# Bureau of Ocean Energy Management

## Hawaii OCS Renewable Energy Task Force Meeting

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Administrator, State Energy Office
December 5, 2012

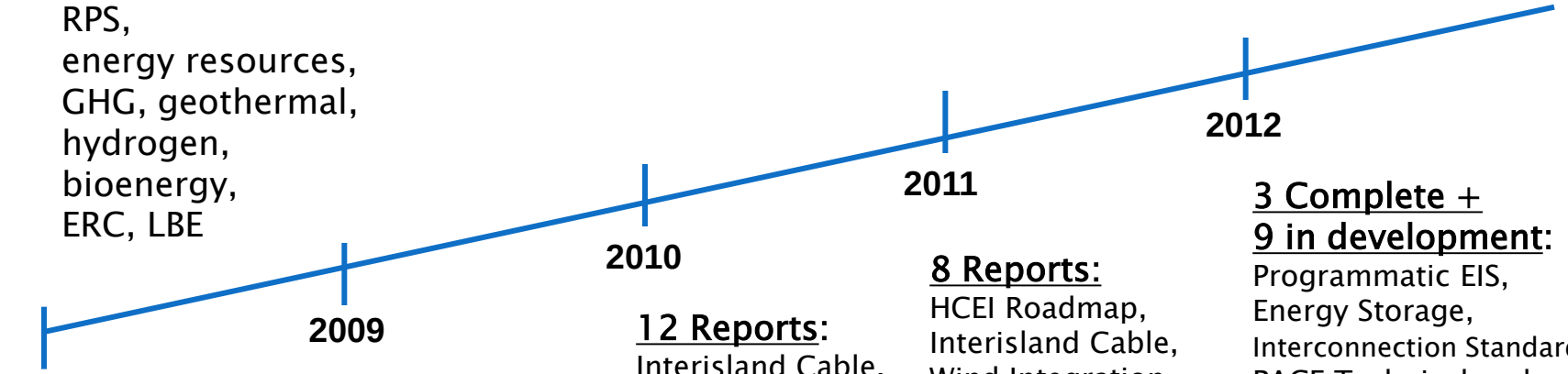
DBEDT
STATE OF HAWAII

# Hawaii Clean Energy Initiative: "A Proven Path for Economic Growth"

- Assess RE, EE, potential (+transportation)
- Set goals, codify with public policy
- Develop scenarios to reach goals
- Keep public informed and engaged
- Build consistent, supportive regulatory & permitting climate
- Deploy infrastructure

# "Body of Knowledge"

**46 Reports since 2008**




**2008**

**8 Reports**:
RPS,
energy resources,
GHG, geothermal,
hydrogen,
bioenergy,
ERC, LBE

**2009**

**6 Reports** :
Bioenergy, Biofuels,
Interisland Cable,
RE to Displace Oil,
ERC, LBE

**2010**

**12 Reports**:
Interisland Cable,
Policy Analysis,
Solar Resource,
Wind Integration &
Resoure,
Energy Efficiency,
HCEI Permitting
Guuidebooks,
ERC

**2011**

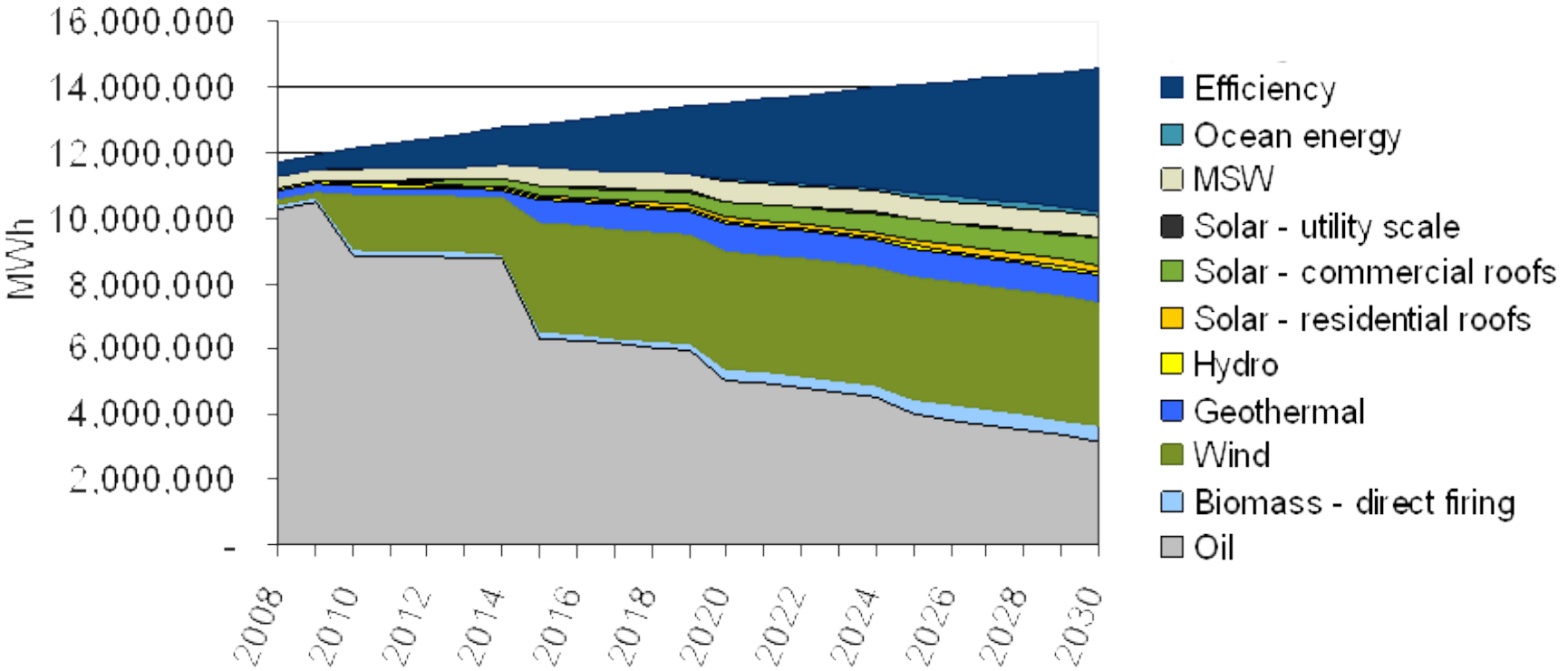
**8 Reports:**
HCEI Roadmap,
Interisland Cable,
Wind Integration,
Net Zero Energy,
Resource Assessment,
Renewable Power Options,
Solar

