

The Future is **Bright** Creating a Clean Energy Economy

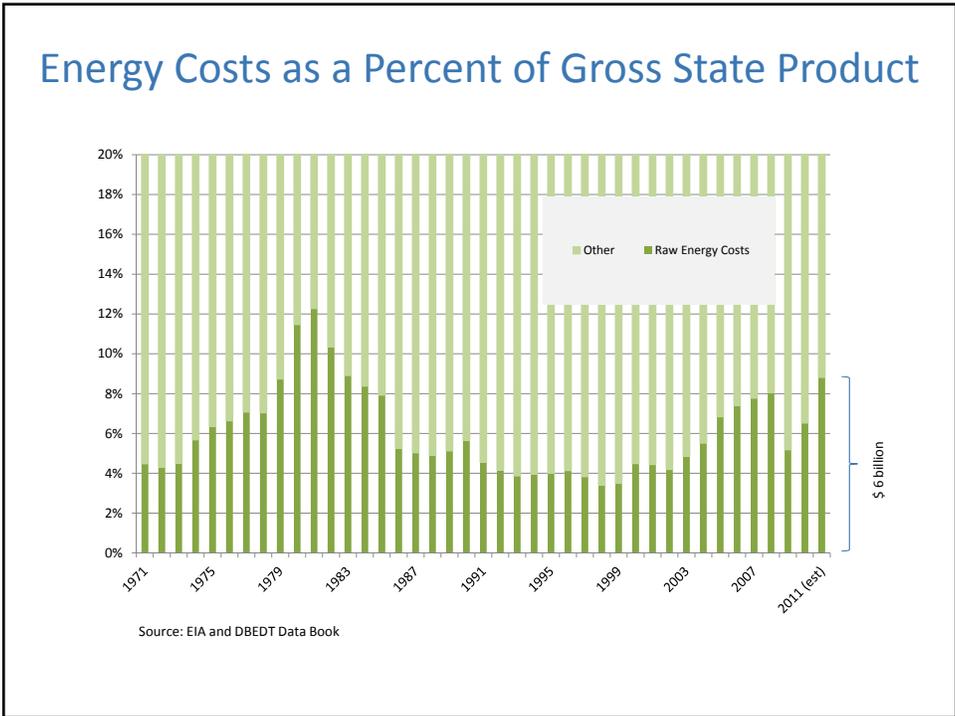
Mark B. Glick, Administrator
Hawaii State Energy Office

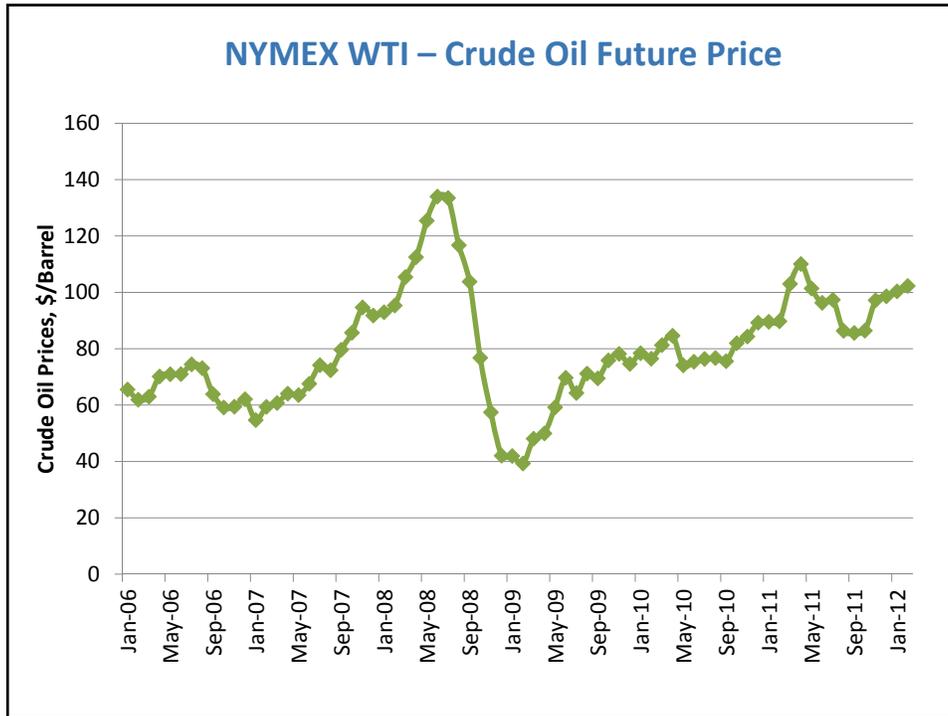


Overview

- **Hawaii's Vulnerability**
- **The State Energy Office**
- **Goals & Objectives**

