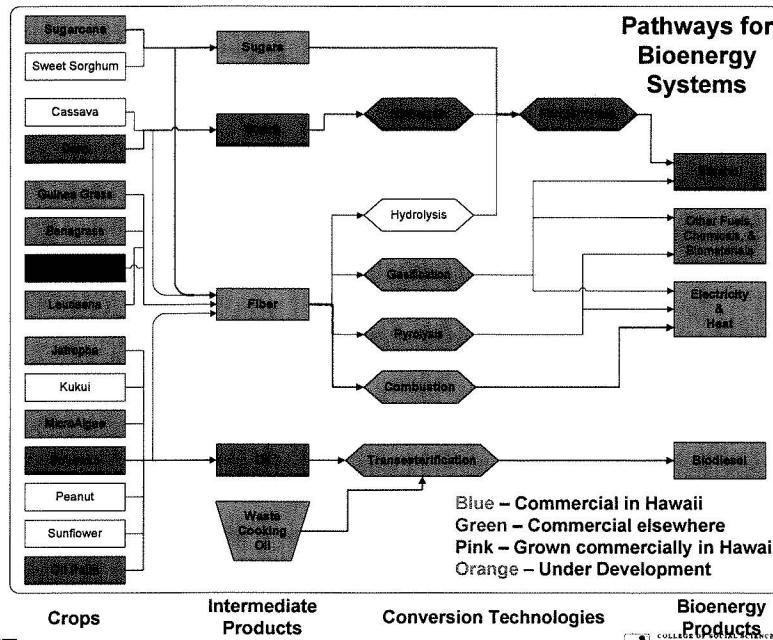
Demonstrate and scale-up integrated systems – optimized use of resource and technology is key



Enact policy to encourage long range development of bioenergy industry

- Biofuels Master Plan (ACT 253)
- Renewable Fuels Standards

Validate conversion technologies and feedstock compatibility



Hawaii Bioenergy Master Plan

- Legislatively mandated in 2007
- “ *The primary objective of the bioenergy master plan shall be to develop a Hawaii renewable biofuels program to manage the State’s transition to energy self-sufficiency based in part on biofuels for power generation and transportation.*”
- Supported by State of Hawaii and USDoE
- Stakeholder meetings held
- Negotiations underway to contract technical experts to conduct analysis in relevant areas
- Draft report to DBEDT June 2009



Geothermal

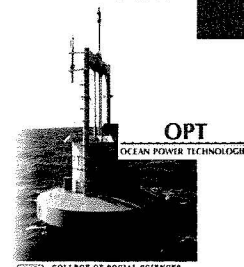
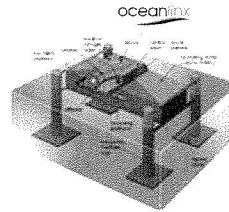


- **Current Status**
 - Commercial. Baseload.
 - ~ 7-9¢/kWh
 - Puna Geothermal Venture (PGV) operates a 30 MW plant on the Big Island. Owned by Ormat Technologies.
 - Permitted for a total of 60MW. Currently installing bottom cycling equipment to capture waste heat ~ 8 MW .
 - Potential sources on Kona side of Big Island. Warm spots on Maui, Molokai and Oahu.
- **Developing**
 - Low temperature technologies will expand resource base
 - Engineered Geothermal Systems (EGS) using water injection under development for hot spots without steam resource
 - Geothermal to Hydrogen Roadmap prepared in September 2008.



Wave

- **Current Status**
 - **Demonstration scale**
 - **Intermittent but hourly and daily forecasting likely**
 - **Cost estimate from 25 - 80¢ / kWh**
- **Issues**
 - **Robustness and efficiency of wave energy generators**
 - **Environmental impacts**
 - **Wave forecasting techniques – short and long term**
 - **Corrosion and survivability**
 - **Integration into the grid**



Ocean Thermal Energy Conversion



- Uses temperature difference between deep and shallow ocean waters to run a low temperature engine
- Technical challenges
 - Large diameter and long pipelines
 - Low cost, efficient heat exchangers
 - Large, stable platform and mooring design
 - Dynamic power cable to shore
- Environmental challenges –large intake and discharge of water
- Cost challenge:
 - Requires new materials, better engineering, and innovative designs, while taking advantage of economy of scale and current offshore technology

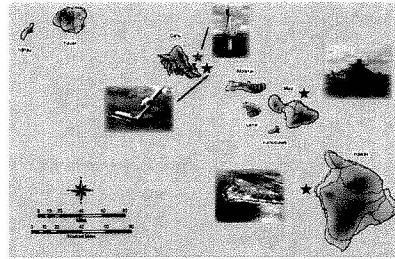


Courtesy Makai Ocean Engineering



Ocean Energy - Hawaii National Marine Renewable Energy Test Center

- UH awarded one of two ocean energy test centers announced by USDOE fall 2008
- Objectives:
 - Wave: Facilitate development & implementation of commercial wave energy systems – with one or more of these systems to supply energy to grid at >50% availability within 5 years
 - Ocean Thermal Energy Conversion: Conduct long-term testing and help move OTEC to pre-commercialization
- Establish up to four field test facilities on Maui, Oahu, and Hawaii
- National and international partners

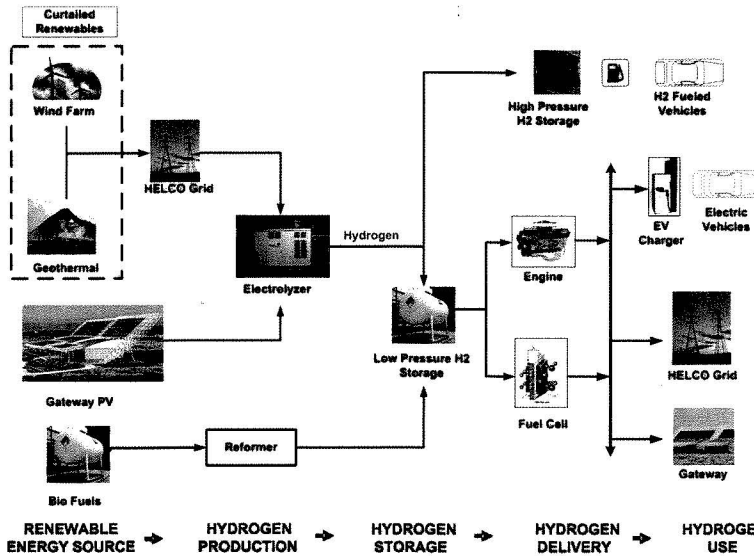


Electric & Hybrid Vehicles

- **Hybrid**
 - liquid fueled with batteries used to allow engine to operate at near peak efficiency
 - batteries maintained within narrow range of state-of-charge
 - commercially available but cost – profitability for manufacturers remains an issue
- **Plug-in hybrid:**
 - electricity for short haul supplemented by engine for longer trips
 - requires larger battery capacity than hybrid and deep-discharge capability
 - Not commercially available today. Toyota, GM, Nissan, and others have announced production of plug-in hybrids production in 2011 or beyond.
- **Electric:** battery only, larger capacity, deep-discharge required
- **Issues**
 - Battery technology for long-life with deep-discharge still under development (3 to 5 years ??)
 - Battery costs remain high
 - Charging infrastructure may requires substantial investment for grid upgrade
 - Need consistent policies, regulations, and incentives to accelerate technology and acceptance of technology



Hydrogen Power Park Concept



Hawaii Volcanoes National Park Renewable Hydrogen Fueling Station

- **Hydrogen Fueling Infrastructure funded by USDOE with cost share from State of Hawaii via H2 Capital Investment Fund**
 - \$ 2.4 million shared by USDOE and State of Hawaii
 - Hydrogen production using electrolysis of water
 - Electrolyzer powered by renewable electricity from HELCO at special research rate. (under negotiation)
 - Hydrogen production 12 -60 kg/day depending on vehicle needs
 - Fueling station to be located on Kilauea Military Camp (DOD)
- **Vehicles provided by DOT/DOI to Volcano National Park under Advanced Transportation for Parks and Public Lands program.**
 - Plug-in hybrid vehicles with H2 for fuel
 - Vehicle integration by Hawaii Center for Advanced Transportation Technology (HCATT)
 - Additional Ford E450 shuttle bus provided by USDOE

Energy Informational Briefing
Before the House Committee on Energy & Environmental Protection
and the
Senate Committee on Energy and Environment
Hawai'i State Capitol, Room 325
Thursday January 22, 2009
1:00 p.m. – 4:00 p.m.

