



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAII AT MĀNOA

Legislative Briefing Renewable Energy January 19, 2006

- **Status/Outlook** – Warren Bollmeier
(HREA & WSB-Hawaii)
- **Legislative Proposals** – Robbie Alm
(HECO)



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAI'I AT MĀNOA

Status – end of 2005

- 8% RPS achieved: HECO (8⁺%); 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



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAI'I AT MĀNOA

Outlook – Near Term

➤ HECO

- Wind (2006) – Hawi (10.6 MW), Kamao'a (20 MW) and Kaheawa Pastures (30 MW)
- Solar (boom in hot water; PV expansion will be limited due to high worldwide demand)
- Biomass – H-Power's new boiler will increase capacity factor and energy output
- Geothermal – expansion of PGM to 60 MW
- Hydro – small run-of-stream system on Maui
- Others Being Investigated: run-of-stream hydro, pumped-hydro, solar air conditioning, solar thermal electric, and wave



Outlook – Near-Term

➤ **Kauai**

- As-Available Renewable RFP: proposals due on January 27, 2006
- Potential for wind and solar projects, but probably not biomass under this RFP
- KIUC plans another RFP for firm renewable capacity later in 2006



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAI'I AT MĀNOA

Outlook -- Issues

- **RPS Implementation** – state is positioned for a substantial growth in renewables in 2006
 - PUC is investigating implementation of RPS: recommendations due by 12-31-06
 - Utilities are using competitive bidding process: KIUC for purchase of as-available renewable electricity; HECO (via RHI) for passive investments in renewable projects
 - Note: all issues regarding competitive bidding and power purchase agreements are being investigated on PUC Docket 03-0372



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAI'I AT MĀNOA

Outlook -- Issues

➤ Siting

- NIMBY response hurt Kahe windfarm: Need to expand education and outreach
- Streamline permitting? DBEDT and DLNR are to facilitate site identification and streamline permitting. Note: renewables already have preferred treatment on private/agricultural land.
- Renewable Development Zones? Could help permitting on state land, if state conducts generic EISs on specific parcels in anticipation of competitive bidding for leases



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAI'I AT MĀNOA

Background Information

- WSB-Hawaii study for the Hawaii Energy Policy Forum (2003)
- Projections for new renewable capacity and energy from 2003 to 2008 (see following two charts)



Technology	Hawaii*	Maui**	Oahu	Kauai	Totals
<i>Supply-Side</i>					
Windfarms	20 to 30 (30)	20 to 35 (20)	50 to 100 (50)	5 to 10 (10)	95 to 175 (110)
Parabolic Trough	0 to 30 (0)	0 to 30 (0)	0 to 50 (0)	0 to 10 (0)	0 to 120 (0)
PV	0 to 5 (0)	0 to 10 (0)	0 to 10 (0)	0 to 5 (0)	0 to 30 (0)
Biomass	8 to 21 (8)	13 to 43 (15)	10 to 20 (10)	9 to 31 (9)	40 to 115 (42)
<i>Demand-Side</i>					
Solar Hot Water	1.6	1.7	5.6	0.3	9.2 (9)
PV	0.15	0.15	1.0	0.1	1.4 (1)
<i>Totals</i>	30 to 88 (40)	35 to 120 (37)	67 to 187 (67)	14 to 56 (19)	145 to 450 (162)

Notes:

* = numbers in the parentheses are the values for 9 selected projects and commercial activities.

** = including Molokai and Lanai.

Table 1. Potential Renewable Capacity Additions (2003 to 2008)



Technology	Hawaii	Maui	Oahu	Kauai	Totals
Supply-Side					
Windfarms	105,120	70,080	175,200	35,040	385,440
Parabolic Trough	0	0	0	0	0
PV	0	0	0	0	0
Biomass	48,803	91,980	61,320	55,188	257,291
Demand-Side					
Solar Hot Water	7,068	7,071	23,247	1,179	38,665
PV	265	265	1,765	104	2,398
Totals	171,256	169,336	261,532	91,511	693,545
Renewable % in 2003*	25.1%	3.1%	4.2%	6.5%	6.1%
Renewable % in 2008**	36.9%	15.9%	6.9%	25.5%	11.7%

Notes:

* = 2003 percentages are assumed to be the same as the *actual* 2001 percentages.

** = An annual growth rate of 1.5% is assumed to *estimate* the 2008 electricity demand.

Table 2. Potential Annual Energy Contributions in MWH