Hawaii's Vulnerability: Over-reliance on Imported Oil





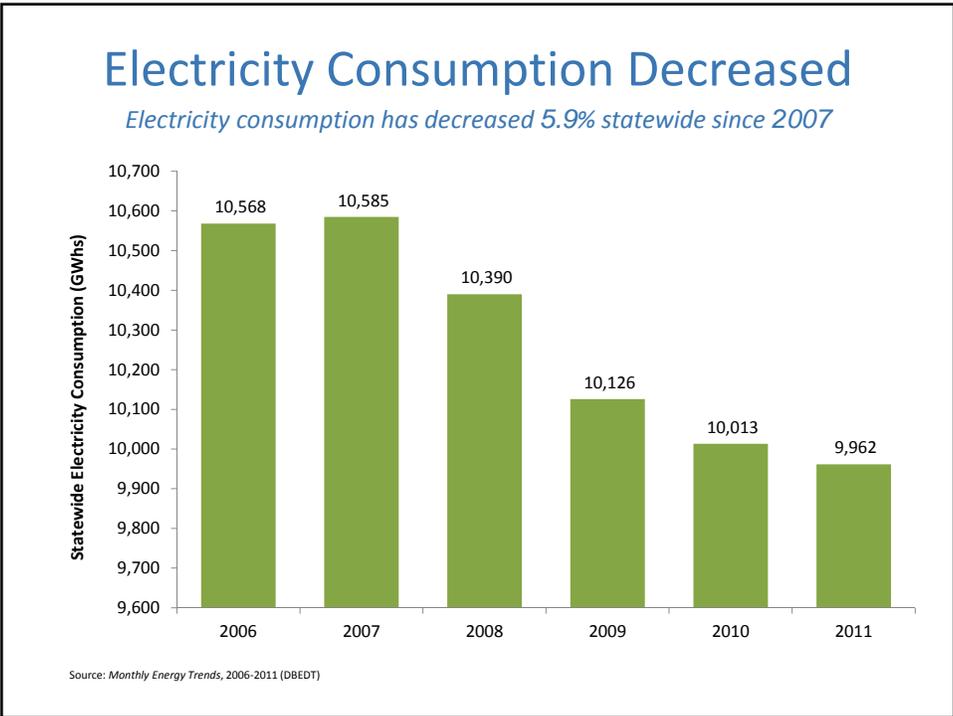
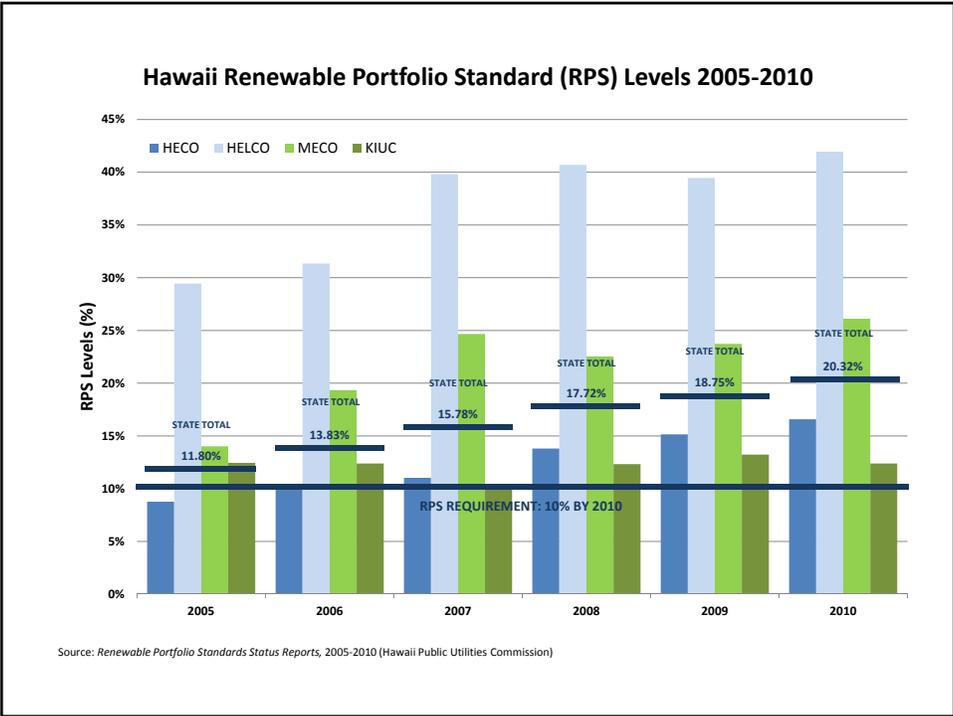
NEIGHBOR ISLAND RATES – DECEMBER 2011