**2012**

**3 Complete +**
**9 in development**:
Programmatic EIS,
Energy Storage,
Interconnection Standards,
PACE Technical and
Business Analysis,
Geo. Resource Assesment,
Smart Inverter Deployment,
Hydrogen for Grid Mang.,
EAP,
Updated Scenario Analysis

# "We Need It"
# Hawaii Clean Energy Scenario Analysis

*Our 70% clean energy goal for the electricity sector is achievable !*
*-through aggressive energy-efficiency goals, high deployment of commercially available renewable resources, and an interisland cable connection*



# "We Can Afford It"

## Scenario Installation & Capital Requirements

*Assumes $16 billion of NPV for capital investment and a "break-even" value of this investment when the long-term average cost of oil is $65 to $85 per barrel (bbl).*

| Renewable Energy Sources ($ / kWh) | Scenario 8 | Capital Cost Range |
|---|---|---|
| Solid Biomass | 83 MW | $2,000 – $6,000 |
| Wind | 1,060 MW | $2,400 – $2,800 |
| Geothermal | 102 MW | $3,000 – $5,000 |
| Small Hydro | 24 MW | $2,500 – $4,000 |
| Solar – Residential Roofs | 179 MW | $8,125 – $9,375 |
| Solar PV (large roof/utility scale) | 651 MW | $6,500 – $7,500 |
| MSW/Landfill Gas | 77 MW | $2,100 – $3,500 |
| Ocean Energy (wave) | 53 MW | $2,000 – $7,600 |
| Energy Efficiency | 495 MW | $70 – $100 |

# "Let's Motivate"
## Carrots & Sticks

### Laws & Regulations

- RPS & EEPS Goals codified as law
- FIT, Net Metering, Decoupling, RSWG
- Transportation Goals

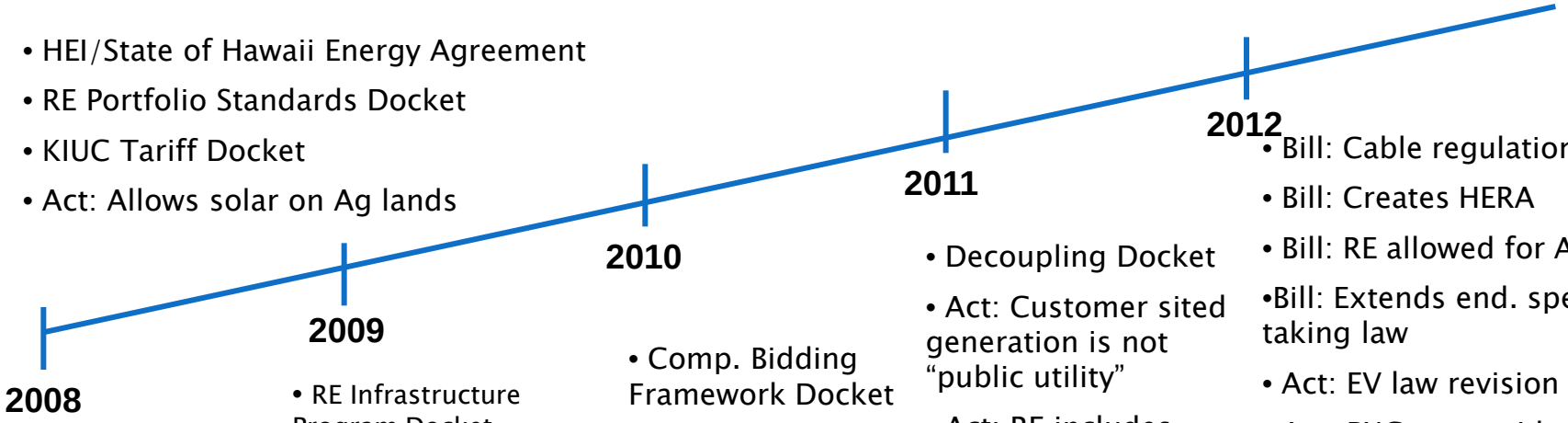
### Incentives & Technical Assistance

- Tax Credits
- Public Benefits Fee Administrator
- US Dept. of Energy – formula grants, ARRA, technical assistance

# “Assistance is on the Way”

- Priority Processing
  - County, State, Federal Agencies
- HSEO Online Permitting Wizard (July 2012)
- DOH ePermitting Portal (Public)
- DPP Online Building/Electrical Permits (2011)
- HSEO/Office of Planning GIS Mapping (2013)