Agenda

Introduction Rep. Hermina Morita, Chair, House Committee on Energy & Environmental Protection and
 Sen. Gabbard, Chair, Senate Committee on Energy and Environment

Hawai'i Energy Policy Forum

- ❖ Overview of the Hawai'i Energy Policy Forum & Energy Progress on the Ten Point Plan --
Mike Hamnett, Co-chair, Hawai'i Energy Policy Forum (HEPF)

Report from the Congressional Delegation

- U.S. Senate: Mike Kitamura, Offices of Senator Daniel K. Akaka
- U.S. House: Joshua Wisch, Office of Mazie Hirono
- ❖ Questions and Answers

Major Energy Players in the State: – Updates on Priorities, Plans and Programs

- ❖ Department of Business, Economic Development & Tourism --
Ted Peck, Administrator, Strategic Industries Division
- ❖ Public Utilities Commission -- Carlito Caliboso, Chairman
- ❖ Division of Consumer Advocacy -- Catherine Awakuni, Executive Director
- ❖ Report from the Utilities
 - Hawai'ian Electric Company -- Robbie Alm, Senior Vice President
 - Kaua'i Island Utility Cooperative -- Steven Rymsha, Renewable Energy Engineer
- ❖ Report from the Petroleum Industry -- Lance Tanaka, Tesoro Corp and HEPF Hydrocarbon Future
Working Group Co-chair
- ❖ Questions and Answers

Current Issues in Energy Policy

- ❖ Technology Issues in Renewable Energy and Energy Efficiency -- Richard Rocheleau, Director
Hawai'i Natural Energy Institute, University of Hawai'i at Mānoa
- ❖ Governance and System Issues to meet the Challenges -- Carl Freedman, HEPF Regulatory
Reform Working Group Chair
- ❖ Questions and Answers

Closing/Next Steps -- Committee Chairs Morita and Gabbard

Adjourn



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAII AT MĀNOA

Hawaii Energy Policy Forum

Update on Activities and Initiatives

2008

www.hawaiienergypolicy.hawaii.edu

What is the Hawaii Energy Policy Forum?

- Over 40 energy and community member organizations
- Convened in 2002 to develop an energy vision and formulate and implement strategies for the state
- Based at the University of Hawaii
 - No vested interest
 - Fact-based studies
 - Leverages the state's investment in UH



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAII AT MĀNOA

Forum Vision

“Smart energy solutions to sustain a healthy, secure and prosperous Hawaii”



“Smart energy solutions to sustain a healthy, secure and prosperous Hawaii”

- **“Smart” energy solutions**
 - Uses best technology available
 - Non-wasteful
 - Economically feasible
 - Optimizes energy resources
 - Provides best yield for our investment
 - Is affordable
 - Is pono
- **“Healthy”**
 - Clean air, water, and natural resources
 - Health and wellness of Hawaii’s people
 - Environmentally friendly
- **“Prosperous”**
 - Economic growth/good jobs for Hawaii’s people
 - Affordable
 - Quality of life, i.e., everything is functioning well
- **“Sustain”**
 - Will not be depleted
 - Indigenous resource(s)
 - Renewable resources
 - Will last because it balances environment, economy, and values of Hawaii’s people
 - Less dependent on imported energy sources
- **“Secure”**
 - Renewables/indigenous resources
 - Transition from fossil fuels to renewable energy sources
 - Energy efficiency/conservation
 - Adequate storage of fuel supplies to buffer state from global shortages and/or during emergencies



Forum Mission

We are a collaborative forum for:

- **Sharing ideas information & diverse viewpoints to**
 - Reach understanding
 - Identify common ground for collaborative action
 - Present options for informed decisions to implement the energy vision
- **Recommending and supporting policies**
- **Promoting civic participation**



10-Point Plan

- | | |
|----|---|
| 1 | Expand Renewable Energy Opportunities - REWG |
| 2 | Promote Conservation and Energy Efficiency - EEWG |
| 3 | Reduce Greenhouse Gas Emissions in Hawaii - GHG Emissions WG |
| 4 | Foster Civic Action and Participation - Comm/Outreach WG |
| 5 | Enhance Regulatory Goals and Protections - RRWG |
| 6 | Encourage Culturally Appropriate and Sustainable Energy Planning - Social & Cultural Impacts WG |
| 7 | Improve Energy Efficiencies and Options in Transportation - EEWG |
| 8 | Support Research and Development of Alternative Energy Sources - REWG |
| 9 | Support Sustainable Development and Use of Biofuels - REWG |
| 10 | Ensure the Security and Reliability of Energy Supply and Distribution - Hydrocarbon WG |



Developing & Implementing Action Plans: The Forum Working Groups

- **RENEWABLES WORKING GROUP**
- **ENERGY EFFICIENCY WORKING GROUP**
- **REGULATORY REFORM WORKING GROUP**
- **GREENHOUSE GAS EMISSIONS WORKING GROUP**
- **SOCIAL & CULTURAL IMPACT WORKING GROUP**
- **HYDROCARBON FUTURES/ENERGY SECURITY WORKING GROUP**
- **COMMUNICATION/OUTREACH WORKING GROUP**



Highlights of 2008 Achievements

- **Study of Biofuel crop development in response to HCR 195 (2006) led to Hawaii Bioenergy Master Plan development (2007-08)**
- **Study of Hawaii energy utility regulation and taxation leading to support for and reorganization of the PUC and DCA (Regulatory Reform Action Plan)**
- **Study of EE transportation strategies in response to Act 254 and convening of Energy Efficiency in Transportation Working Group**
- **Study of natural gas import options for Hawaii in response to USDOE contract to address Section 355, National Energy Policy Act**
- **Assessment of EE in four buildings through "Energy by Example" initiative**



Outreach Activities to Share Ideas & Information

- **Briefing of Congressional Delegation staff on RE developments (March 2007)**
- **Briefing on federal opportunities in “ag-energy” by U.S. House Agriculture Committee Chairman Colin Peterson (April 2007)**
- **Facilitated WG with broad spectrum of stakeholders on guidelines for ocean energy development (July 2007)**
- **Briefing on commercializing new RE technologies by U.S. Departments of Commerce & Energy and local representatives of High Technology Development Corporation, Sopogy & ClearFuels Technology (August 2007)**



Outreach Activities to Share Ideas & Information, cont'd.

- **Briefing on work of the Hawaii Natural Energy Institute, University of Hawaii (September 2007)**
- **Briefing on greenhouse gas emissions (GHG) by the Technical Working Group of the State GHG Emissions Task Force & the Voluntary GHG Reporting Program of the Climate Registry (November 2007 and December 2008)**
- **Co-sponsored TV Documentary: “Hawaii’s Climate Crisis” (January 2008)**
- **Briefing on the Hawaii Clean Energy Initiative and Facilitated Dialogue on the October 2008 Energy Agreement between the State and HECO**





COLLEGE OF SOCIAL SCIENCES
HAWAII ENERGY POLICY FORUM
UNIVERSITY OF HAWAII AT MĀNOA

**HEPF Energy Informational Briefing:
REPORT FROM THE HAWAII PETROLEUM
INDUSTRY**

Lance Tanaka
Tesoro Hawaii Corporation
Co-Chair, Hydrocarbon Future
Working Group
January 22, 2009

New Leadership Opens Doors

Tuesday, Jan. 20, 2009 – In a message to employees:

"At noon Eastern Time today our nation will inaugurate a new leader. The inauguration is a momentous occasion for our country, for the world, and for every individual whether or not they voted for President-elect Obama. I encourage you to watch or listen to his inaugural address.

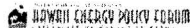
"We live in a nation that values and cherishes change as a driving force for success. Today, more than ever, we need new leadership. I hope this change brings new opportunities and improved economic conditions."

Bruce Smith
Chairman & CEO
Tesoro Corporation



Key Messages to Policy Makers

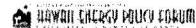
- The petroleum industry wants to have a valued role for years to come
- Hawaii needs all the abundant, reliable and affordable energy sources it can harness
- Policies should balance renewable energy initiatives with established energy sources
- A balanced energy mix mitigates Hawaii's unique supply risks



Industry is Engaged

Many petroleum companies are voluntarily reducing emissions and developing new technologies

- Renewables
- Conservation and energy efficiency
- Improving efficiency of existing technology
- Hydrogen
- Promising new technologies
- Research projects

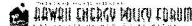


Hydrocarbon Future Working Group

#10 of HEPF Ten-Point Plan:

Ensure the security and reliability of energy supply and distribution

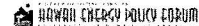
- Cannot be achieved by swapping renewable fuels for fossil fuels
- Coordinated transition is needed
- Policies promoting efficiency, renewables and conservation should not be tied to serving electricity needs only



What Price Policy?

"The current profits of these refineries are poor, and in light of the regulatory issues noted, the question of whether or not one or both refiners will close may be a question of when, not if."

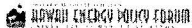
Carlito Caliboso
Chairman,
Public Utilities Commission
(The Honolulu Advertiser, Jan. 16, 2009)



What Price Policy? (continued)

"If there's no local market [for petroleum products], the refineries won't survive."

Kang Wu
Senior Fellow
East-West Center
(OPISNET.com, Jan. 13, 2009)

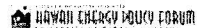


What Price Policy? (continued)

A plan to develop alternative energy sources reduces oil imports... [but] there are relevant energy economics issues which may not have been taken into account. Even with oil at \$50 - \$100/bbl it's not clear that petroleum isn't a compelling energy choice.

The most likely energy outcome for Hawaii is that petroleum will provide a base source of power for a large portion of the economy, Brewbaker said, but alternatives will supplement that...

