



Creating a Clean Energy Economy

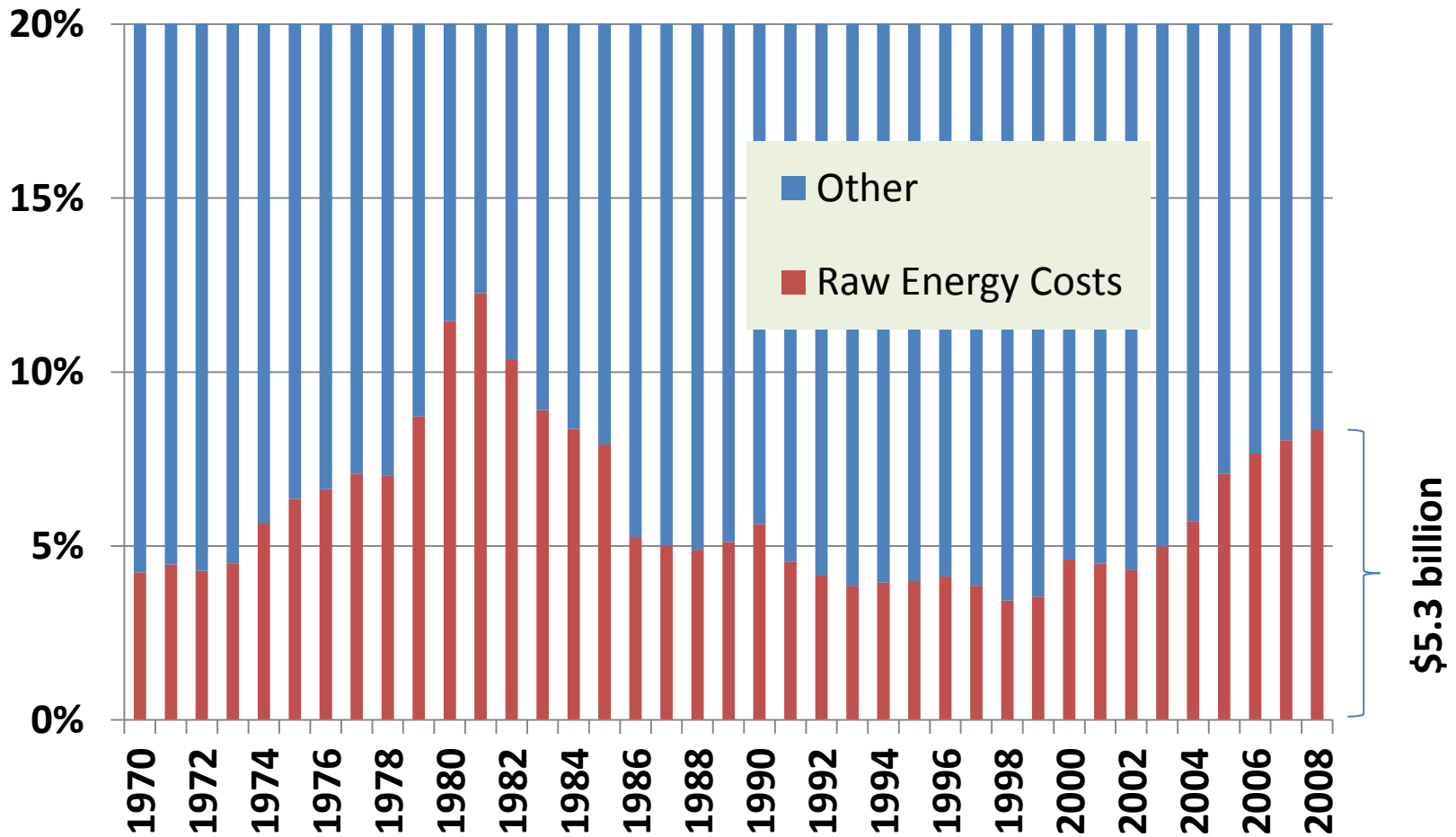
Mark B. Glick, Administrator
Hawaii State Energy Office