# "Our Legislative & Regulatory Accomplishments"



**2008**

- HEI/State of Hawaii Energy Agreement
- RE Portfolio Standards Docket
- KIUC Tariff Docket
- Act: Allows solar on Ag lands

**2009**

- RE Infrastructure Program Docket
- Maui County PV/Wind Permit Guide, DSA 18.0
- New home solar hot water heating mandate (HRS 196-6.5)
- Act: RPS revised to 25% by 2020, 30% by 2030; created EEPS (4300 GWh reduction by 2030); allowed EPC contracting
- Act: subdivision exemptions for RE

**2010**

- Comp. Bidding Framework Docket
- Act: Created $1.05 "Barrel Tax" for HCEI and food
- Act: Gas Co to submit RPS reports

**2011**

- Decoupling Docket
- Act: Customer sited generation is not "public utility"
- Act: RE includes customer site gen.
- Act: Modifies REFSP to allow biofuel 500Kgal/yr
- Act: Extends subdiv. exemption
- Act: Allows solar on better Ag lands

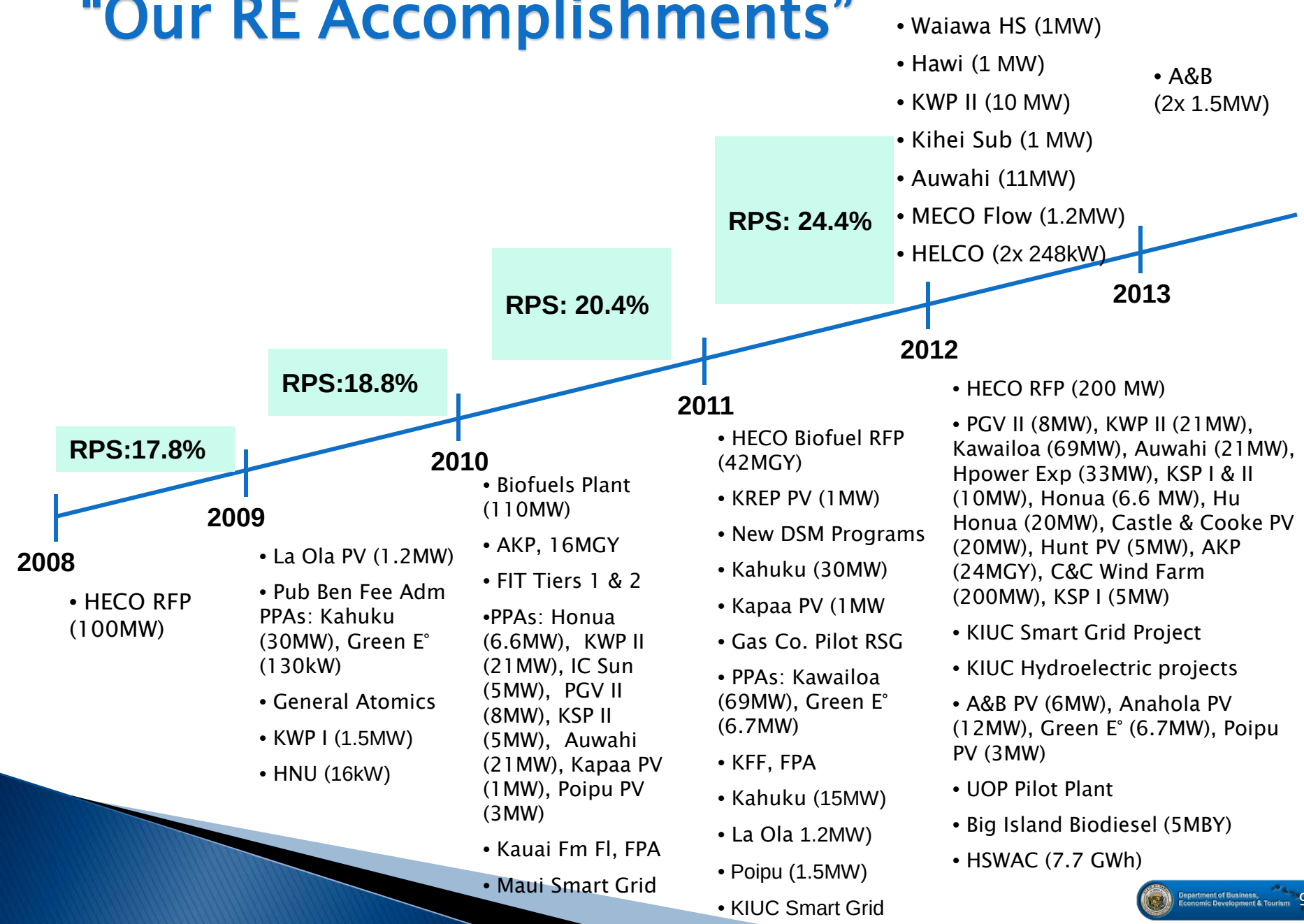
**2012**

- Bill: Cable regulation
- Bill: Creates HERA
- Bill: RE allowed for Ag ops
- Bill: Extends end. species taking law
- Act: EV law revision
- Act: PUC to consider diverse fossil fuels
- Act: Removes geothermal subzones
- HRS 201N refined
- C&CH Solar Permit ruling: 2012/INT-1
- Hawaii County Ord. for RE permitting

**Open Dockets:**

- Intragovernmental Wheeling (opened in 2007)
- HECO Feed-in Tariff (opened in 2008)
- HECO Rule 14H (opened in 2010)
- Implementation of Reliability Standards (opened in 2011)
- Integrated Resource Planning (opened in 2012)