Paul Brewbaker
SVP & Chief Economist
Bank of Hawaii
(OPISNET.com, Jan. 13, 2009)



Strategic Value of Petroleum Industry

Petroleum powers the air, water and highway transportation systems that drive the state's economy

- Jet fuel
- Gasoline
- Diesel
- Fuel Oil
- Asphalt
- Bunker fuel



Industry Seeks Stable Relationship

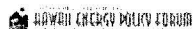
Mature, established industry with a lot to offer is looking for a collaborative relationship with the state and other energy producers

- Delivery infrastructure
- Storage facilities
- Sourcing, optimization best-practices
- Globally connected
- Wants to participate in diversifying energy sources



Advantages of Enhanced Relationship

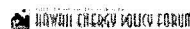
- Allows continuation of strategic fueling facilities
- Provides assets to achieve long-term, comprehensive energy policy
 - ❑ Coordinated transition to renewable fuels relative to Hawaii Clean Energy Initiative
- Energy security vis-à-vis reduced risk of dependency on imported finished products



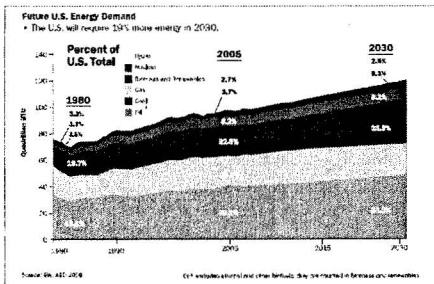
Future Energy Demand in Perspective

Consumption	2008		2030		% Change
	Quads	% Share	Quads	% Share	
Oil*	39.55	39.7%	41.22	34.9%	4.2%
Natural Gas	22.30	22.4%	23.30	19.8%	4.9%
Coal	22.50	22.6%	29.00	25.3%	32.9%
Ethanol	0.47	0.5%	2.01	1.7%	327.7%
Nuclear Power	8.21	8.2%	9.57	8.1%	16.6%
Hydropower	2.69	2.9%	3.00	2.5%	3.8%
Other Biomass and Renewables**	3.60	3.6%	8.91	7.6%	147.5%
Total	99.32	100.0%	118.01	100.0%	18.6%
Oil and Gas	61.85	62.2%	64.61	54.7%	4.4%
Oil, Gas and Coal	84.36	84.6%	94.51	80.1%	12.0%
All Other Total	15.17	15.2%	23.5	19.9%	54.9%

Chart compiled by Western States Petroleum Association



Future Energy Demand (continued)



Help or Hinder?

Recent policies directed at the petroleum industry have led to unintended consequences

- Cap on wholesale gasoline prices: Law suspended after prices rose rather than abated
- Ethanol blending mandate: Without in-state production, refiners are forced to continue to import the costly blend stock

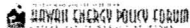


Help or Hinder? (continued)

Petroleum Industry Monitoring, Analysis and Reporting (PIMAR) Program:

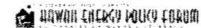
"The state's suspension of a gasoline price cap hasn't resulted in excessive or inexplicable increases at the pump."

ICF International
 [In a report to the PUC analyzing Hawaii petroleum pricing data]



In Closing

- Petroleum companies are engaged in developing new technologies
- Developing reliable, abundant and affordable energy sources beyond those that apply to electricity is in the public's best interest
- Hawaii needs all the energy sources it can harness – including petroleum
- Balancing existing energy sources with renewable sources is critical



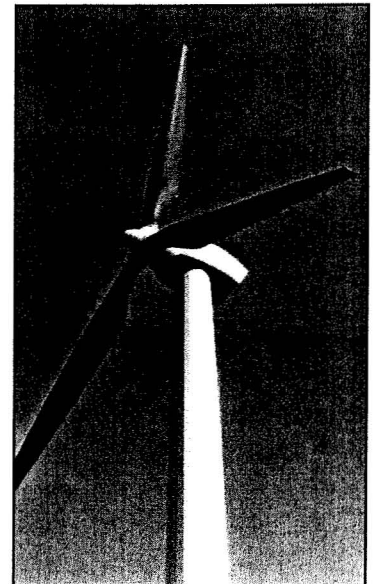
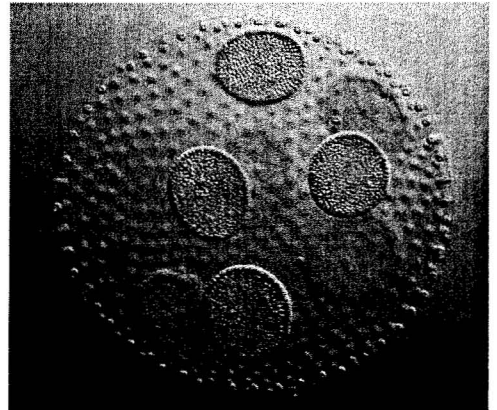


EXAMPLES OF WSPA MEMBER COMPANY GREENHOUSE GAS EMISSION REDUCTION PROGRAMS AND PROJECTS

Many of WSPA's member companies are voluntarily reducing emissions in low-cost, common-sense ways, developing new technologies to ensure future progress, and investing billions of dollars in climate research.


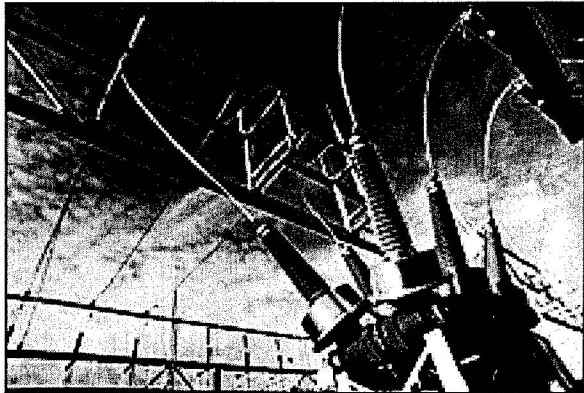
RENEWABLES

- Chevron Corporation and the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) have entered into a collaborative research and development agreement to study and advance technology to produce liquid transportation fuels using algae.
- Shell's wind farm near Palm Springs displaces 85,000 tons of carbon dioxide every year and meets the electricity needs of 11,000 households. Shell's 980 watt solar electric power system at the Semitropic Water Storage District in Wasco, CA saves 1,729,000 kw hours a year and avoids 1,763,000 pounds of CO₂ annually. Shell is also investing in advanced biofuel processing technologies.
- BP Solar announced plans to double its capacity from around 90MW to 200MW by 2006. In California, BP's Solar Home Solutions package is now sold at Home Depot. BP is also focused on the development of 'wind farms' at existing BP refineries and petrochemical sites, and is investing in research and development of advanced biofuels.
- Chevron has completed installation of the first solar photovoltaic facility in California to help power oil field operations. At 500 kilowatts, the demonstration project is one of the largest photovoltaic installations in the United States and the largest array of flexible, amorphous-silicon solar technology in the world. Chevron is focused on geothermal, hydrogen, biofuels and advanced batteries as well as wind and solar technologies. Chevron recently teamed with San Jose Unified School District and Bank of America to establish solar photovoltaic arrays at several schools. The company has also teamed with western cities to convert kitchen grease and wastewater sludge to biogas that powers wastewater treatment plants.
- ConocoPhillips announced a partnership to convert animal fat from Tyson Farm's rendering facilities to renewable diesel fuel that helps produce lower life-cycle carbon emissions. The company has also teamed with Archer Daniels Midland Company to develop advanced biofuels.



CONSERVATION AND ENERGY EFFICIENCY

Conservation and the efficient use of energy are critically important because they help reduce growth in demand to keep energy affordable and reduce greenhouse gas emissions. WSPA companies are doing their share to conserve energy.

- ExxonMobil Chemical and ExxonMobil's Japanese affiliate, Tonen Chemical, have developed new film technologies for lithium-ion batteries with the potential to improve the energy efficiency and affordability of next generation hybrid and electric vehicles. These new film technologies are expected to significantly enhance the power, safety and reliability of lithium-ion batteries, thereby helping speed the adoption of these smaller and lighter batteries into the next wave of lower-emission vehicles.
- 
- Valero is implementing the latest control technology to improve combustion efficiency at refineries nationally. That new technology will reduce CO2 emissions by 1.8 million tons per year by approximately 2008. Project upgrades at its Benicia and Wilmington refineries will decrease CO2 emissions by more than 140,000 tons per year.
 - Tesoro installed two state-of-the-art flare gas compressors at its Golden Eagle Refinery in Concord. This equipment takes flare gases – hydrogen, nitrogen, methane and other hydrocarbons – compresses them and returns them to the refinery for use as fuel. This project reduced flaring by 90 percent, which in turn reduced flare emissions by 94 percent. At its Salt Lake City Refinery, Tesoro's cogeneration operation (using natural gas to generate both electricity and steam), reduces emissions at that facility by more than 500 tons each year.
 - Aera's cogeneration facility in the San Joaquin Valley combines electric power production with oil production. It produces 315 megawatts of electricity, enough power for 160,000 households while reducing greenhouse gas emissions.
 - Energy efficiency measures at BP helped reduce operational greenhouse gas emissions by 2.5 million metric tons in 2006. BP's cogeneration project at its Texas City refinery realized a 250,000 ton reduction in greenhouse gas emissions in its first 12 months of full operations.
 - Shell reduced its greenhouse gas emissions by 7 million tons in 2006 from the previous year. Shell's Oil Products and Chemicals businesses committed to undertake energy efficiency projects at their 40 major facilities by 2008. In Nigeria, for example, refinery operations run by Shell and partners have invested more than \$2 billion and have reduced gas flare volumes by almost a third already.
 - Since 1986, Occidental has invested in the construction of several highly efficient cogeneration facilities to produce electric power and steam. This doubled energy efficiency over traditional power production while reducing carbon dioxide emissions by almost four million metric tons at full utilization.
- 

- ExxonMobil's worldwide energy efficiency plan has reduced greenhouse gas emissions by about 8 million tons since 2001, resulting in a reduction in carbon emissions equivalent to removing 1.5 million U.S. cars from the road. In addition, ExxonMobil's 100 cogeneration facilities have reduced greenhouse gas emissions by 10.5 metric tons in 2004 and 2005.
- ConocoPhillips cogeneration plants in Europe and the United States save energy and reduce emissions. Its newest cogeneration plant uses up to 20% less energy while cutting carbon dioxide emissions by 3 million tons a year.
- Chevron participates in cogeneration projects that, together, produce enough electricity to power more than 1 million homes. For example, two cogeneration facilities in Kern County, California, with high generating efficiencies, provide 600 megawatts of electricity while emitting substantially less carbon dioxide than conventional gas-fired simple-cycle power plants. At the U.S. Postal Service's Processing and Distribution Center in West Sacramento, California, Chevron's Energy Solutions Division completed a number of energy-efficient upgrades, including the nation's largest nonmilitary federal solar power installation. These improvements are expected to reduce the facility's power use by more than one third.

