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HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAI'I AT MĀNOA

# Legislative Briefing Renewable Energy

January 18, 2007

## **Renewable Energy Working Group**

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- **Status/Outlook** (Technologies/Projects)
- **Status/Outlook** (Legislative/Regulatory)



# HEPF 10-Point Plan

- **The following actions from the 10-point plan have been addressed by the REWG:**
  - ✓ TPP #1: Expand renewable energy opportunities;
  - ✓ TPP #3: Increase solar hot water heating and energy efficient appliances;
  - ✓ TPP #8: Support R&D of alternative fuels;
  - ✓ TPP #9: Encourage development, production, and use of biofuels.



# RPS Status – End of 2006

- **RPS: HECO (11<sup>+</sup>%); KIUC (14%)**
  - Existing wind, solar, biomass, geothermal and hydro installations, including solar offsets
  - Energy offsets from heat pumps, ice storage, and waste heat recovery portion of Combined Heat & Power systems
  - Energy offsets from utility Demand-Side Management Programs



# Outlook – Electricity Sector

- **Hawaiian Electric Company**
  - **Wind** – Hawi (10.6 MW), Kaheawa Pastures (30 MW), Pakini Nui (21 MW) and others under investigation;
  - **Solar** -- boom in hot water system; PV expanding but prices are still high, as worldwide demand is high;
  - **Biomass** – H-Power's waste-to-energy power plant (45 MW); alternative options for additional capacity are under investigation;
  - **Geothermal** – expansion of Puna Geothermal Ventures to 60 MW; and
  - **Hydro** – run-of-stream system on Maui under development.



# Outlook – Electricity Sector

- **Other Renewable Energy Sources Being Developed/Investigated:**
  - Seawater Air Conditioning (SWAC) – Kakaako & Waikiki,
  - Pumped-hydro storage,
  - Solar thermal electric – NELHA,
  - Solar air conditioning,
  - Ocean Thermal Energy Conversion (OTEC) – NELHA, and
  - Wave.



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# **Hawi Windfarm - 10.6 MW** **(Hawi Renewable Development)**





# Hawi Windfarm





# Hawi Windfarm





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# **Kaheawa Pastures Windfarm – 30 MW** **(Urban Power Corp & Makani Nui)**





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# Kaheawa Pastures Windfarm





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# Kaheawa Pastures Windfarm





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# Pakini Nui (Tawhiri Wind LLC)





# Pakini Nui





# Outlook – Electrical Sector

- **Kauai Island Utility Cooperative:**
  - Issued RFP for “As-Available” Renewables and selected four projects: one wind and three biomass, including one waste-to-energy
  - Released a RFP for installation of small, distributed renewables on a “green rate” basis
  - Planning to release a RFP for “Firm” Renewables



# Status – Transportation Sector

- **Ethanol mandate is in the implementation phase – E-10 in 85% of fleets/gasoline stations**
  - Initial ethanol is being imported
  - Development of local ethanol sources continues, e.g., at Gay & Robinson (Kauai) and HC&S (Maui)
- **Biodiesel – market is growing**
  - Pacific Biodiesel – 600k-g/yr (waste cooling oil/grease)
  - Act 240 established biodiesel preference in state procurement law
- **HCR 195 – opportunity for local biofuels**
  - Required HEPF to make recommendations regarding local crop production as feedstocks for biofuels.



# HCR 195 Requirement

- HCR 195 requested HEPF recommendations on the following (paraphrased):
  1. Financial incentives to stimulate development of fuel crops including risk mitigation for investors;
  2. Most suitable locations for biomass projects including integration with MSW program;
  3. Options for leasing State land;
  4. Opportunities for federal grants; and
  5. Revolving funds feasibility.



# HCR 195 – HEPF Activities

- **HEPF proceeded on two parallel tracks:**
  - ✓ Co-sponsored and co-coordinated the Hawaii Agriculture Bioenergy Workshop on October 27, 2006
  - ✓ Commissioned via DBEDT the Rocky Mountain Institute to study the issues and provide recommendations to the Forum.
- **What we have learned:**
  - ✓ Stakeholders are a diverse group and their concerns are complex – solutions for encouraging local Ag interests in feedstock production are not immediately apparent, but are likely to require risky capital investments



# Main Observations

- Hawaii needs an accepted vision, mission, objectives & a plan to achieve them.
  - How can there be “Political Will” if there are no clear objectives and a plan?
- Many diverse and competing issues identified including:
  - Ag Lands
  - Water
  - Labor
  - Technology
  - Permitting
  - Financing
  - Partnering
  - Political Will & Policies
- Considerable coordination will be required among multiple state agencies.



# Bioenergy Master Plan

- The Forum is vetting proposed legislation this session as follows:
  - Develop a state “Bioenergy Master Plan”;
  - DBEDT proposed as lead agency; and
  - Allocate sufficient resources to develop the plan.