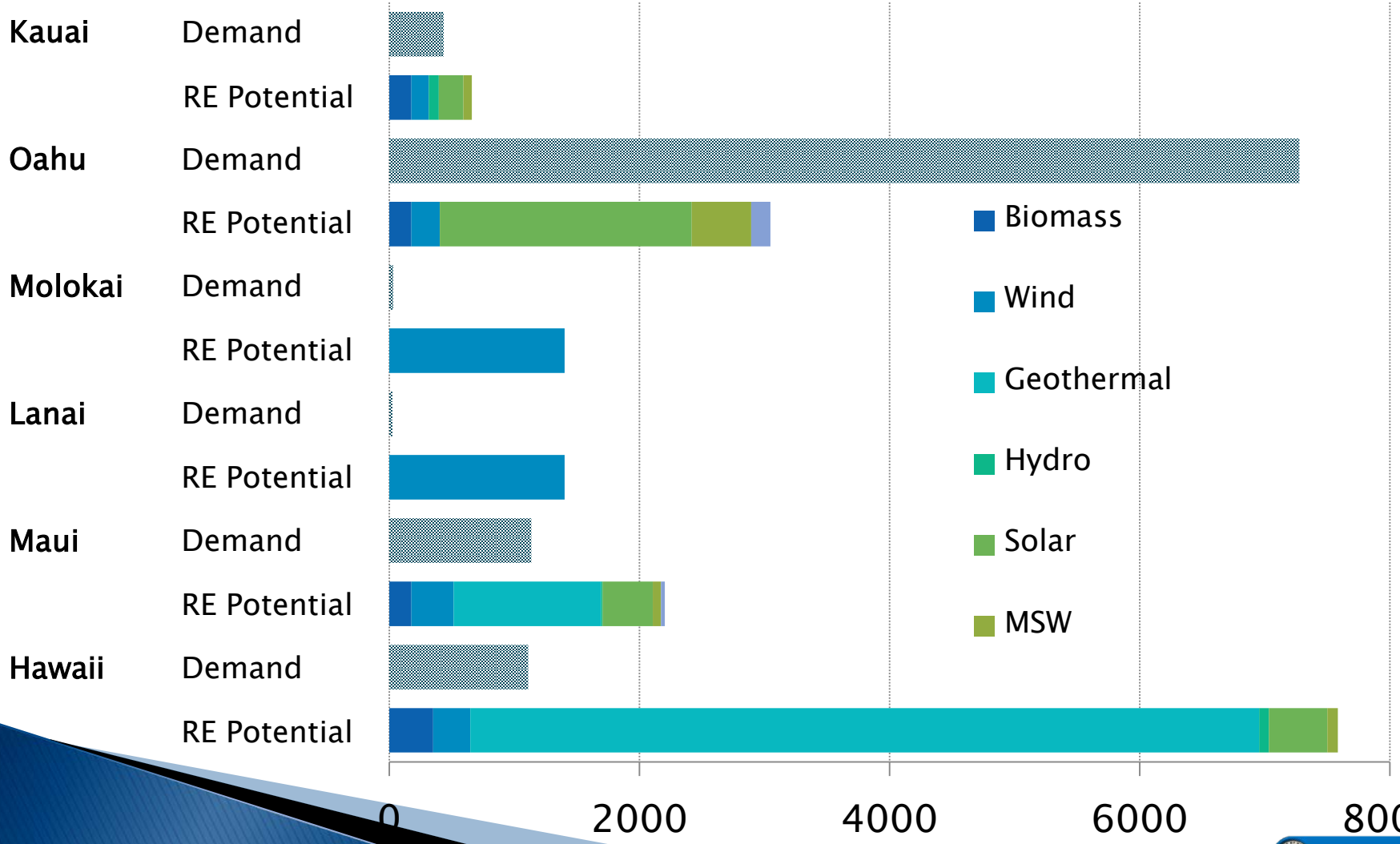
# "Our RE Accomplishments"