IMPROVING THE EFFICIENCY OF EXISTING TECHNOLOGY

Continuous progress in reducing smog-forming emissions from the internal combustion engine has been a phenomenal success story.

- California's cleaner-burning gasoline reduced smog-forming and carbon monoxide emissions by one billion pounds a year, the equivalent of taking 3.5 million cars off the road.
- California's cleanest internal combustion engine cars known as the SULEV (Super Ultra Low Emission Vehicles), are as clean or cleaner than hybrids with smog-forming emissions almost below detection limits.
- ExxonMobil in partnership with Toyota and others is exploring new approaches to traditional internal combustion engine (ICE) technology. Better understanding of fuel chemistry and combustion could lead to 30% better fuel efficiency and a corresponding reduction in smog-causing emissions and carbon dioxide.

HYDROGEN

Hydrogen is a chemical element that carries energy and can be stored in either liquid or gaseous form. When combined with hydrogen fuel cells it can generate electricity with far less emissions than other means of production.

- Several WSPA members including BP, Chevron and Shell are also members of the California Fuel Cell Partnership, a private-public consortium to overcome the difficult technological challenges in making hydrogen fuel cells.
- ConocoPhillips is working with other private companies in California to develop a hydrogen infrastructure in California, by testing multiple approaches to producing hydrogen and providing infrastructure at 24 fueling stations throughout the state.
- Chevron is working with the AC Transit District in Oakland to design and build a state-of-the-art hydrogen fueling station.

PROMISING NEW TECHNOLOGIES

- **Decarbonized Fuel:** The BP Carson Hydrogen Power project is designed to generate much-needed electricity, and to reduce greenhouse gas emissions by capturing carbon dioxide and storing it safely and permanently. Every day, it will transform about 5,000 tons of petroleum coke – a by-product of the refining process – into hydrogen and carbon dioxide. The hydrogen gas will be used to fuel a power station capable of providing the California power grid with 500 MW of low-carbon electricity – enough to power about 325,000 southern Californian homes. At the same time, about 4 million tons of carbon dioxide a year will be captured, then transported by pipeline to the California oil fields and stored in oil reservoirs thousands of feet below the surface, where it will flush out oil that can't be reached [cost-effectively] in any other way.
- **Coal Gasification:** This process converts coke or coal synthetic gas to hydrogen which in turn can be used as a fuel for electric power plants. ConocoPhillips demonstrated this technology on the Wabash River in Indiana where it succeeded in generating electricity which produced emissions far below U.S. Clean Air Act standards with negligible particulate matter levels and a 20% reduction in carbon dioxide.
- **Carbon Sequestration:** Capturing and “sequestering” carbon dioxide in geologic formations has the potential to mitigate CO2 emissions associated with combustion of fossil fuel resources.



RESEARCH PROJECTS

- The mission of The Global Climate and Energy Project (GCEP) at Stanford University is to conduct fundamental research on technologies that will permit the development of global energy systems with significantly lower greenhouse gas emissions. It receives financial support from ExxonMobil, General Electric, Schlumberger, and Toyota.
- The CO2 Capture Project, is a global collaboration formed to research and develop technology to reduce greenhouse gas emissions. Its members include BP, Chevron, ConocoPhillips, U.S. Department of Energy and the European Union.
- Occidental is partnering with the U.S. Environmental Protection Agency through its Star program to evaluate, implement and report on cost-effective programs to reduce methane gas emissions.

- Chevron announced a Biofuels Alliance with Weyerhaeuser to research and develop technology to transform wood fiber and other nonfood sources of cellulose into biofuels for cars and trucks.
- BP and The California Institute of Technology have teamed up in a multi-million dollar research program that could open the door to a radical new way of producing solar cells, making the cost of solar electricity more competitive and increasing current efficiency levels. BP also announced it will partner with UC Berkeley and the Berkeley National Laboratory to establish a new Energy Biosciences Institute.
- Chevron, ConocoPhillips and Shell are founding members of the Colorado Center for Biorefining & Biofuels (C2B2) an academic-industry collaboration formed to pursue alternative energy and raw materials. The Center was established this year.

January 24, 2008




COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAII AT MĀNOA



**Kaua'i Island
Utility Cooperative**

Your Touchstone Energy Cooperative 


The power of human connections®

Steven Rymsha
srymsha@kiuc.coop

246-8287

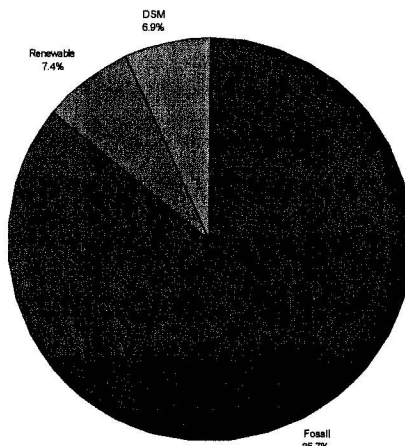


**Kaua'i Island
Utility Cooperative**

Your Touchstone Energy Cooperative 

The power of human connections®

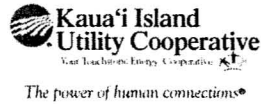
Tentative 2008 RPS



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAII AT MĀNOA



Customer Sited Renewable Generation

- 93 systems installed in 2008 with a generation capacity of 1859kWdc
- 170 systems installed since 2001 with a total generation capacity of 2800kWdc



Solar Hot Water Programs

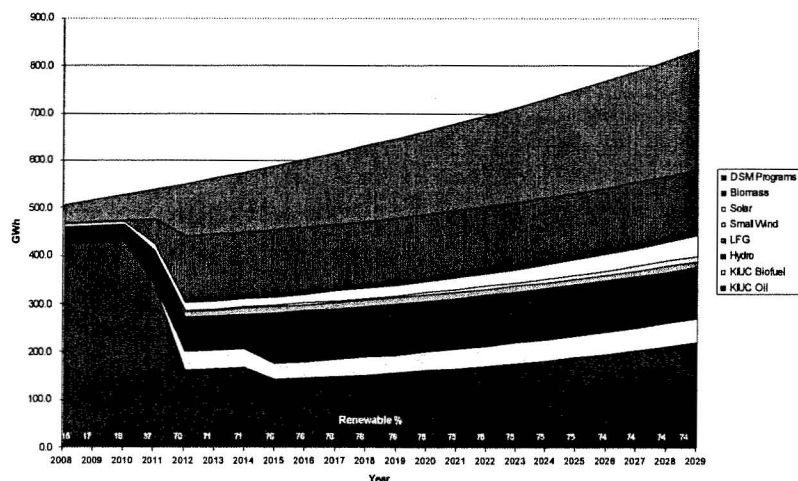
- 87% increase of installed systems
- KIUC Rebate Program installed 174 systems
- KIUC Zero Interest Loan Program installed 43 systems
- KIUC Solar Water Heating Savings Pilot Program 53 applications requested, 1 returned to KIUC, 0 installs



Renewable Projects

- Collaborative agreement with Pacific West Energy, LLC to develop a 20MW biomass facility.
- Working with Kauai Agricultural Association to lease lands for a solar project.
- Preliminary discussions with landowner to develop a 4MW hydro electric project.
- PUC approved PPA for a 130kW hydro electric unit scheduled to be online in 2009.
- Avian and siting issues persist in bringing on wind generation.
- Green Energy Biomass scheduled to be online in 2010.
- Landfill gas projects potentially to be developed by Navy.