	<u>MAUI</u>	<u>BIG ISLAND</u>	<u>KAUAI</u>
Average	35.7 ¢/kWh	41.3 ¢/kWh	45.4 ¢/kWh
Residential	36.5 ¢/kWh	42.9 ¢/kWh	46.8 ¢/kWh
Commercial	35.3 ¢/kWh	40.1 ¢/kWh	44.3 ¢/kWh
	<u>LANAI</u>	<u>MOLOKAI</u>	
Average	45.6 ¢/kWh	44.3 ¢/kWh	
Residential	45.8 ¢/kWh	44.1 ¢/kWh	
Commercial	45.6 ¢/kWh	44.4 ¢/kWh	

The State Energy Office: Helping to Deploy Hawaii's Clean Energy Agenda

Carrots & Sticks

- RPS & EEPS Goals codified as law
- Tax Credits
- Public Benefits Fee Administrator
- Transportation Goals
- Feed-in-tariff, Net Metering, Decoupling
- Reliability Standards Working Group
- US Dept. of Energy – formula grants, ARRA, technical assistance



A Focused Strategic Plan

Mission:

Deploy clean energy infrastructure as a catalyst for economic growth, innovation sector development, and energy security advancement.

Strategies & Tactics: FOCUS

On high-impact clean energy solutions that maximize economic development, especially in innovation sector ...

- Identify clean energy RD&D opportunities and promote business development for local companies.
- Concentrate on implementing high-impact clean energy solutions for near term and midterm.
- Improve core competencies in economic development, quantitative analysis, and communication.

Strategies & Tactics: LEVERAGE

Resources through federal, county and private sector partnerships using HCEI as a key driver ...

- Serve as business systems integrator, resolve project implementation and permitting barriers.
- Advocate for programs, policies and incentives to make clean energy development cost-effective.
- Connect partnerships and resources to develop business opportunities, resolve policy barriers, and technical hurdles.
- Seek federal funding and private investment opportunities.

Strategies & Tactics: REACH

Objectives and maintain strong communication and outreach to key stakeholders and public ...

- Analyze data and results to identify best practices and ensure goals are met.
- Provide access to clean energy data, tools and information online.
- Communicate achievements and provide outreach through mass media, select events and public briefings.

Midterm Goals & Objectives (2015)

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Implement HCEI 70% Clean Energy Benchmarks

- Meet 15% Renewable Portfolio Standard (RPS) target.
- Meet 2015 Energy Efficiency Portfolio Standard (EEPS) target.
- Displace 50 Million Gallons/Year of oil in the transportation sector.

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Grow Hawaii's Clean Energy Innovation Sector

- Develop clean energy RD&D sector with annual revenues of \$100 M.
- Attract \$100 M in project financing for emerging technologies between 2011 and 2015
- Add 400 clean energy RD&D jobs between 2011 and 2015

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Expand on Hawaii's Position as a National Clean Energy Leader

