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KIUC's Demand for Bioenergy

Hawaii Agricultural Bioenergy Workshop

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Jeff Deren

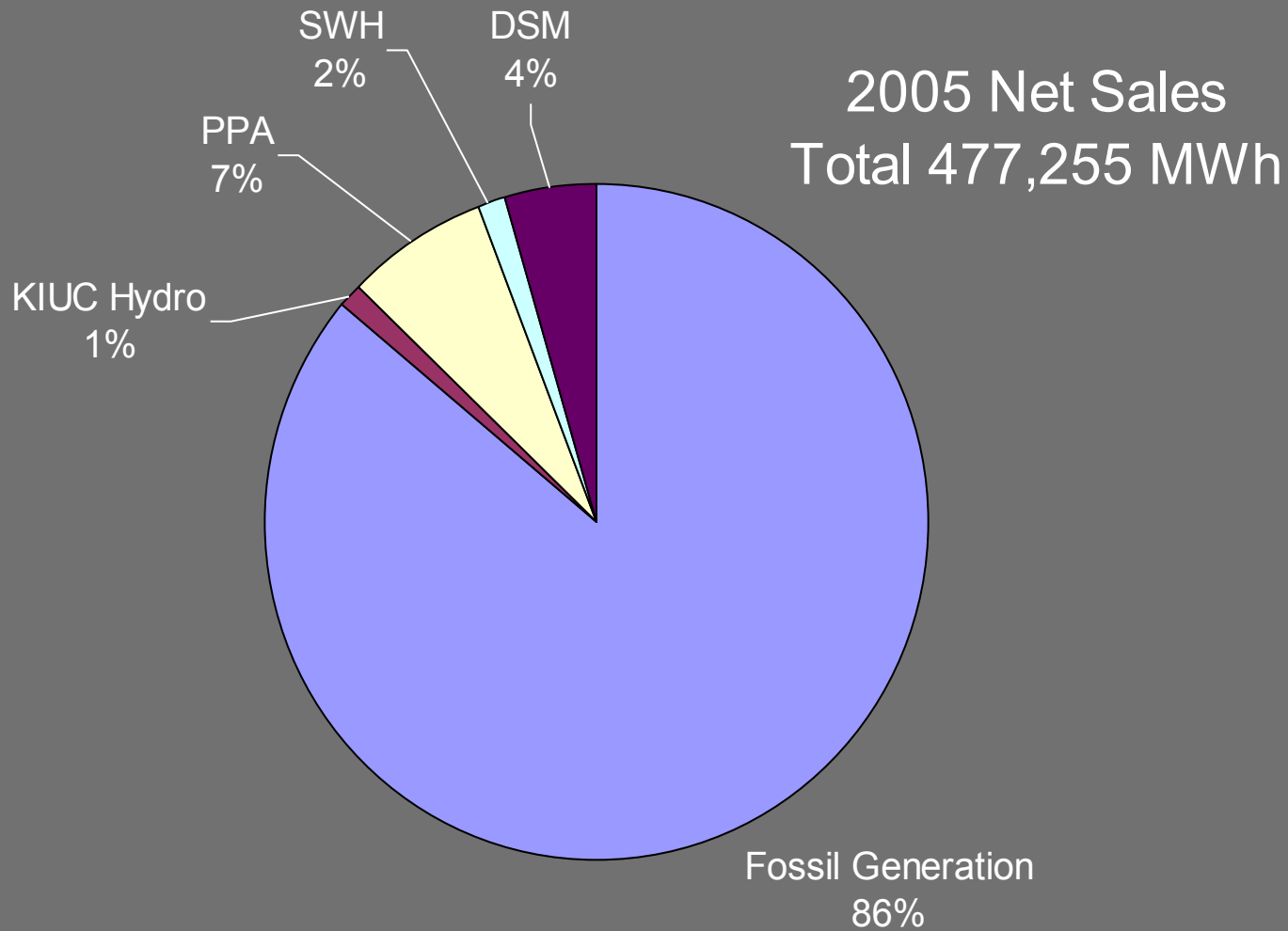
Outline

- KIUC Today
- KIUC Moving Forward
- KIUC Tomorrow

KIUC Demand & Supply

- Peak demand of 76 MW
 - 1 MW = 1,000 homes
- Approx. 34,000 meters
- 124 MW of capacity
- Diesel/naphtha fired generation
- Purchase 7% renewable generation
- 33¢/kWh residential rate

KIUC Today



Reasons for Renewable Energy

- Hedge against increasing fuel costs
- Minimize environmental impact
- Lessen dependence on foreign oil
- Comply with Renewable Portfolio Std (RPS) -
13.9% in 2005
- It's the right thing to do!

Barriers to Renewables

- High cost (\$/MWh)
- High initial capital costs
- Environmental opposition
- Social opposition
(views, noise, NIMBY)
- Firm vs. non-firm capacity

Benefits of Bioenergy

- Produced locally
 - Fuel \$'s stay in Hawai'i
- Utilizes existing ag. infrastructure
- Keeps Kaua'i green
- Carbon neutral emissions
- Can provide firm energy
- Easy integration of bio-oils

Renewable Energy Request For Proposals

- All renewable energy technologies
- Purchase power
 - Open to alternate forms of ownership
- Energy-only
 - Capacity vs. energy
- Received 20 proposals

Proposals Received

Tech	No.	MW	¢/kWh*
Wind	9	92	10 - 17
Biomass	3	26	16 - 20
MSW	4	21.7	13 - 16
Photovoltaic	4	20.8	17 - 30