KIUC's HCEI Scenario





COLLEGE OF SOCIAL SCIENCES
HAWAII ENERGY POLICY FORUM
UNIVERSITY OF HAWAII AT MĀNOA

Governance and Policy Issues

2009 Legislative Session

January 22, 2009

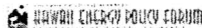
Governance: Agency Roles

- Legislature
 - Sets General and Specific Energy Policies
 - Determines Scope of Agency Authority and Duties
 - Determines Agency Budgets
 - Provides Oversight of Agencies
- Public Utilities Commission (PUC)
 - Regulates All Aspects of Public Utilities
 - Sets Rates and Specific Policies
 - Investigations / Responds to Complaints



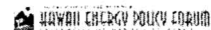
Governance: Agency Roles

- Division of Consumer Advocacy
 - Represents Consumers Before the PUC
 - Provides Public Information
- Strategic Industries Division (DBEDT)
 - Planning and Information
 - Program Implementation
 - Resource Permitting Facilitation
 - Greenhouse Gas Task Force (with DOH)



Governance Issues

- Who Sets Policies: Legislature vs PUC
 - General Policy versus Implementing Policies
 - Evolving, Technical or Difficult Issues to PUC
- Transportation Sector Energy Policy
 - How to Encourage / Mandate Efficiency
- Permit Streamlining
 - Energy Imperatives versus Normal Due Process
 - Caution Regarding Legal Errors



Governance Issues

- Adequate Agency and Program Funding
 - ❑ Agencies and Programs Do Not Work Without Resources
 - Staff Positions
 - Budget for Resources
 - ❑ Forum Fully Supports Completion of PUC Agency Reorganization and Relocation



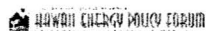
Governance Issues

- Funding Sources
 - ❑ Utility Consumers - Surcharges on Utility Bills
 - PUC Special Fund – For PUC/DCA Agency Costs Only
 - Public Benefits Fund Surcharge – Efficiency Programs
 - DSM Surcharge - Load Management Programs
 - Clean Energy Infrastructure Surcharge – Utility CWIP
 - ❑ Taxpayers
 - General Fund
 - Tax Credits
 - ❑ General Consumers
 - Upstream "Barrel" Tax



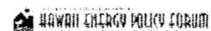
Energy Policy What is 2009 All About?

- Hawaii State Budget Crunch
- Economic Stimulus Strategies
- Pending Federal Energy Policies
- New Hawai'i Energy Initiatives
 - ❑ Hawaii Clean Energy Initiative
 - ❑ October 2008 Energy Agreement
 - ❑ Legislative Initiatives



Hawaii Clean Energy Initiative (HCEI)

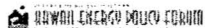
- Agreement with State of Hawaii and U.S. Dept. of Energy (January 2008)
- Calls for 70% Clean Energy by 2030
- Includes Electrical and Transportation Sectors
- Inspired the October 2008 Energy Agreement
- Includes a Legislative Package
 - ❑ HEPF Will Review Components



October 2009 Energy Agreement

➤ Signed Agreement Between:

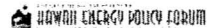
- ❑ State of Hawaii
 - Governor
 - DBEDT
 - Consumer Advocate
- ❑ Hawaiian Electric Companies
 - HECO
 - MECO
 - HELCO



October 2009 Energy Agreement

➤ New Paradigm for HECO Regarding Extensive Renewable Generation:

- ❑ Old Position: No Can Do (much)
 - Cost Too High / System Integration Issues
 - ❑ New Position: Can Do... (a lot more)
 - Cost Recovery / Smart Grid
- Agreement Primarily Includes Matters To Be Determined by the PUC



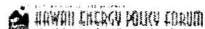
October 2009 Energy Agreement

➤ Several PUC "Dockets" Opened:

- ❑ Feed-in Tariffs
- ❑ Revenue Decoupling
- ❑ Advanced Metering / Time of Use Rates

➤ Several More Dockets Contemplated:

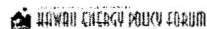
- ❑ Clean Energy Infrastructure Surcharge
- ❑ Clean Energy Scenario Planning Process
- ❑ Capacity Surcharge Adjustment Mechanism
- ❑ HECO "PV Host" Program
- ❑ Renewable Portfolio Standard Modifications
- ❑ Energy Efficiency Portfolio Standard
- ❑ Specific Energy Efficiency Resource Programs



October 2009 Energy Agreement

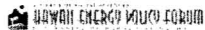
➤ Feasibility Not Yet Determined

- ❑ Overall Costs and Rate Impacts Not Determined Specifically
 - ❑ Electric System Integration Issues Not Resolved
 - ❑ No Over-Arching Venue or Investigation of Merits
- Concerns Regarding Impacts On Existing Hawaii Renewable Industry



October 2009 Energy Agreement

- Legislative Matters:
 - ❑ Enabling Legislation
 - Wholesale Contracts Above Avoided Cost
 - Renewable and EE Portfolio Standards
 - ???
 - ❑ Legislative Oversight
 - Will PUC Conduct Probative Investigation?
 - Will Consumer Advocate Remain Objective?
(Considering Being an Agreement Signatory)



Other Legislation ?

- Soon to be Determined...
- Forum Will Review Energy Related Bills to Determine Which Have Full Consensus Support



Mahalo!

Questions?



COLLEGE OF SOCIAL SCIENCES
HAWAII ENERGY POLICY FORUM
UNIVERSITY OF HAWAII AT MANOA

The Hawaii Energy Policy Forum (HEPF)

What is the Hawaii Energy Policy Forum (HEPF)?

The Hawaii Energy Policy Forum or “Forum” is currently comprised of 40 representatives from the electric utilities, oil and natural gas suppliers, environmental and community groups, renewable energy industry, academia, and federal, state and local government – all committed to a preferred energy vision for Hawaii of achieving “*Smart energy solutions to sustain a healthy prosperous, and secure Hawaii.*” The Forum is jointly administered by the Social Sciences Public Policy Center at the University of Hawaii Manoa and the Research Corporation of the University of Hawaii (RCUH).

The HEPF’s mission is to facilitate the achievement of the preferred energy vision by:

- Establishing a forum for sharing information and diverse viewpoints to:
 - Reach understanding;
 - Identify common ground for collaborative action; and
 - Present options for informed decision-making to implement the energy vision.
- Establishing policies and relationships among members to:
 - Raise the level of trust, knowledge, and public information; and
 - Support implementation of the energy vision.
- Promoting civic participation in implementing the energy vision and actions.

Background:

In May 2002 the University of Hawaii at Manoa, as part of its Hawaii Energy Policy Project,¹ convened major energy stakeholders in Hawaii to develop an energy vision for Hawaii through the year 2030, and to formulate a strategy consistent with its implementation. This advisory group became known as the “Hawaii Energy Policy Forum.” It deliberated on the preferred energy future for Hawaii and explored relevant issues and constraints in achieving this preferred future. As a result, scientific studies were conducted to provide baseline information,

¹ The Hawaii Energy Policy Project was initially funded by the Hawaiian Electric Company to bring together experts from the University and the regulated electric utilities in Hawaii to examine current and future trends in utility planning and operations. It was to focus on environmental and fuel security issues and how these issues might affect the future direction of public perceptions / policy regulation of Hawaii’s electric utility industry. However, as the advisory group of energy stakeholders began to work on a vision for Hawaii’s preferred energy future, commissioned studies on the various issues, and obtained further community input at its Hawaii Energy Policy Summit held in December 2003, the project evolved to develop a more long-term, strategic, comprehensive and action-oriented plan. The project also obtained additional funding for its planning and activities from the State Department of Business, Economic Development, and Tourism, the Hawaii Community Foundation, and the Department of Health.

and to review various environmental, regulatory, economic, social and cultural issues relating to Hawaii's energy future. These studies were integral in providing a science and fact-based approach to developing the Forum's policy agenda.

In December 2003, the Forum convened the Hawaii Energy Policy Summit to review the results of the above-mentioned studies and to provide a community-based forum to develop a vision and strategy for Hawaii's energy future. The outcome of the Summit was a final report entitled "Hawaii at the Crossroads: A Long Term Energy Strategy", which provided recommended guiding principles and policy options to meet Hawaii's long-term energy needs. The members of the Forum have continued to meet over the past three years to facilitate the achievement of those recommendations leading to a preferred energy future for Hawaii. The Forum also developed a set of governance procedures to guide its deliberations providing a collegial environment where all opinions and positions are freely expressed, to meet its mission of reaching understanding and collaborative action.

Forum Achievements to Date:

The goal in creating the Forum was to bring together the diverse groups of the State's stakeholders to address energy -- a significant policy issue for our community. The Forum conveners wanted --and did--develop a common energy vision and conducted studies to answer questions that would bring the State closer to establishing policies to achieve our vision of a sustainable, affordable, safe and reliable energy system for Hawaii in 2020.

The Forum continues to be an organization where all ideas and interests can be discussed and analyzed, where white papers and research studies can be conducted, shared and views aired, and where there is civil, deliberative dialogue to address significant energy issues and options. We have learned that energy issues are multiple and complex and that study and development of a Hawaii knowledge base are critical, and that all stakeholder groups should continue to come to the table to discuss these issues and options to enable sound decision-making. This is not easy, but members have continued to work together because they believe that the energy strategy must be based on a broader view of the impacts to the various segments of our State and must be knowledge-based.