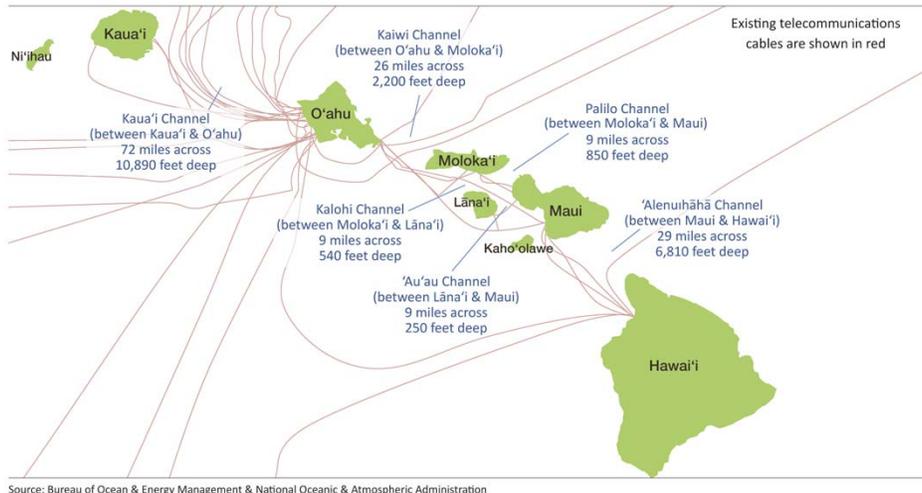
- Maintain top 5 national ranking in renewable energy penetration, performance contracting, and green job growth.
- Receive A rating for net metering and interconnection in national ranking.
- Complete interisland undersea cable project-specific EIS in preparation for permitting and construction.

Short Term Objectives (1 Year)

- Facilitate selection of cable developer.
- Contribute to comprehensive policy on net metering, interconnection and reliability standards.
- Increase federal funding opportunities.
- Serve as online clearinghouse for clean energy information and self-help permitting tools.
- Increase international clean energy trade, investment & RD&D possibilities.

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Hawaii's Energy Future Depends on an Inter-Island Undersea Cable System

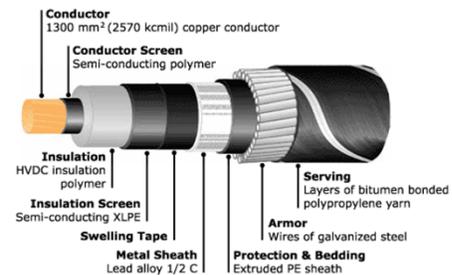


Interconnection Strategy

- **True programmatic EIS** - serious discussions with DOE to oversee the process
- **Private sector driven**, owned, operator interisland cable with affordable financing – sole purpose of the Cable bill.
- **Accepts all RE options**, ultimately leading to connection with geothermal on Hawaii
- **RFP** for RE production and cable must be simple, direct, & intended to connect to Maui in initial phase.