Overview

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

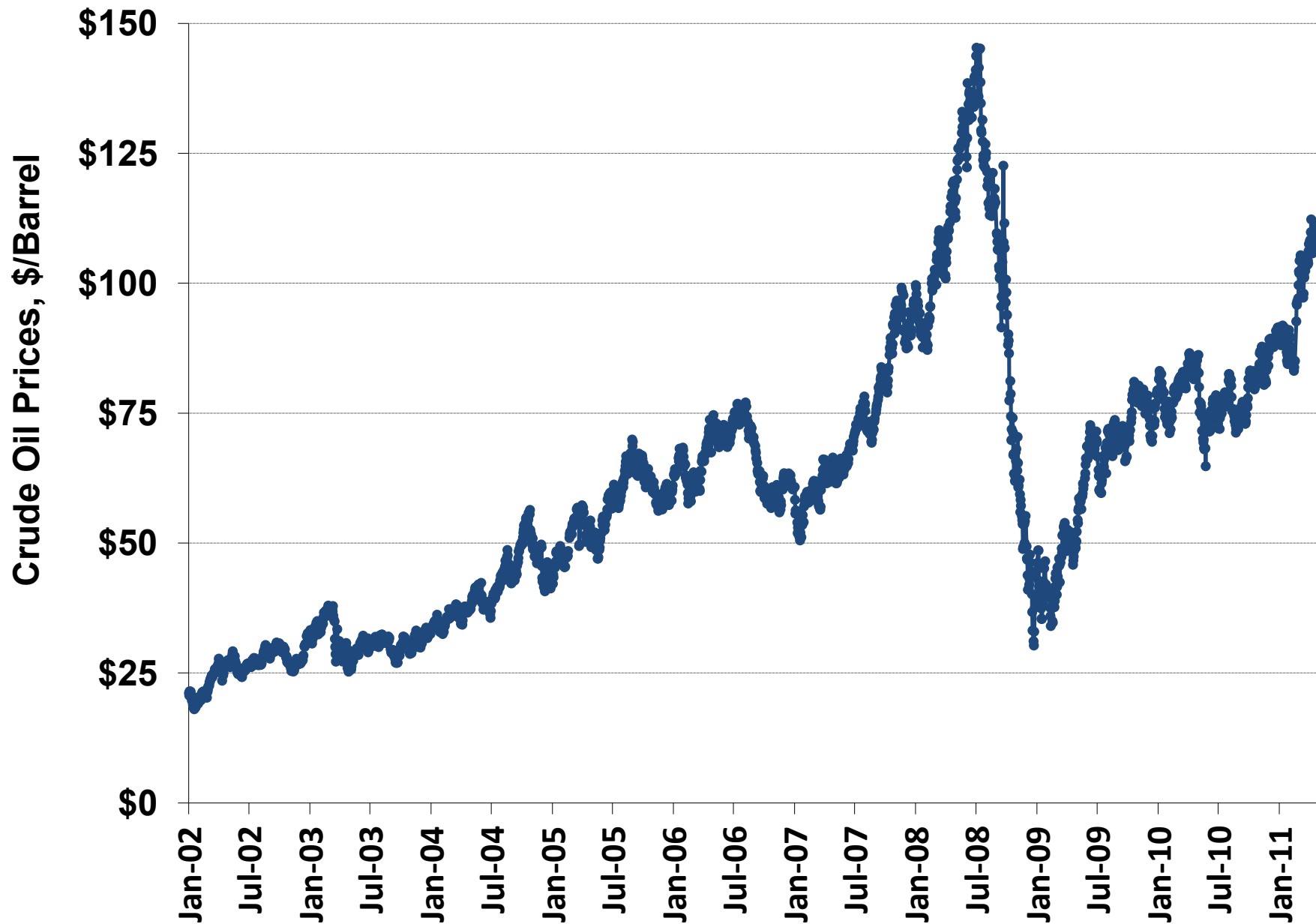
Hawaii's Vulnerability: Over-reliance on Imported Oil

Energy Costs as Percent of Gross State Product



- Hawaii imports fossil fuels for >85% of our energy
- Hawaii’s energy prices are high; costs are unpredictable
- Energy price spikes = economic turmoil

NYMEX WTI – Crude Oil Spot Price



Residential Rates – June 1, 2011

MAUI:

First 350 kWh	37.3 ¢/kWh
Next 850 kWh	38.1 ¢/kWh
Over 1200 kWh	38.7 ¢/kWh

LANAI

First 250 kWh	43.4 ¢/kWh
Next 500 kWh	44.7 ¢/kWh
Over 750 kWh	45.1 ¢/kWh

MOLOKAI

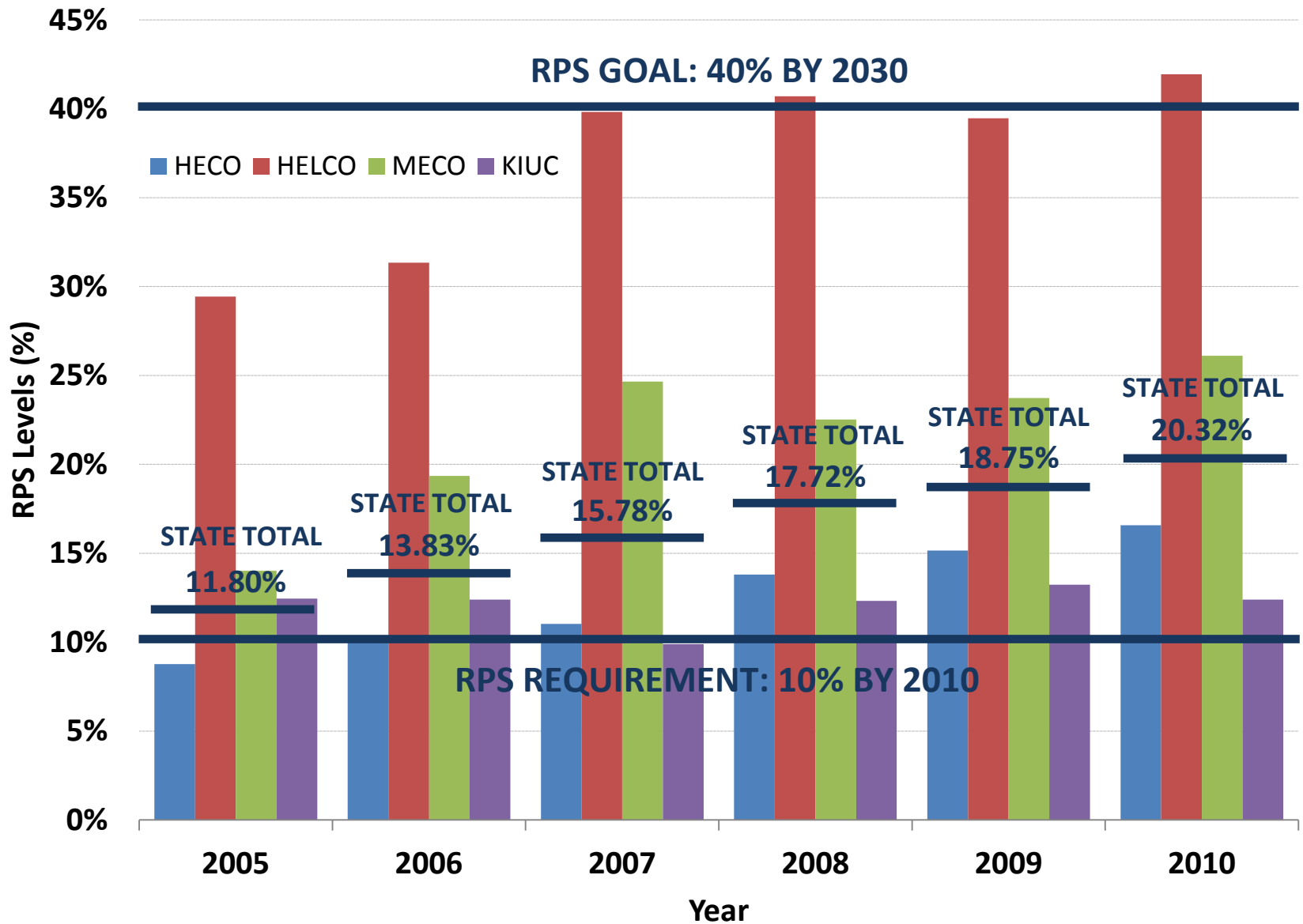
43.9 ¢/kWh
45.1 ¢/kWh
45.9 ¢/kWh

**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

Hawaii Renewable Portfolio Standard (RPS) Levels (2005-2010)



Source: 2005-2010 Renewable Portfolio Standards Status Reports

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)

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.