The Forum in its six years of work together accomplished the following:

- Conducted research on various policy issues ranging from hydrocarbons outlook, environmental requirements on energy producers, renewable and unconventional energy, energy utility regulation and taxation, and energy efficiency. Nine reports on these various areas were produced and can be found on the Forum website: <http://www.hawaiienergypolicy.hawaii.edu>. Some of the reports have already influenced policies and practices.
- Provided briefings on the status of energy and work of the Forum to the Joint Energy Committees of the State House and Senate since 2005;

- Developed recommendations which involved several hundred key energy and policy stakeholders and community leaders who share the need for a common strategic vision for Hawaii's energy future both at a Energy Summit held in 2003 and Forum discussion (see one of the outcomes: the strategic framework report that was distributed to federal, state, and local policymakers)
- Developed a brief and understandable common vision for our energy future: "Smart energy solutions to sustain a healthy, prosperous, and secure Hawaii"
- Adopted 10 Point Comprehensive Plan as framework for action and established Action Plan Working Groups to implement plan and recommendations; action plans have been developed for the major substantive components: (1) renewable energy; (2) energy efficiency; (3) regulatory reform; (4) hydrocarbon future; (5) social and cultural impacts; (6) reducing greenhouse gas emissions; and (7) communication and outreach Plans can be viewed on the Forum's website
- Developed a communication/outreach plan to support the public education and outreach on issues and programs to further the energy vision and goals, and in 2007, aired on prime time TV a documentary, "Hawaii's Climate Crisis", which resulted in unanticipated viewer interest that it was aired two additional times
- Developed and continually updated its common mission to facilitate the achievement of the preferred energy vision for Hawaii by establishing a forum for sharing information and diverse viewpoints, including most recently a forum on the October 2008 Energy Agreement between Hawaiian Electric Company and the State of Hawaii (Department of Business, Economic Development & Tourism and the Consumer Advocate)
- Established procedures and relationships among Forum members to raise the level of trust, knowledge and public education as well as support for implementation of the energy vision, and promoting civic participation in moving forward the energy vision and actions
- Developed and supported legislative proposals passed by the Legislature and signed into law by the Governor
- Convened an "Executive Energy Briefing" for over 50 top executives in business and government to brief them on the benefits and how tos of increasing energy efficiency in their buildings (August 2006)
- Established an "Energy by Example" awards program to increase energy efficiency in the public and private sector by providing preliminary energy assessments to selected organizations as case studies to demonstrate energy efficiency measures. Awards were given for assessments of the following buildings: (1) Hawaii State Capitol; (2) Farrington High School; (3) United Laundry; (4) Saunders Hall at the University of Hawaii at Manoa.

- Co-sponsored with the Hawaii Agricultural Leadership Foundation, Department of Business, Economic Development & Tourism, UH College of Tropical Agriculture & Human Resources, and Hawaiian Electric Company, a workshop on biofuels development to objectively promote the production of bioenergy derived fuels (October 2006), which resulted in introduction of and current implementation of a Hawaii Bioenergy Master Plan (2008)
- In partnership with the Hawaii Natural Energy Institute, obtained \$136,000 in funding from the U.S. Department of Energy to assess the impact of Hawaii's dependence on petroleum as well as to communicate and inform policymakers and the public of promising and viable renewable energy technologies.
- State appropriation in the amount of \$50,000 by the 2007 Legislature (\$27,000 released by the Governor) to develop energy efficient strategies in the transportation sector, including convening a voluntary advisory working group of statewide public and private transportation and energy stakeholders to explore energy efficient strategies in the transportation sector; resulting in \$108,000 in funding from the U.S. Department of Transportation
- See updates on the Forum's website at <http://www.hawaiienergypolicy.hawaii.edu>

Funding to Date:

Since 2002 when the Forum first began, the Forum has obtained funding of \$1.1 million from the following sources: Hawaiian Electric Company; Hawaii Community Foundation; State of Hawaii/Departments of Business, Economic Development & Tourism and Health; U.S. Department of Energy/Hawaii Natural Energy Institute, and the U.S. Department of Transportation/Hawaii State Department of Transportation.

HEPF ACHIEVEMENTS AND ACTIVITIES
(AUGUST 2005 - JUNE 2008)

PUBLIC BRIEFINGS AND MEETINGS		
DATE	ACTIVITY	IMPACT
2005		
August 9 2005	Initiative on "Creating Energy Challenges" for Hawaii	Explored initiative to promote energy efficiency in various sectors through a program on "Energy Challenges". Meetings with University of Hawaii, State Comptroller initiated awareness but agencies not ready to participate.
October 2005	Developed draft "Energy Scorecard" to raise public awareness of Hawaii's score in achieving energy independence from fossil fuel	Created as an initial draft of energy benchmarks for use when working groups have identified goals, actions and benchmarks.
October 12 2005	Briefing by Carla Din, Apollo Alliance	Briefed membership and public on the work of the Alliance in developing broad coalitions of labor, environmental, business, and urban communities to develop private-public investments in renewable energy and energy efficiency projects.
October 12 2005	Panel Discussion with Riley Saito, PowerLight Corp.; Derrick Sonoda & Peter Rosegg, HECO; Warren Bollmeier, HREA; Barry Mizuno, Puna Geothermal; Maria Tome, DBEDT; Bob Shleser, Clear Fuels Technology; and Scott Turn; HNEI	Provided a panel discussion to members and public on "Renewables: Status and Promise: Challenges and Recommendations". Discussion led to presentation to the Hawaii State Legislature on status of Hawaii's energy situation and recommendations for the 2006 session.
2006		
January 2006	Conducted formal legislative briefing on status of Hawaii's energy situation to the Hawaii State House and Senate Energy Committees	Briefed legislature on energy issues and recommendations for legislation in the 2006 session.
August 23 2006	Sponsored "Hawaii Executive Energy Briefing"	Promoted energy efficiency measures in private and public buildings; 60 CEOs and government leaders attended
August 23 2006	Created and sponsored "Energy by Example" awards	Promoted energy efficiency in building by awarding 4 energy audits: Hawaii State Capitol, Farrington High School, University of Hawaii/Saunders Hall, Young Laundry. Catalyst for DAGS, DOE & UH efforts for in-depth energy audits and recommissioning of buildings.
October 25 2006	Briefing by Dr. Lorenz Magaard, UHM International Center for Climate & Society	Briefed membership and public on the assessment of the Chicago Climate Exchange, which Forum reviewed and submitted its recommendation and report to the Legislature
October 25 2006	Briefing by Kyle Datta and Lena Hansen, Rocky Mountain Institute	Briefed membership and public on Hawaii's Energy Strategy and findings on HCR 195 relating to biofuel industry development
October 25 2006	Briefing by David Rezachek, Honolulu Seawater Air Conditioning	Briefed membership and public on Honolulu Seawater Air Conditioning, which led to Forum support of SB 987, CD1, which passed into law in 2006
October 27 2006	Co-sponsored "Hawaii Agriculture Bioenergy Workshop"	Promoted renewable biofuels energy development in agricultural and business communities; resulted in HEPF initiation and passage of legislation establishing Hawaii Bioenergy Master Plan & continuing support of staff and funding for DBEDT (Kick off meeting convened by DBEDT in May 2008).
December 6 2006	Briefing by Terry Surlles, HNEI	Briefed membership and public on the status of Section 355 of the Energy Policy Act of 2005
December 6 2006	Briefing by Steve Alber, DBEDT	Briefed membership and public on status of the Hawaii Energy Strategy 2006
December 6 2006	Briefing by Carilyn Shon, DBEDT	Updated membership and public on state energy efficiency efforts

HEPF ACHIEVEMENTS AND ACTIVITIES
(AUGUST 2005 - JUNE 2008)

2007		
January 18 2007	Conducted formal legislative briefing on status of Hawaii's energy situation to the House and Senate Energy Committees	Briefed legislature on energy issues and recommendations for legislation in the 2007 session, with major efforts becoming law: (1) Bioenergy Master Plan; (2) Energy Efficiency Strategy for the Transportation Sector; and (3) Reorganization of the Public Utilities Commission and the Division of Consumer Advocacy.
March 5 2007	Briefing of the Congressional Delegation Hawaii staff on renewable energy development in Hawaii	Briefed Congressional offices on the efforts in the state relating to renewable energy development and the need for collaboration among all sectors; resulted in Congressional delegation representation on the Forum membership and on invitation to US House Agriculture Committee Chairman to brief state on farm bill and potential for support of biofuels efforts.
March 5 2007	Briefing by Drs Charlie Kinoshita, CTAHR; and Scott Turn, HNEI	Briefed membership and public on bioenergy research
April 9 2007	Briefing on "Hawaii's Pathway to Energy Independence" by Congressman Collin Peterson, Chair of US House Committee on Agriculture	Over 100 stakeholders invited to participate in the briefing discussed the potential for federal support for developing bioenergy industry; resulting in inclusion of funding for Pacific Insular Sun Grant Center in the Farm Bill
May 9 2007	Briefing by Landis Maez, BlueEarth Biofuels; and Ed Reinhardt, Maui Electric Company	Briefed membership and public on BlueEarth Biofuels. Resulted in federal and local interest in developing a bioenergy industry.
May 9 2007	Briefing by Sasha Fesheraki, FACTS Inc. and Mark Glick, OHA, on the status of LNG for Hawaii	Updated membership and public on LNG study
May 26 2007	Presentation to the University of Puerto Rico-Mayaguez on developing sustainable energy in island states by Rep Hermina Morita, Carl Freedman, Regulatory Reform Working Group Chair, and Dr. Sharon Miyashiro, HEPF Co-chair	Upon request from the University of Puerto Rico-Mayaguez, Forum members presented and discussed lessons learned from Hawaii's efforts in developing sustainable energy for an island state
June 27 2007	Briefing by Peter Miller and Debbie Hammel, National Resource Defense Council	Briefed steering committee on NRDC and "Environmental Policy for the Procurement of Biodiesel from Palm Oil and Hawaiian Feedstocks". The Forum was invited to join visiting NRDC members on Beth-Ann Kozlovich's "Town Square" program on Hawaii Public Radio, June 29, 2007.
July 2007	Co-sponsored facilitated dialogue on ocean energy development	Convened and facilitated dialogue on ocean energy development which resulted in "Ocean Energy Development Guidelines" to foster understanding of the culture and environment and the issues that are important in energy development of the oceans.
July 24 2007	Briefing on the "Plans and Priorities of the DBEDT and PUC" by Maurice Kaya and Carlito Caliboso	Briefed public on plans and priorities of the state energy agencies
August 15 2007	Briefing by Ted Obringer, GoGreen Hawaii, on developing a documentary on raising awareness of the public on Hawaii's climate crisis	Briefed membership and public on proposed documentary, "Hawaii's Climate Crisis." Resulted in a well-received program that aired three times.
August 20 2007	Briefing on "Public/Private Strategies to Promote Commercialization of Renewable Energy Technologies"	Briefed renewable energy technology stakeholders on federal, state and local efforts, specifically presentations by US Department of Commerce, US Department of Energy, State High Technology Corp; and local companies Sopogy & Clear Fuels Technology Inc.