# “We Have the Resources”

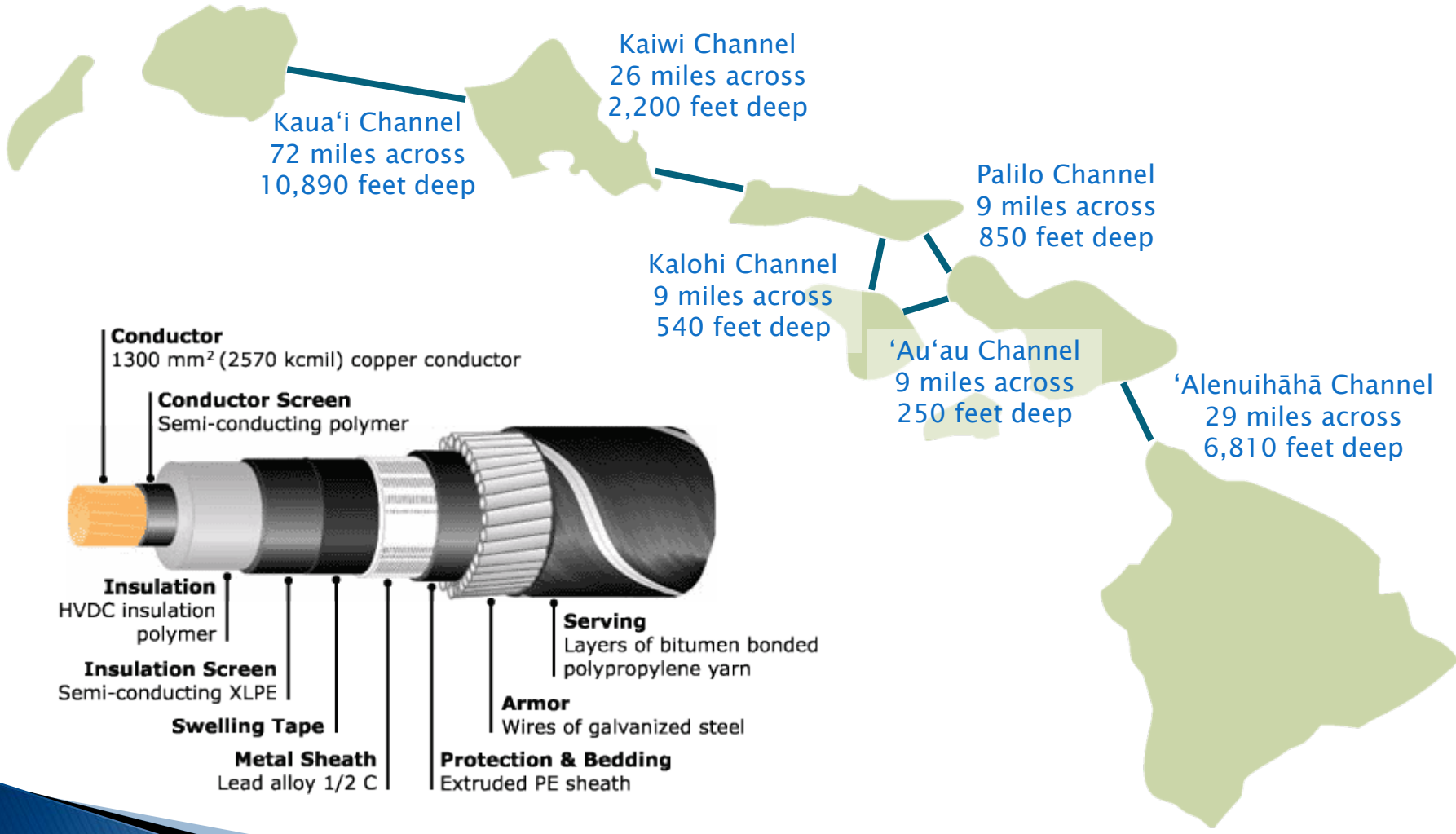
## Hawaii Renewable Energy Potential (GWh)

*Oahu has the most energy demand, but most renewable energy sources are on the neighbor islands*



# “Submarine Transmission is a Key”

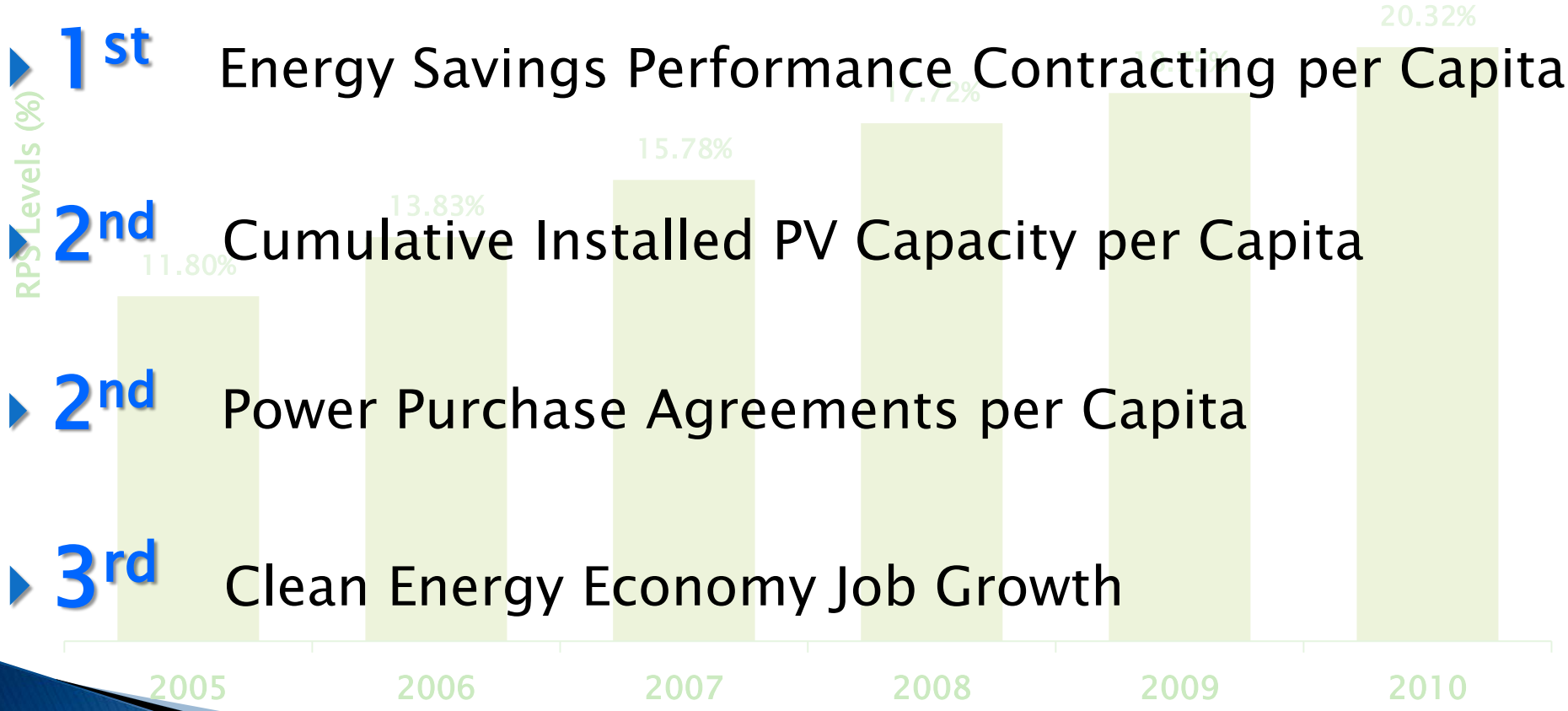
*The interisland cable is essential to Hawaii’s clean energy future*