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.

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

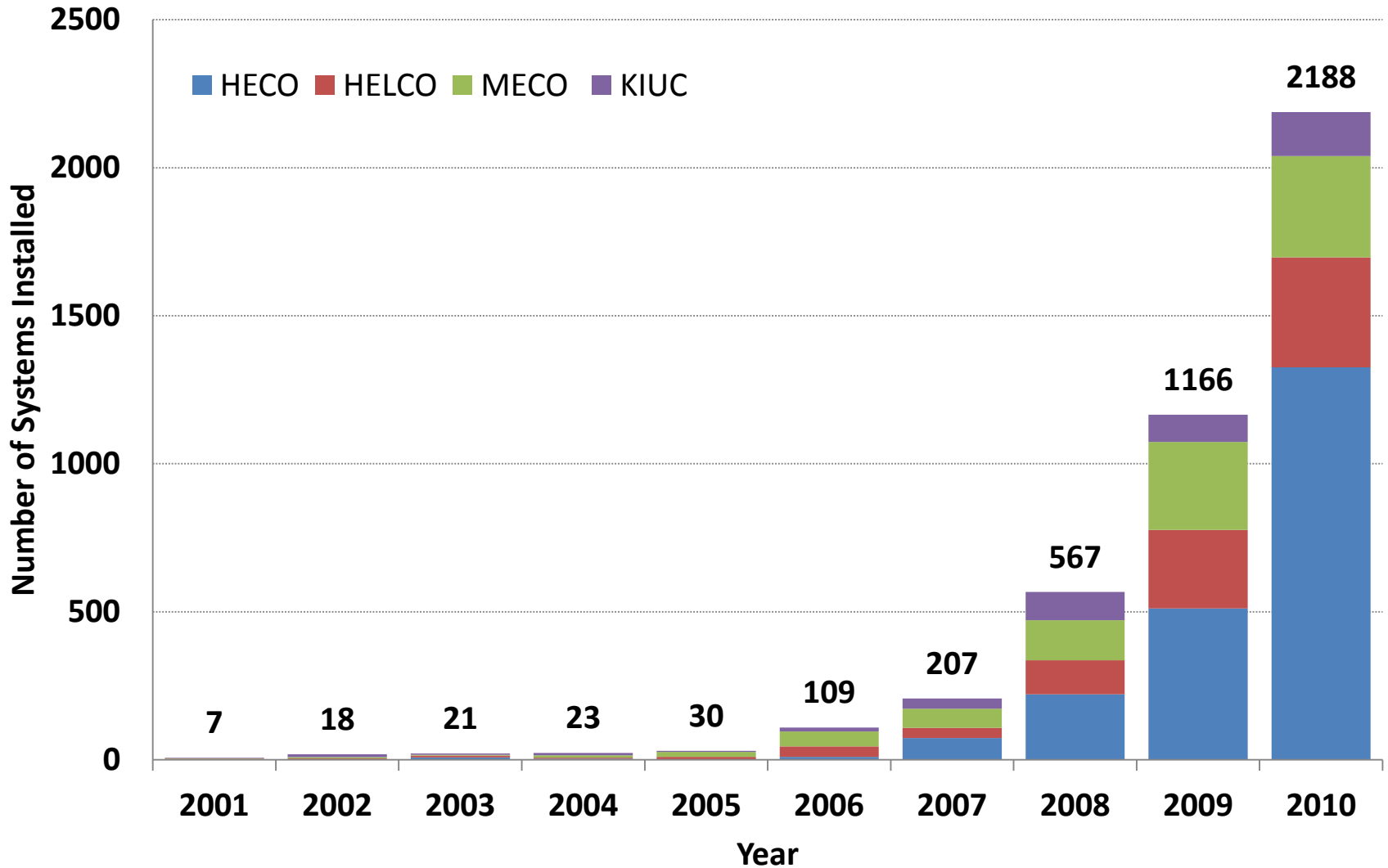
- Maintain top 5 national ranking in renewable energy penetration, performance contracting, and green job growth.
- Receive A rating for net metering and interconnection in national ranking.
- Complete interisland undersea cable project-specific EIS in preparation for permitting and construction.