HEPF ACHIEVEMENTS AND ACTIVITIES
(AUGUST 2005 - JUNE 2008)

August 29 2007	Convened Energy Efficient Transportation Strategies Working Group	Briefed 21 members of the working group representing state and county transportation agencies, energy agencies, university, and private sector (Hawaii Automobile Dealers Assn, Alliance of Automobile Manufacturers; resulted in study and recommendations to pursue strategies to address energy efficiency in ground transportation in the state, including submission of legislation on its recommendations
September 26 2007	Briefing by Dr. Rick Rocheleau, HNEI	Briefed membership and public on the Hawaii Natural Energy Institute renewable energy projects and the RPS Study
December 7 2007	Briefing by Dr. Denise Konan , UH Dept. of Economics; Terry Surles, HNEI; Mike Hamnett, RCUH; and Larry Lau, DOH, on greenhouse gas emissions efforts and the Climate Registry	Conducted a Greenhouse Gas Emmissions panel discussion, updating members and the public on the current state of the UH greenhouse gas emissions working group
2008		
January 15 2008	Co-sponsored "Hawaii's Climate Crisis" a documentary aired on KHON to bring awareness of the climate and energy crisis to the general public	The program raised awareness of the general public and was so well received that it aired two additional times (January 19 and March 20 on KGMB as well as over 200 DVDs have been distributed to interested organizations and individuals). The KNON programming director noted over a dozen personal calls from viewers wanting to know more about the issues. Requests for follow-up re: actions that can be taken to address the problems cited will be further explored.
January 17 2008	Briefing by Drs. Bill Steiner, College of Agriculture, Forestry & Natural Resources UH Hilo; and Charlie Kinoshita, CTAHR; and Kyle Datta, US Biofuels	Briefed Forum members and public on "Hawaii's Energy Future: What Will it Look Like?"
January 17 2008	Conducted briefing of the Senate and House Energy Committees on the status of Hawaii's energy situation and recommendations for the 2008 session	Legislation was introduced and four bills supported by the Forum were passed.
January 28 2008	Convened briefing on the Hawaii Clean Energy Initiative (HCEI) by the USDOE & State DBEDT	Briefed the energy stakeholders and broader community on the HCEI relating to the transformation of planning of renewable energy and energy initiatives for Hawaii.
March 7 2008	Briefing by Director Ted Liu, DBEDT, on its energy office and efforts	Updated membership and public on DBEDT's Energy Office and Hawaii's Clean Energy Initiative
March 11 2008	Briefing at University of Ryukyus public forum on "Environmental Preservation and Sustainable Development through Renewable Energy in the Pacific Islands."	Upon request from the University of Ryukyus - Center for Asia-Pacific Island Studies and UH PEACESAT program, presented lessons learned in energy policy development in Hawaii; explored potential partnerships with Hawaii and Okinawa
May 9 2008	Briefing on the outcomes of the 2008 Legislature by Rep Hermina Morita; Ted Peck and Maria Tome, DBEDT; and Deputy Director Laurence Lau, DOH.	Updated membership and public on outcomes and plans forward from the 2008 Legislative Session
REPORTS AND STUDIES		
DATE	REPORT/STUDY	IMPACT
December 2006	Biomass- and Biofuels-to-Power Study	Assessed biofuel industry development in response to HCR 195, 2007; which resulted in passage and support for the development of a "Hawaii Bioenergy Master Plan"

HEPF ACHIEVEMENTS AND ACTIVITIES
(AUGUST 2005 - JUNE 2008)

February 2007	Chicago Climate Exchange	Conducted in response to Act 163, 2006, the Forum commissioned the UHM to conduct a study and provide findings to the the Forum. Based on the study findings, the Forum recommended that Hawaii should not become a member of the Chicago Climate Exchange at this time. Rather, Hawaii should take immediate steps to establish baseline data on GHG emissions so that this matter can be considered again in the future using updated and complete information.
April 2007	Evaluating Natural Gas Import Options for Hawaii	In co-sponsorship with the Office of Hawaiian Affairs, the Forum commissioned FACTS to update its assessment of natural gas options for Hawaii.
November 2007	Opportunities and Obstacles in Hawaii's Laws to Implementing Energy Efficiency and Renewable Energy Resources	To facilitate energy efficiency and renewable energy resources throughout the state, the Forum commissioned a study of all state and county laws to determine the obstacles to their implementation. It found that while the list of obstacles is short, more problematic are the absence of specific requirements and the lack of necessary funding to actually implement and enforce initiatives and programs.
January 2008	State of Hawaii Energy Efficiency in Transportation Strategies	As directed by Act 254, the Forum convened the energy and transportation sectors to explore policies and strategies to pursue Hawaii as a "transportation paradise." The work resulted in a proposed study and legislative proposal to the 2008 Legislature and the establishment of a working group that continues to work on a pilot project. It has sought federal and private sources of funding and, to date, has secured some funding from private sources.

Hawaii Energy Policy Forum Working Group Co-Chairs

Forum Co-Chairs:
Michael Hamnett and Sharon Miyashiro

RENEWABLES WORKING GROUP

Warren Bollmeier wsb@lava.net
Mark Duda mark@suntechhawaii.com

ENERGY EFFICIENCY WORKING GROUP

Stephen Meder smeder@hawaii.edu
Kyle Datta kyledatta@yahoo.com
Darren Kimura dkimura@sopogy.com

REGULATORY REFORM WORKING GROUP

Carl Freedman jcfm@hawaiiantel.net

SOCIAL & CULTURAL WORKING GROUP

Mark Glick markg@oha.org
Val Tavai valt@hcapweb.org

HYDROCARBON FUTURES/ENERGY SECURITY WORKING GROUP

Lance Tanaka ltanaka@tsocorp.com
Lynne Ebisui lebisui@hawaiiigas.com

COMMUNICATION/OUTREACH WORKING GROUP

Peter Rosegg peter.rosegg@heco.com
Mitch Ewan ewan@hawaii.edu
Bill Kaneko wkaneko@ahfi.com