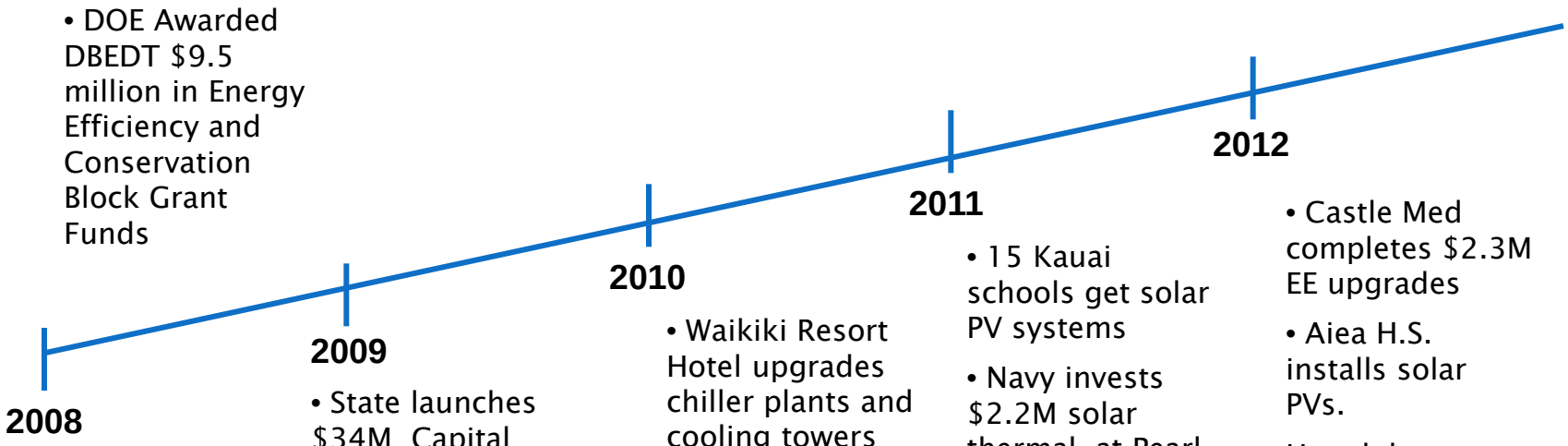
# “We’re Making Progress”

## Compared to Other US States

- 1st Solar Water Heaters per Capita
- 1st Energy Savings Performance Contracting per Capita
- 2nd Cumulative Installed PV Capacity per Capita
- 2nd Power Purchase Agreements per Capita
- 3rd Clean Energy Economy Job Growth



# "Efficiency Accomplishments"



**2008**

- DOE Awarded DBEDT $9.5 million in Energy Efficiency and Conservation Block Grant Funds

**2009**

- State launches $34M Capital District project
- PUC awards $38M contract to SAIC for Utility EE programs
- DOT signs PPAs for 7 PV systems

**2010**

- Waikiki Resort Hotel upgrades chiller plants and cooling towers
- Honolulu Academy of Arts begins EE project
- Honblue retrofits cut usage by 20 percent

**2011**

- 15 Kauai schools get solar PV systems
- Navy invests $2.2M solar thermal at Pearl Harbor, Hickam
- State DPS invests $25.5 million in retrofits
- UH Community College system plans $32.8 million EE investment