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.

Recent Successes

Distributed Renewable Energy Systems Installed in Hawaii (2001-2010)



Source: 2010 HECO Companies , KIUC Net Energy Metering

Second in the Nation in Cumulative Installed Photovoltaic Capacity per Capita

State	Cumulative through 2009 (W _{DC} /person)	2009 Installations (W _{DC} /person)
1. California	20.8	5.7
2. Hawaii	20.2	9.8
3. New Jersey	14.6	6.6
4. Nevada	13.8	1.0
5. Colorado	11.8	4.7
6. Arizona	7.0	3.2
7. Connecticut	5.6	2.5
8. Delaware	3.7	1.6
9. Oregon	3.7	1.7
10. Vermont	2.7	1.0
National Average	4.2	1.4

Source: 2009 U.S. Solar Market Trends (IREC)

Second in the Nation in Performance Contracting Per Capita

State	Total Performance Contracting (\$)	Dollars per Capita (\$)	Jobs Created (Job Year)	Estimated Annual Source Energy Saved (Million BTUs)	Estimated Annual Carbon Avoided (Tons)
1. Idaho	\$ 129,000,000	\$ 90.27	1,402	1,070,442	18,387
2. Hawaii*	\$ 99,161,315	\$ 77.76	1,078	822,841	14,134
3. Massachusetts	\$ 457,696,106	\$ 71.53	4,975	3,797,962	65,238
4. Utah	\$ 165,195,000	\$ 66.89	1,796	1,370,788	23,546
5. Kansas	\$ 174,796,442	\$ 63.69	1,900	1,450,461	24,915
6. Colorado	\$ 252,788,228	\$ 54.19	2,748	2,097,637	36,031
7. Rhode Island	\$ 53,000,000	\$ 49.25	576	439,794	7,554
8. Maryland	\$ 243,409,541	\$ 43.46	2,646	2,019,812	34,694
9. Nevada	\$ 100,656,000	\$ 41.68	1,094	835,243	14,347
10. Pennsylvania	\$ 438,000,000	\$ 35.24	4,761	3,634,524	62,430
National Average	\$ 126,333,708	\$ 29.38	1,332	1,016,550	17,461

Source: Energy Services Coalition Performance Contracting Impacts - State Comparison, September 2010
<http://www.energyservicescoalition.org/espc/table.aspx>

*According to a September 16, 2010 DBEDT news release, state and county energy performance contracts totaled \$102,118,183