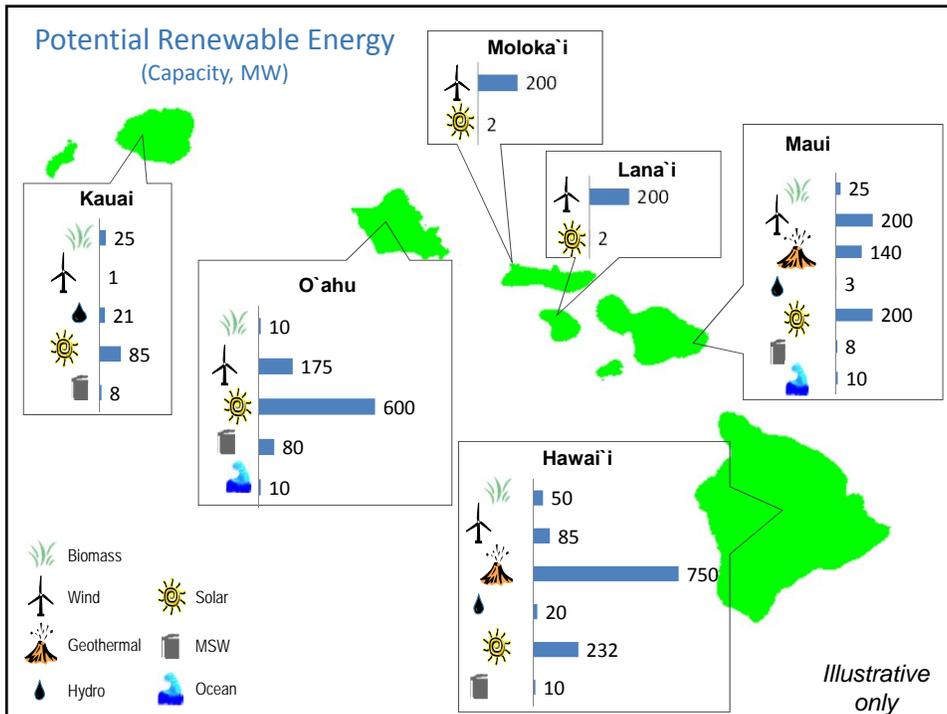
Undersea Power Cable

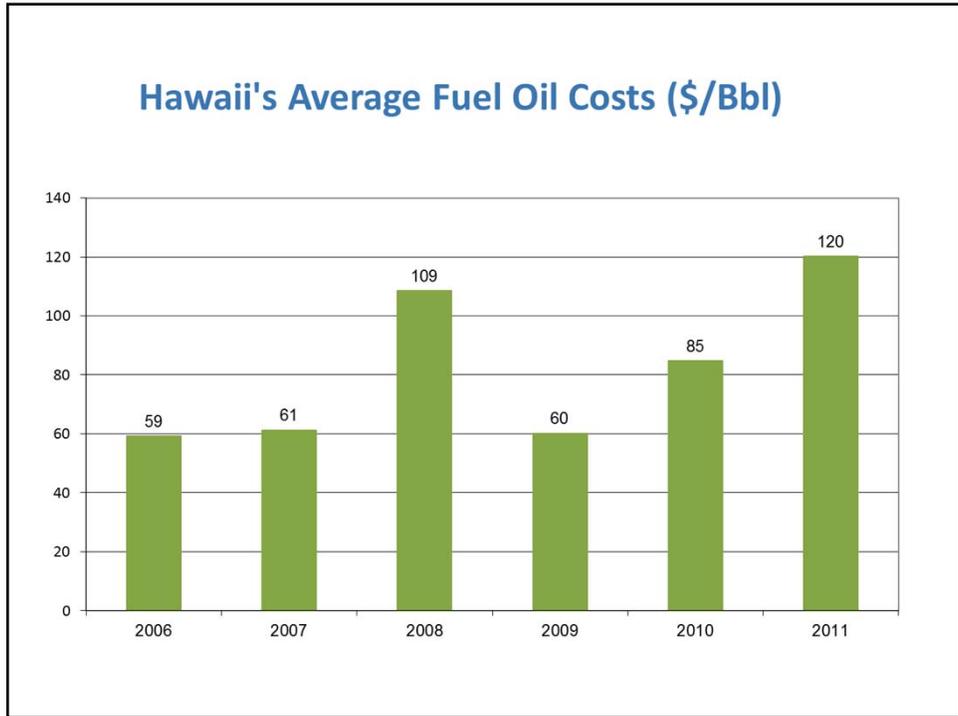
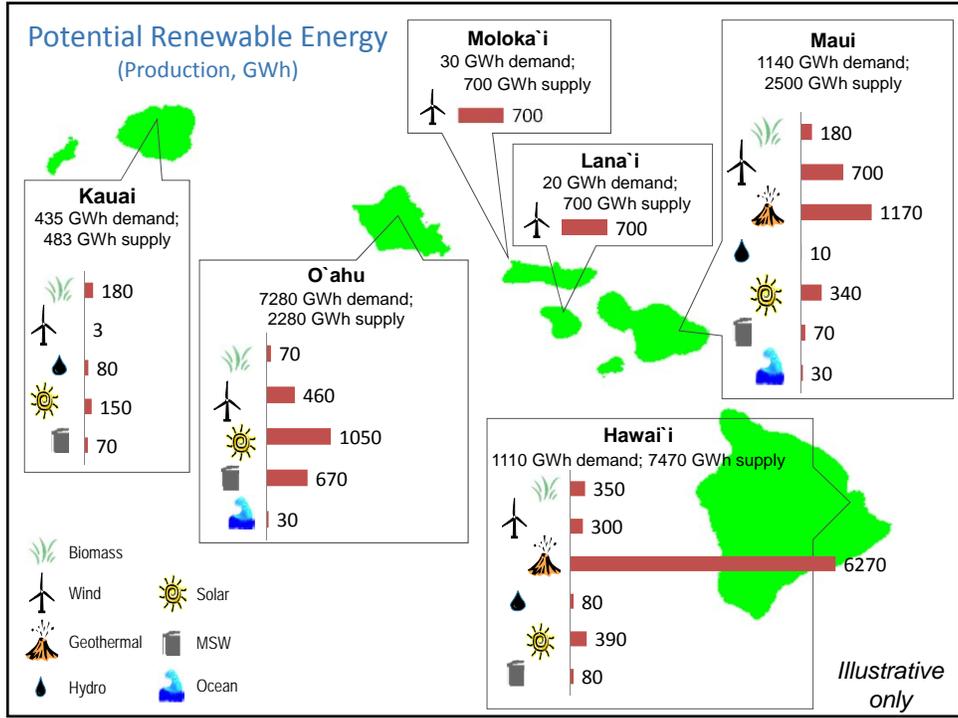
The cables are approximately 4 inches in diameter depending on carrying capacity; about the size of a can of tuna.