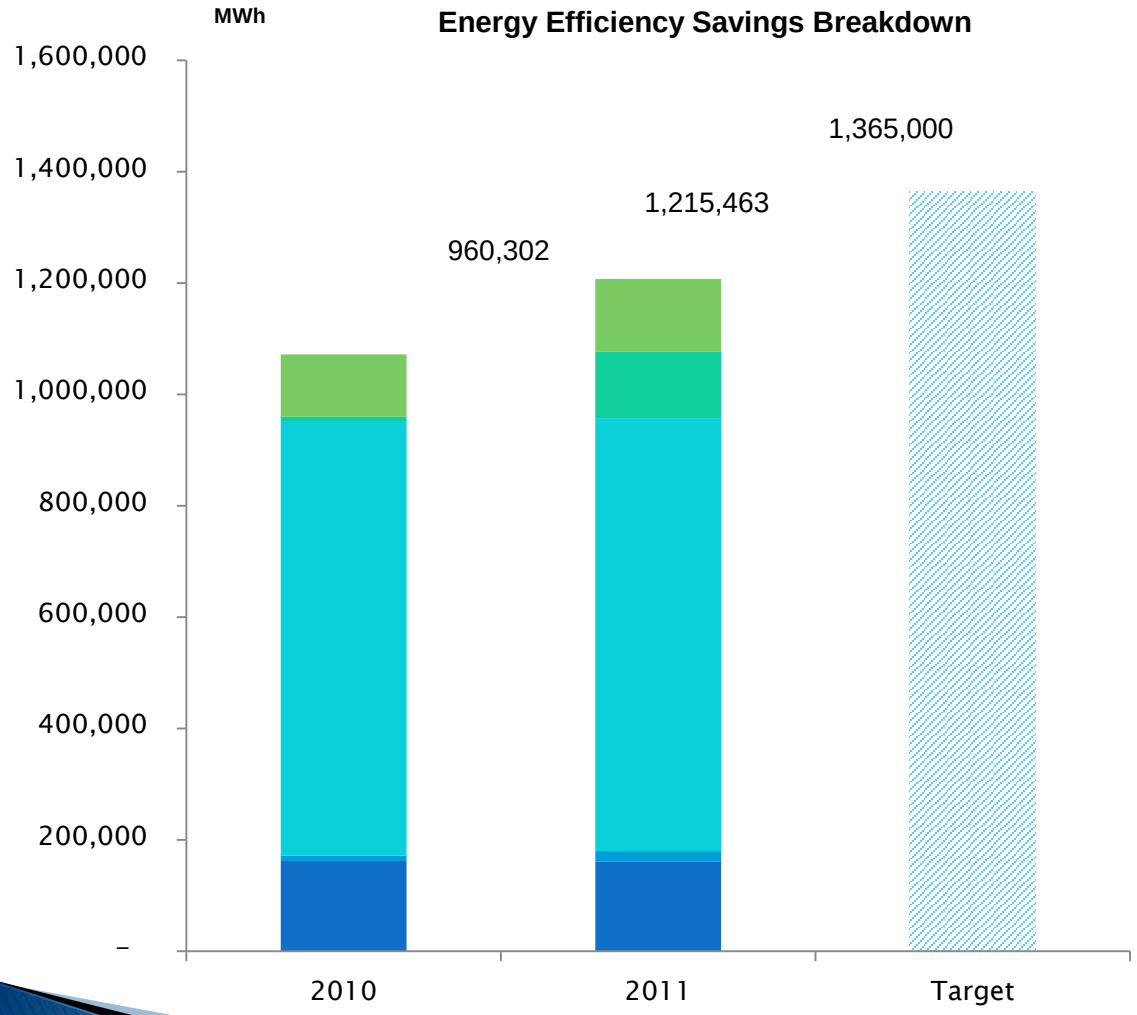
**2012**

- Castle Med completes $2.3M EE upgrades
- Aiea H.S. installs solar PVs.