GREENHOUSE GAS EMISSIONS WORKING GROUP

Mike Hamnett mhamnett@rcuh.com
Carl Freedman jcfm@hawaiiantel.net

FORUM MEMBERS 12/2008										
Name			Address				Phone	Fax	e-mail	
Mr.	Robbie	Alm	HECO	P.O. Box 2750		Hon, HI 96840-0001	543-7650		Robbie.Alm@heco.com	SrVP,Public Affairs
Ms.	Amy	Asselbaye	The Office Congressman Neil Abercrombie	Prince Kuhio Federal Building, 300 Ala Moana Blvd.	Rm 4-104	Honolulu, HI 96850	541-2570	533-0133	Amy.Asselbaye@mail.house.gov	Chief of Staff
Ms.	Madeleine	Austin	World Business Academy	2600 Pualani Way	Suite 3401	Honolulu, HI 96815	926-1711	926-1722	madeleine@worldbusiness.org	Vice President
Ms.	Catherine	Awakuni	Division of Consumer Advocacy	335 Merchant St.	Rm 326	Honolulu, HI 96813	586-2770	586-2780	Catherine.P.Awakuni@DCCA.hawaii.gov	Executive Director
Mr.	Warren	Bollmeier	Hi Renewable Energy Alliance	46-040 Konone Pl	#3816	Kaneohe, HI 96744	247-7753	247-7753	wsb@lava.net	President
Mr	Carlito	Caliboso (observer)	Public Utilities Commn	465 S King St	Rm 103	Hon, HI 96813	586-2020	586-2066	Hawaii.PUC@hawaii.gov	Chairman (Observer)
Mr.	Albert	Chee	Chevron	91-480 Malakole Street		Kapolei, HI 96707	682-2313	682-3116	AlChee@chevron.com	Public Affairs Manager
Ms.	Elizabeth	Cole	The Kohala Center	P.O. box 437462		Kamuela, HI 96743	808-887-6411	808-886-6707	bcole@kohalacenter.org	Deputy Director
Mr.	Kyle	Datta	New Energy Partners	P.O. Box 390303		Keauhou, HI 96739	808-329-4360	808-329-4370	kyledatta@yahoo.com	
Mr.	Mark	Duda	Hawaii Solar Energy Assn	P.O. Box 37070		Honolulu, HI 96837	808-735-1467	808-262-6600	mark@suntechhawaii.com	President
Ms.	Lynne	Ebisui	The Gas Company	PO Box 3000		Honolulu, HI 96802-3000	535-5934	535-5944	lebisui@hawaiigas.com	Senior Planner/ Compliance Administrator
Sen	Kalani	English	Senate Comm on Transportation & Internat'l Affairs	State Capitol	Rm 205	Hon HI 96813	587-7225	587-7230	senenglish@capitol.hawaii.gov	Senator; Chair of Committee
Mr.	Mitch	Ewan	HNEI	1680 East-West Road	POST 109	Honolulu, HI 96822	956-2337	956-2336	ewan@hawaii.edu	Hydrogen Systems Program Mgr
Mr.	Carl	Freedman	Haiku Design &Analysis	4234 Hana Hwy		Haiku, HI 96708	1-808-572-2519		icfm@hawaiiantel.net	President
Sen	Mike	Gabbard	Sen Energy & Environment	Hawaii State Capitol	Room 201	Honolulu, HI 96813	586-6830	586-6679	sengabbard@Capitol.hawaii.gov	State Senator, Chair of Committee
Mr.	Mark	Glick	Ofc of Hawaiian Affairs	711 Kapiolani Blvd.	Suite 500	Honolulu, HI 96813	594-1911	594-1865	markg@oha.org	Director, Economic Development
Dr.	Mike	Hamnett	RCUH	2800 Woodlawn Dr.	Suite 200	Hon HI96822	988-8311	988-8319	mhamnett@rcuh.com	Executive Director
Ms.	Paula	Helfrich	Econ Development Alliance of Hawaii	737 Bishop St.	Suite 2040 Mauka Tower	Hon, HI 96813	989-1899	536-2281	wkaneko@hipaonline.com. Wkaneko@ahfi.com	CEO
Mr.	William	Kaneko	Hi Institute for Public Affairs	1001 Bishop St. - Amer Sav Bank Tower	Suite 1132	Hon HI 96813	535-7931 X103	585-7932	wkaneko@hipaonline.com	Pres & CEO
Mr.	Darren	Kimura	Energy Industries Holdings	2660 Waiwai Loop		Honolulu, HI 96819	839-7300	839-7400	dkimura@sopogy.com	President&CEO
Mr.	Mike	Kitamura	Office of Senator Daniel K. Akaka	Prince Kuhio Federal Bldg., 300 Ala Moana Blvd.	Rm. 3-106	Honolulu, HI 96850	522-8970	545-4683	Michael_Kitamura@akaka.senate.gov	State Director
Mr.	Kal	Kobayashi	Maui County Energy Office	200 S. High St.		Wailuku, HI 96793	1-808-270-7832	1-808-270-7141	kal.kobayashi@co.maui.hi.us	Maui Energy Coordinator
Mr.	Larry	Lau	Department of Health	1250 Punchbowl St		Honolulu, HI 96813	586-4424	586-4368	laurence.lau@doh.hawaii.gov. jan_hasegawa@doh.hawaii.gov	Dep Dir, Environmental Health
Mr.	Allyn	Lee	Dept of Design & Construction	650 S King St.	9th Flr	Hon HI 96813	523-4106	526-6002	alee2@honolulu.gov	Engineer
Mr.	Aaron	Leong	Office of the Hon. Daniel Inouye	300 Ala Moana Blvd.	Room 7212	Honolulu, HI 96813	541-2877	541-2549	kristina_kekuewa@inouye.senate.gov	Staff Assistant

Name			Address				Phone	Fax	e-mail	
Dr.	Stephen	Meder	University of Hawai'i Center for Smart Building and Community Design	2525 Correa Rd.	HIG 238	Honolulu, HI 96822	956-7031	956-3014	smeder@hawaii.edu	Director
Mr.	Jeff	Mikulina	Sierra Club Hawai'i Chapter	P.O. Box 2577		Honolulu, HI 96803	538-6616		mikulina@lava.net	Director/Hawaii Chapter
Dr.	Bruce	Miller	University of Hawai'i Office of Sustainability	Hawaii Energy House	2020 East-West Road	Honolulu, HI 96822	956-8645	956-5142	bmiller@hawaii.edu	Director
Dr.	Sharon	Miyashiro	Public Policy Ctr	Saunders Hall 723	2424 Maile Way	Hon HI 96822	956-7070	956-0950	sharonmi@hawaii.edu	Assoc Dir,SSPublicPolicy Ctr
Rep.	Hermina	Morita	House Committee on Energy & Environmental Protection	Hawai'i State Capitol, Room 315	415 South Beretania Street	Honolulu, HI 96813	586-8435	586-8437	repmorita@capitol.hawaii.gov	State Rep;Chair of the Committee
Mr.	Tim	O'Connell	USDA/Rural Development	154 Waiuanueue Avenue	Room 303	Hilo, HI 96720	1-808-933- 8313	1-808-933- 8326	tim.oconnell@hi.usda.gov	
Mr.	Richard	Paglinawan	Pa Ku'i A Lua	47-710 Ahuimanu Rd		Kane'ohe, HI 96744	594-4700	239-8945		Hawaiian Specialist
Ms.	Melissa	Pavlicek	Western States Petroleum Assn	1099 Alakea Street	Suite 2140	Honolulu, HI 96813	(808) 447- 1840;c-722- 7007		pavlicekm001@hawaii.rr.com	Legislative Advocate
Mr.	Ted	Peck	DBEDT Strategic Industries Division	P.O. Box 2359		Honolulu, HI 96804	587-3812	586-2536	tpeck@dbedt.hawaii.gov	State Energy Administrator
Mr.	Randy	Perreira	HI State AFL-CIO	888 Millilani	Ste 601	Honolulu, HI 96813	543-0003	528-0922	rperreir@hgea.org	President
Mr.	Rick	Reed	Hawaii Solar Energy Assn	761 Ahua Street		Honolulu, HI 96819	523-0711	536-5586	rreed@solarsupply.com	President
Dr.	Rick	Rocheleau	Hawaii Natural Energy Institute	Univ of Hawaii-- 1680 East-West Rd	POST 109	Honolulu, HI 96822	956-8366	956-2336	rochelea@hawaii.edu	Director
Mr.	Peter	Rosegg	HECO	P.O. Box 2750		Honolulu, HI 96840- 0001	543-7780	543-7790	peter.rosegg@heco.com	Sr.CommunicationsC onsultant
Mr.	Steven	Rymsha	KIUC	4463 Pahee St.	Suite 1	Lihue, Kauai, HI 96766	808-246-8287		srymsha@kiuc.coop	Renewable Energy Staff Engineer
Mr.	Riley	Saito	PowerLight Corp.	73-1294 Awakea St.		Kailua-Kona, HI 96740	1-808-895- 0646	1-808-325- 6256	rsaito@powerlight.com	Solar Energy Strategist
Mr.	Glenn	Sato	Office of Economic Development	4444 Rice Street	Room 200	Lihue, Kaua'i, HI 96766	1-808-241- 6390		gsato@kauai.gov	Energy Coordinator
Mr.	Bill	Short	Building Industry Association of Hawai'i	1727 Dillingham Blvd.		Honolulu, HI 96819	349-5560	237-8928	short@am-pres.com	Chair, Govt Relations Committee
Ms.	Joelle	Simonpietri	Simonpietri Enterprises LLC	250 Nonou Street		Honolulu, HI 96825	341-7984	320-341- 7984	joelle@simonpietri.com	President
Mr.	H. Ray	Starling	Hawaii EnergyGrp	1001 Bishop St- Pacific Tower	Rm 977	Honolulu HI 96701	478-7097	262-9967	raystarling@off-peak.com	President
Mr.	Lance	Tanaka	Tesoro Hawaii Corp.	91-325 Komohana St.		Kapolei, HI 96707	547-3920	547-3858	ltanaka@tsocorp.com	Manager, Governmental Relations
Ms.	Val	Tavai	Honolulu Community Action Progam	33 South King Street	Suite 300	Honolulu, HI 96813	521-4531	521-4538	valt@hcapweb.org	Director of Community Services
Dr.	Don	Thomas	Center for the Study of Active Volcanoos	POST 619B	200 Kawili St.	Hilo, HI 96720	956-6482; 1-895-6547		dthomas@soest.hawaii.edu	Director
Mr.	Murray	Towill	Hawai'i Hotel & Lodging Assn	2250 Kalakaua Ave.	Suite 404-4	Honolulu, HI 96815	923-0407		mtowill@hawaiihotels.org	President
Mr.	Joshua	Wisch	Office of Congresswoman Mazie Hirono	5104 Prince Kuhio Federal Building, 300 Ala Moana		Honolulu, HI 96850	541-1986	538-0233	Joshua.Wisch@mail.house.gov	District Director of Field Services