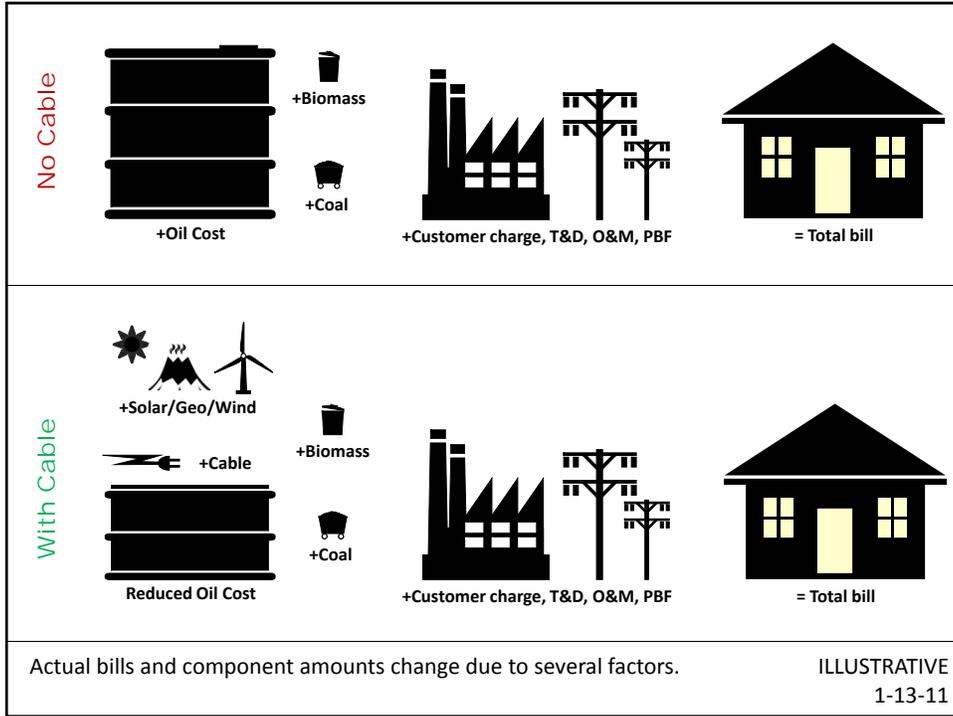


Renewable Resource Abundance by Island (GWh)

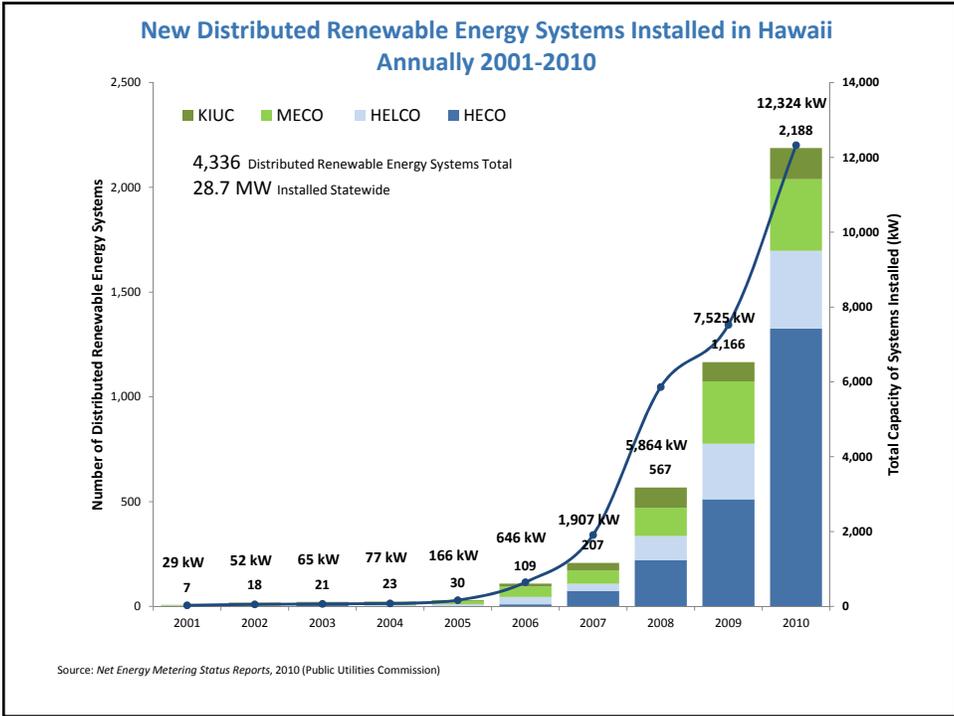
	Oahu	Kauai	Maui	Hawaii	Lanai	Molokai	State
Biomass	70	180	180	350	-	-	780
Wind	460	-	700	300	700	700	2,860
Geothermal	-	-	1,170	6,270	-	-	7,440
Hydro	-	80	10	80	-	-	170
Solar	1,050	150	340	390	4	4	1,938
MSW	670	70	70	80	-	-	890
Ocean	30	-	30	-	-	-	60
RENEWABLE POTENTIAL	2,280	480	2,500	7,470	704	704	14,138
DEMAND	7,280	430	1,140	1,110	20	30	10,010
%	31%	109%	220%	673%	2822%	2240%	141%