Total 20 161 MW

* Lowest first year price

Projects Selected

	UPC Wind	Cleaves Biomass	Green Biomass	Barlow WTE
Net Capacity (MW)	10.5 - 14	4.2	8.5	5.3
Fuel	Wind	Walnut shells*	Wood chips	Trash
Annual Generation (%)	9%	6%	12%	7%
Price (¢/kWh)	At or below our avoided cost			
In Service Date	July 2008	Dec 2008	June 2008	2010

Green Energy Biomass Project

- Size: 8.5 MW
- Pros
 - Site control – Letter of Interest
 - Good fuel plan – existing tree farm
 - Price
 - Locally owned
 - High capacity factor
- Status
 - Site Lease
 - Interconnection study
 - Preliminary engineering & permitting

Cleaves Biomass Project

- Size: 4.2 MW
- Pros
 - Site control – Letter of Interest
 - Price
 - Relocation of an existing plant*
 - High capacity factor
- Status
 - Pursuing site lease
 - Finalizing technology & fuel supply

Implementation Process

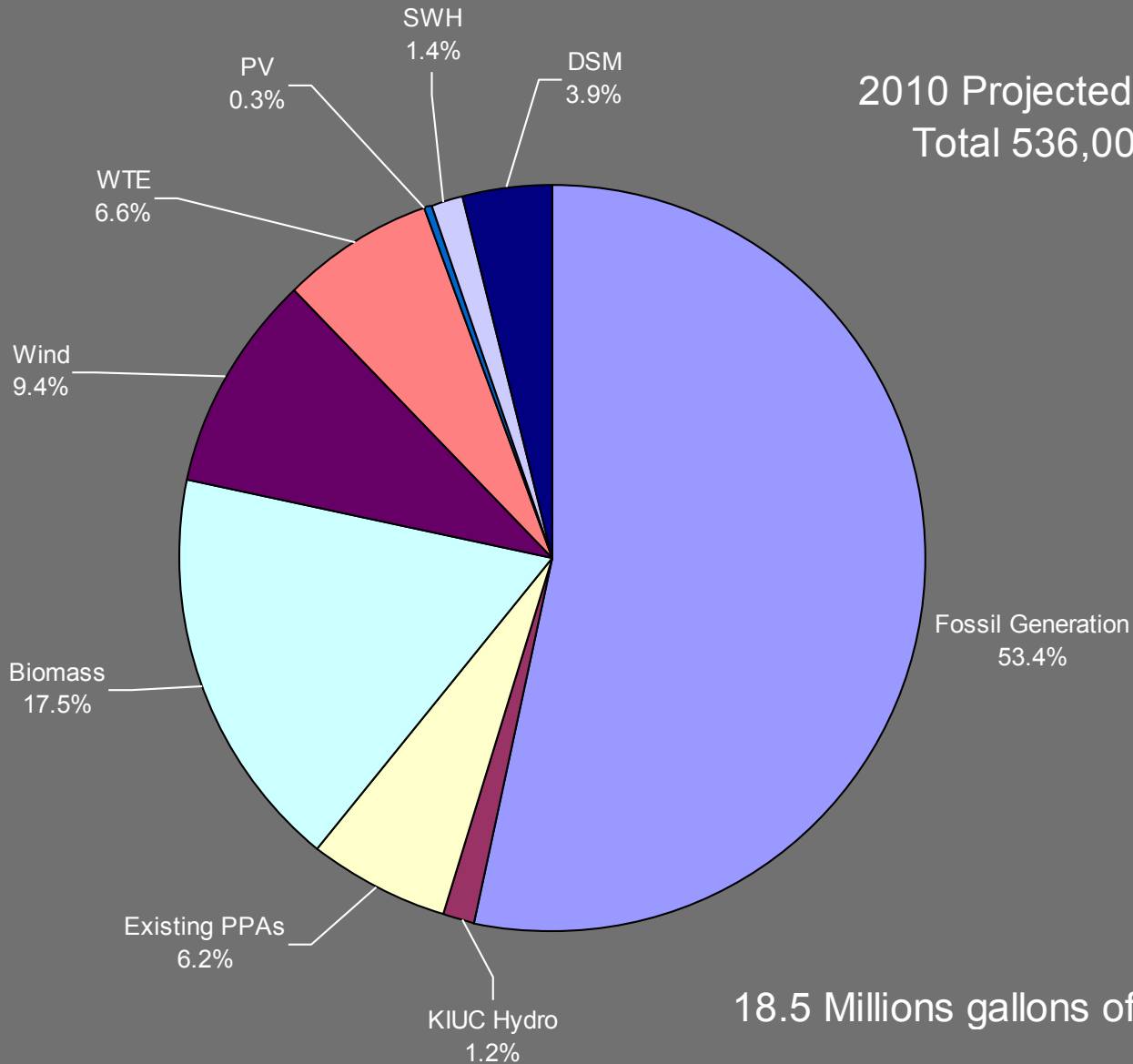
- Signed Letters of Intent
- PPA Negotiations
 - Price & non-price issues
- Parallel tasks
 - Public outreach
 - Interconnection studies
 - Evaluation in Integrated Resource Plan
 - Permitting
 - Environmental studies
 - Wind studies
- HPUC & RUS Approvals

Biodiesel Pilot Program

- Why biodiesel?
 - Burns cleaner*
 - Integrates easily
 - Approved by engine manufacturer & DOH
 - Potential to produce locally
- Pilot Program
 - 7.8 MW Wartsila diesel
 - Test various % blends
 - Monitor engine emissions & performance
 - In-line blending system

KIUC Tomorrow

2010 Projected Net Sales
Total 536,000 MWh



18.5 Millions gallons of oil displaced!

Summary

- KIUC is heavily dependent upon fossil fuel
 - Only 8% renewable in 2005
- Committed to lessening our dependence on fossil fuels
- Aggressively pursuing renewable energy projects
- Bioenergy is an attractive option