Renewable Energy Investments in Hawaii

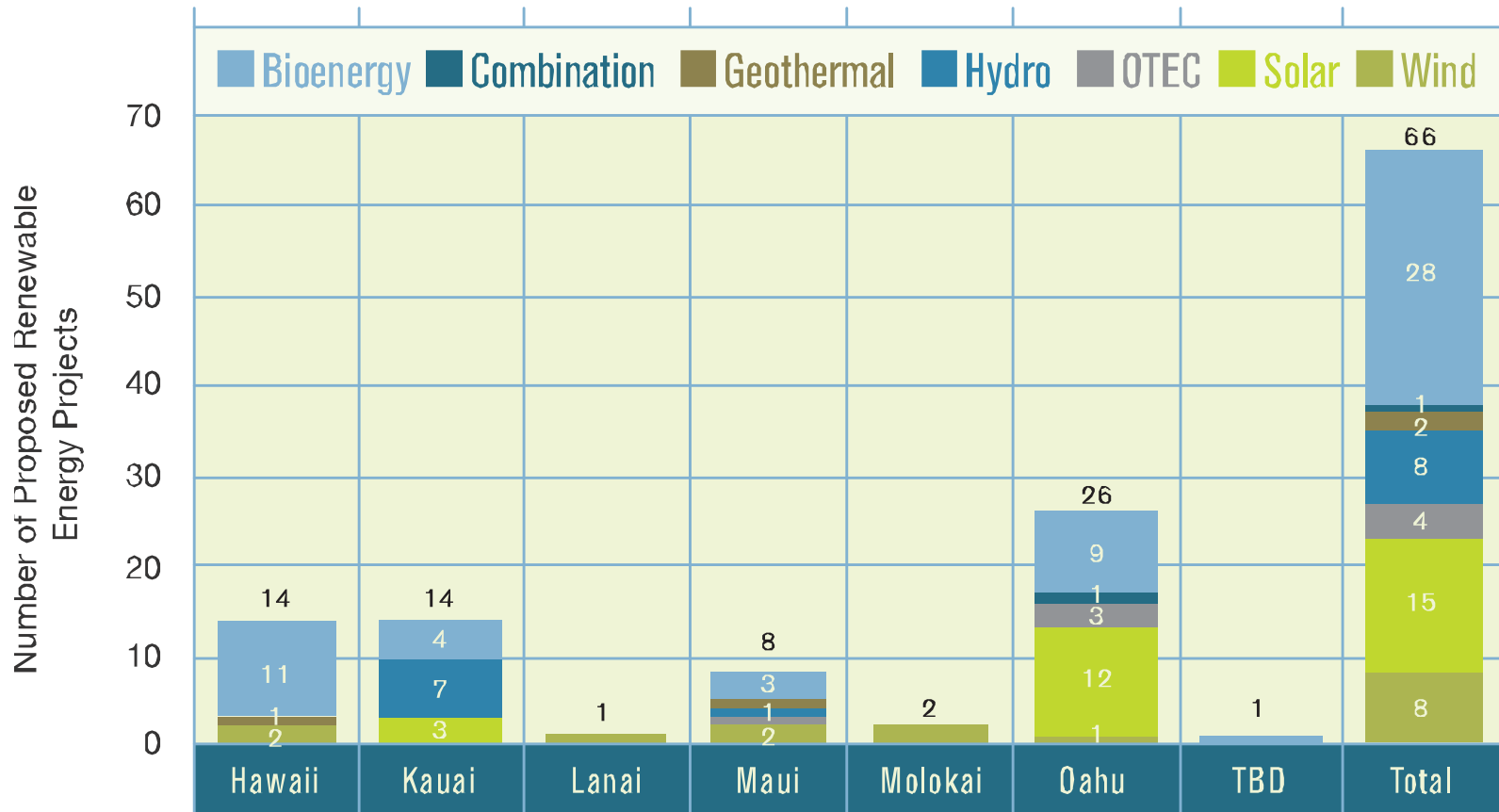
Entities	2009 Expenditures	2010 Expenditures	2011 Expenditures
Private Companies	\$ 188,961,485	\$ 441,503,536	\$ 598,790,774
Government Agencies	\$ 71,977,111	\$ 213,759,898	\$ 252,853,383
Others*	\$ 101,671,469	\$ 174,698,204	\$ 413,268,330
State total	\$ 362,610,064	\$ 829,961,638	\$ 1,264,912,487