Recent Successes



First in Nation Energy Savings Performance Contracting Per Capita

State	Dollars per Capita (\$)	Total Performance Contracting (\$)	Jobs Created (Job Year)
1. Hawaii	\$117.09	\$159,278,011	1,731
2. Kansas	\$90.81	\$259,094,503	2,816
3. Idaho	\$90.27	\$129,000,000	1,402
4. Massachusetts	\$71.53	\$457,696,106	4,975
5. Utah	\$66.89	\$165,195,000	1,796
National Average	\$31.46	\$130,846,670	1,379

Source: Performance Contracting Impacts - State Comparison, December 2011 (Energy Services Coalition)

**Second in the Nation
Cumulative Installed Photovoltaic Capacity per Capita**

State	Cumulative Through 2010 (W _{DC} /person)	2010 Installations (W _{DC} /person)
1. Nevada	38.8	25.3
2. Hawaii	32.9	13.6
3. New Jersey	29.6	15.1
4. California	27.4	6.8
5. Colorado	24.1	12.3
National Average	7.0	2.9

Source: 2010 U.S. Solar Market Trends, July 2011 (IREC)

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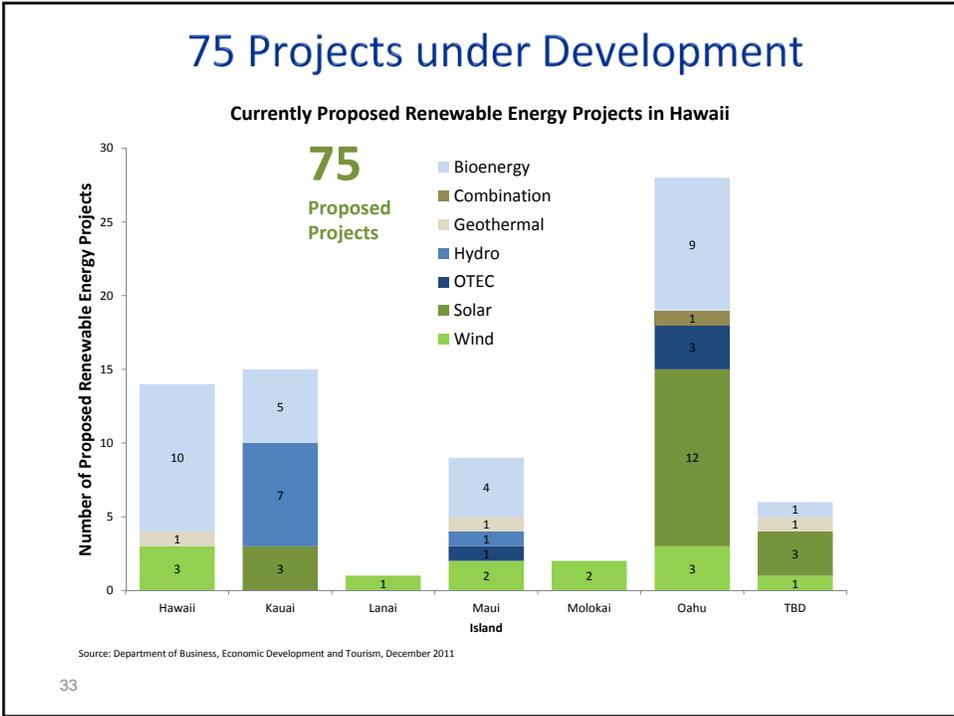
Renewable Energy Investments in Hawaii