# Ethanol

- There is an “economy of scale” for cost-effective production of ethanol as a **transportation fuel**, and sugar (or a similar cultivar) requires large land areas and water;
- While it is not clear which projects will emerge, it appears that the current federal and state incentives should be sufficient to produce sufficient ethanol (40 mg/yr) to meet our current E-10 mandate from two (or perhaps more) projects; and
- However, the promise of local ethanol production vs. imports, will/should require consensus on the impacts to our economy and our environment and the economies and environments of potential mainland and overseas suppliers.



# Biodiesel

- **Biodiesel – has potential both as a transportation and generation fuel:**
  - Biodiesel has different “economy of scale” issues, such that Ag growers could be successful with one or more feedstocks on smaller parcels than is the case for sugar;
  - Significant resources will be required in order to make and implement appropriate feedstock and infrastructure choices;
  - It appear, however, there could be a vibrant market place of Ag growers to supply perhaps one biodiesel converter per island; and
  - A primary question then is what role government should play to facilitate local biofuel production – perhaps, among several alternatives: (i) a credit to the converters to support a fair price to growers, and (ii) support to create Ag cooperatives for the sharing of expertise and equipment among the growers?



# Status – Hawaii Renewable Hydrogen Program

- Section 6 of Act 240 passed by 2006 Legislature established “Hawaii Renewable Energy Program” within DBEDT:
  - Strategic partnerships for R&D, testing, and deployment of renewable hydrogen technologies;
  - Evaluation of Hawaii’s potential for hydrogen use & near-term project opportunities;
  - Hydrogen demonstration projects including infrastructure for the production, storage, and refueling of hydrogen vehicles; and
  - State-wide hydrogen economy public education.
- Section 7 of Act 240 established the “Hydrogen Investment Capital Special Fund” with \$10 million in initial capitalization
- Program administration being developed.



# Status/Outlook – Legislative Issues

- **RPS Implementation:** Act 162 (2006 Session) revised our RPS law:
  - Definitions. A new set of definitions clarified what can be counted by the utilities in meeting the RPS: renewable-electric technologies, renewable off-set technologies and certain energy-efficiency and conservation measures
  - Ratio of Renewables vs Energy-Efficiency. The Commission was given the authority to: (i) specify percentages among the broad renewable vs. energy efficiency categories, provided that at least 50% of the goal is met by renewables, and (ii) establish a Public Benefit fund and a fund administrator to support energy efficiency and demand-side programs and services (investigated as part of Docket No. 05-0069)
  - Need for Incentives. Still under consideration by the Commission are the implementation of incentives to encourage the utility's achievement of the RPS per Act 95 (Session 2004).



# Status/Outlook – Legislative Issues

## **Renewable Energy Technologies and Bonds for PV on Schools:**

- Renewable Energy Technologies Income Tax Credit. Act 240 revised our renewable energy tax credits for wind and solar technologies:
  - were made permanent at 20% for wind and 35% for solar,
  - credit CAPS for residential solar systems were increased (to \$2,250 for solar water heating and \$5,000 for PV), and
  - credit CAPs for commercial projects were increased to \$500,000 per project.
- Bonds for PV on Schools. Act 96 appropriated \$5M of general funds to implement a PV, net energy metered pilot project in public schools including:
  - A project site at one public school within each of the counties of Oahu, Hawaii, Kauai and Maui,
  - Allowing installations conjunction with substantial roof repairs or replacements,
  - Application of net metering to off-set project costs,
  - Recapture system costs within 75% of the useful PV system life,
  - Possible use of third party leaser or purchase contracts, and
  - Interim Progress report from the Dept. of Education.



# Status/Outlook – Legislative Issues

- **PAYS®** - Act 240 also established PAYS®:
  - Pay As You Save®. The Commission was directed to implement a pilot project to be known as the solar water heating “Pay As You Save® Program by June 30, 2007 to: (i) allow residential customers to purchase a solar water heating system (SWHS) with no upfront payments and to pay for the cost of the system over time on the customer’s electricity bill, (ii) provide for billing and payment of the SWHS on the utility bill, (iii) provide for disconnection of utility service for non-payment of SWHS pay as you save payments, (iv) allow for assignment of system repayment costs attached to the meter location.

## Notes:

1. PAYS® will help address underserved renter and low income segments,
2. system savings must exceed the system payments over time,
3. customers will save on their electricity bills from their first PAYS® payment onward, and
4. Commission investigating PAYS® in Docket No. 06-0425



# Status/Outlook – Regulatory Issues

- **A Number of Renewable Issues have been Delegated to the Commission:**
  - RPS Implementation. As part of Decision and Order on Docket No. 03-0372, new generation, including renewables, is to be acquired by the utility via a competitive bidding process unless exempted by the Commission. Renewable developers will still have the right to negotiate for a Power Purchase Agreement with the utility under our state's PURPA law.
  - Energy-Efficiency and a Possible Energy Efficiency Portfolio Standard. In addition, the following are under consideration as part of the Decision and Order on Docket No. 05-0069 : (i) an energy efficiency portfolio standard, as a complement to RPS or perhaps as a modification to our RPS, and (ii) third party administration of DSM.
  - Net Energy Metering. The Commission was given the authority (Act 69, 2005 Session) to implement the state's net metering law. Potential enhancements to the law are now under investigation in Docket No. 06-0084.