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

Source: State Energy Office

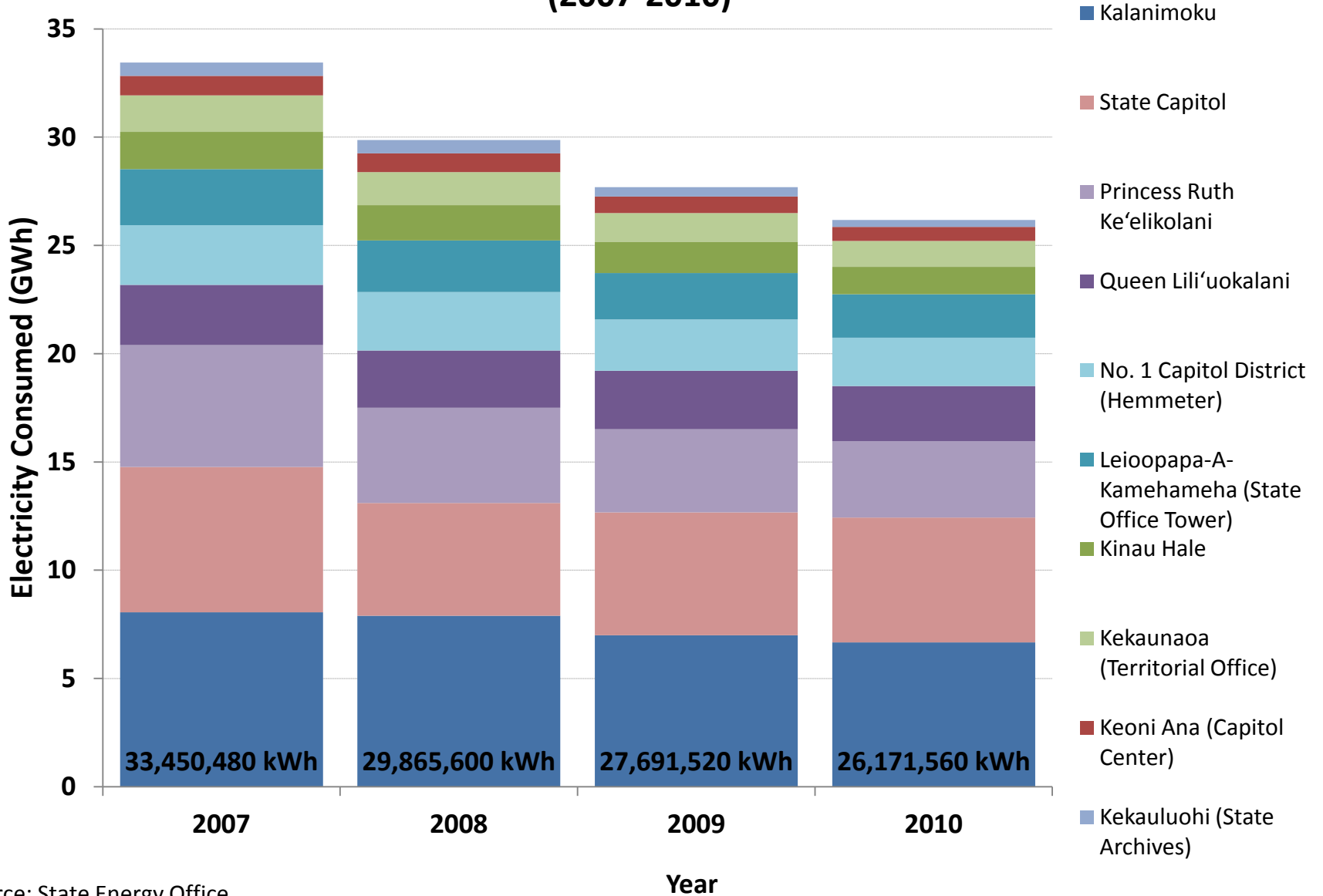
66 Projects under Development

Currently Proposed Renewable Energy Projects in Hawaii



Source: Department of Business, Economic Development and Tourism, August 2011

Decreased Electricity Consumption in Lead-By-Example State Buildings (2007-2010)



Source: State Energy Office

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



National Leader

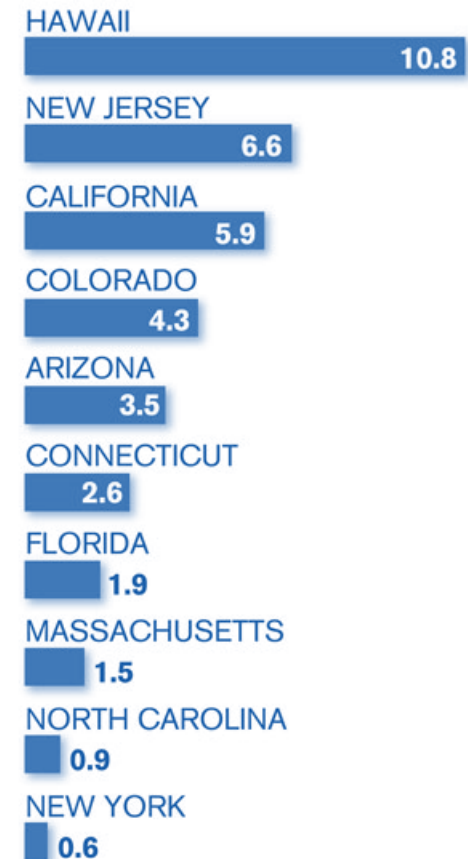
1st in solar water heaters per capita
2nd in power purchase agreements
per capita



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

STAR-ADVERTISER

Mahalo

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