Entities	2009 Expenditures	2010 Expenditures	2011 Expenditures
Private Companies	\$ 188,961,485	\$ 441,503,536	\$ 598,790,774
Government Agencies	\$ 71,977,111	\$ 213,759,898	\$ 252,853,383
Others*	\$ 101,671,469	\$ 174,698,204	\$ 413,268,330
State total	\$ 362,610,064	\$ 829,961,638	\$ 1,264,912,487

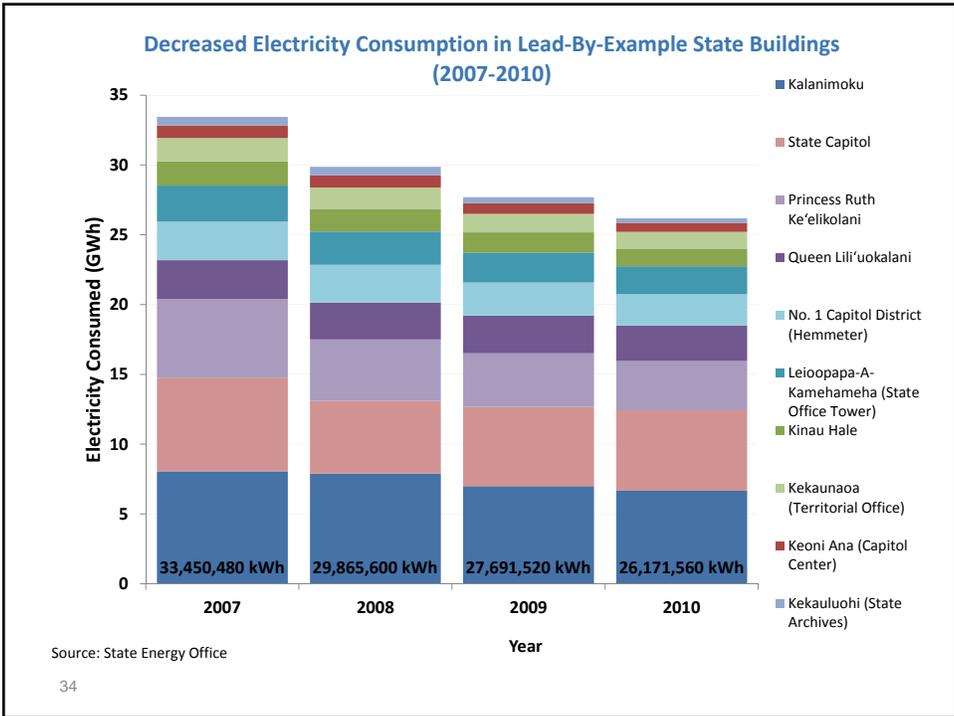
*Includes investments in commercial and residential photovoltaic systems and solar water heaters

Source: State Energy Office

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Power Purchase Agreements at Four Airports Decrease Electricity Costs Nearly 20%



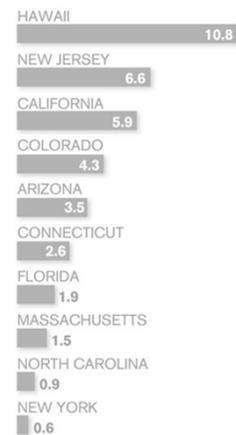
National Leader

1st in solar water heaters per capita
2nd in power purchase agreements per capita



856 kW solar system at Oceanic Time Warner Cable's facility at the Mililani Tech Park, by Chevron Energy Solutions, includes rooftop panels & the largest solar parking canopy in Hawaii.

HAWAII TOPS IN SOLAR ENERGY
Grid-tied solar energy generation in the U.S. (watts per capita):



Source: Solar Energy Industry Association

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Mahalo

Visit energy.hawaii.gov for a more comprehensive look
at Hawaii's clean energy future.