Honolulu Museum of Art $1.5M EE

- Hawaii Energy, Forest City launch Energy Smart Initiative

# “Efficiency Savings”



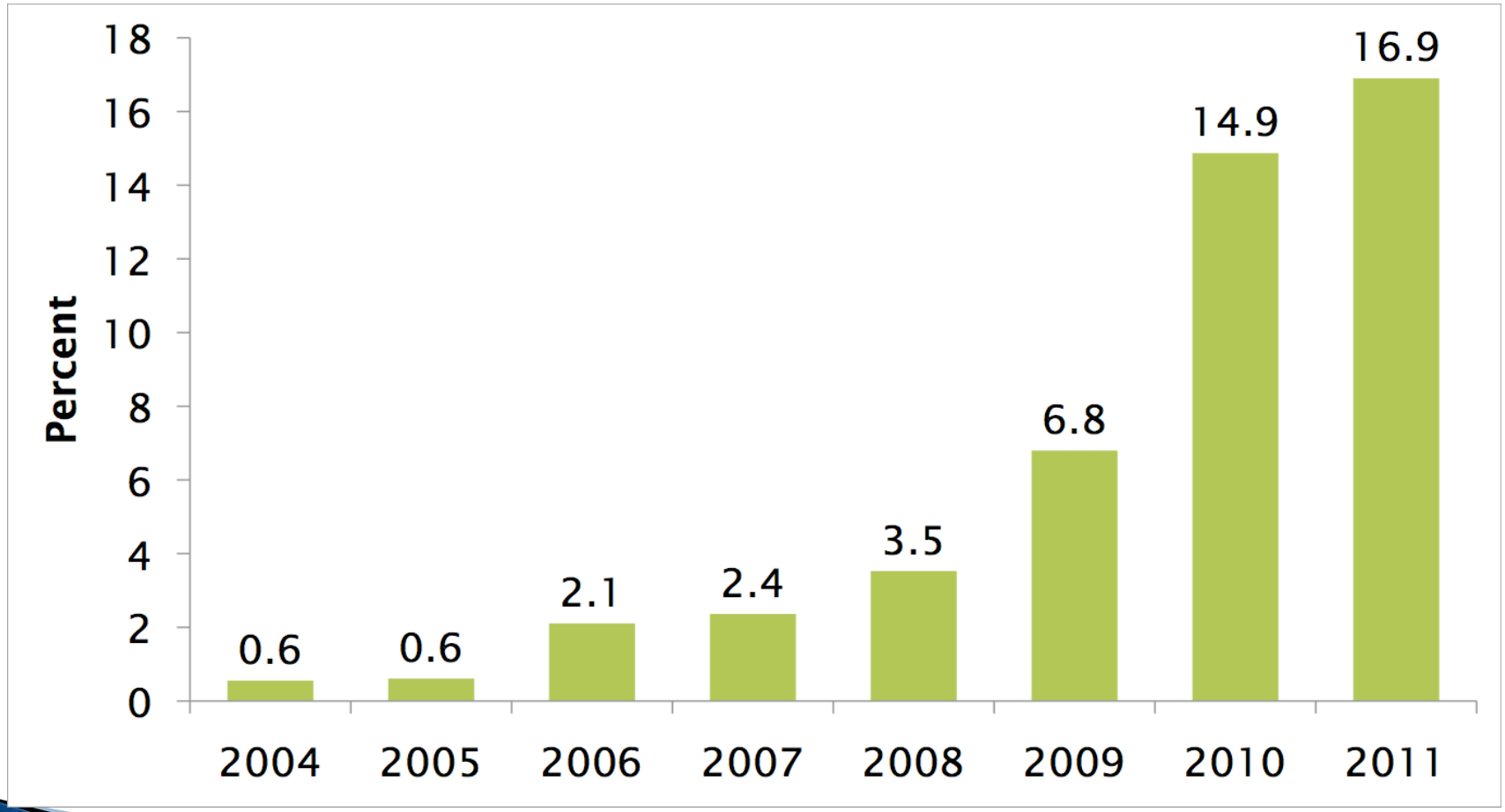

| Reporting Entity | 2011 PBFA Savings (MWh) |
|---|---|
| HECO | 112,920 |
| Hawaii Energy | 157,498 |

* Source: HECO

# “The Private Sector is Responding”

## Solar-Related Construction Expenditures

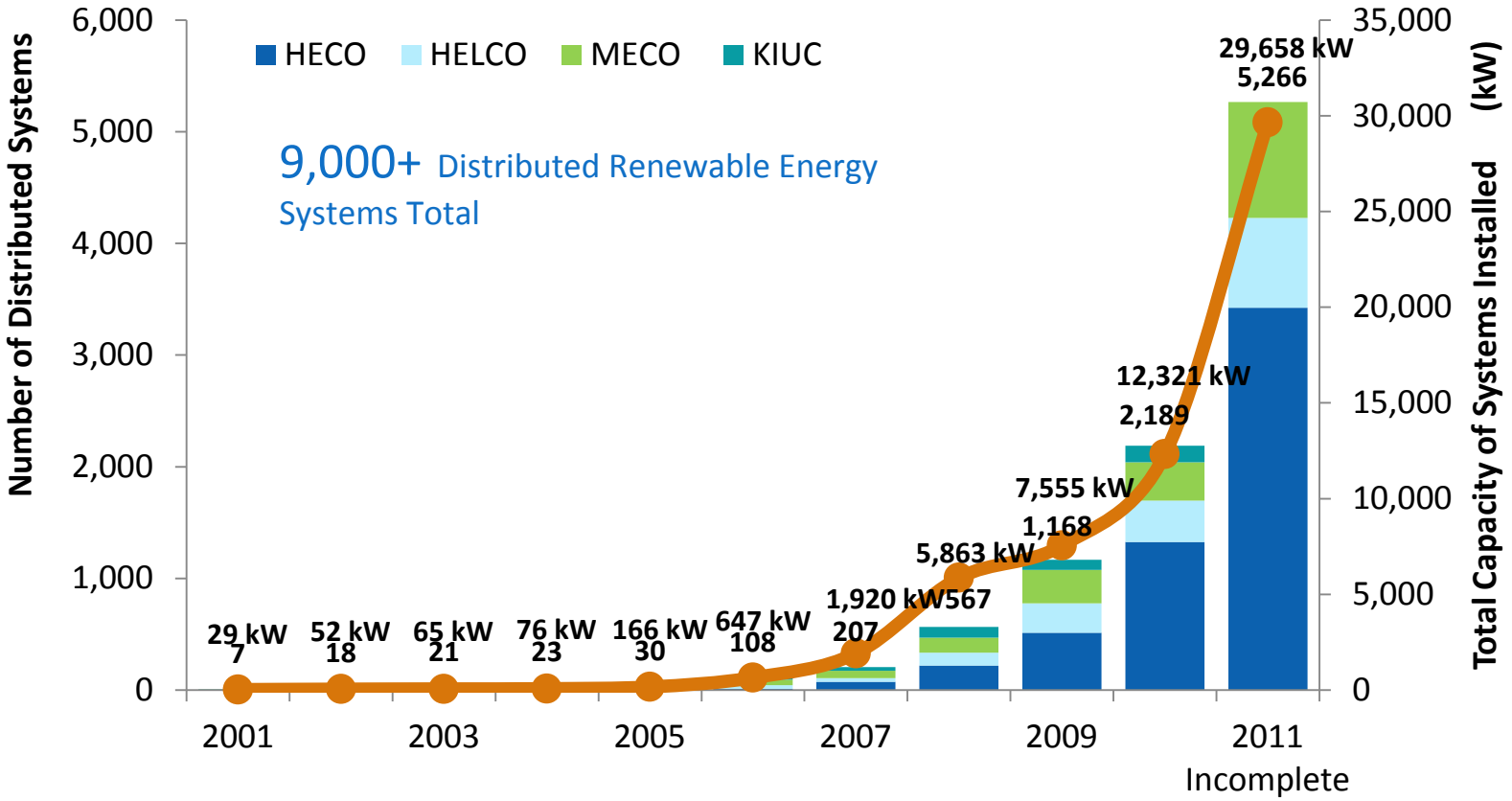
*Solar-related construction expenditures reached nearly 17% in 2011*



# “The Private Sector is Responding”

**Distributed Renewable Energy Systems**

*As of 2011, over 9,000 distributed renewable energy systems have been installed statewide, totaling over 58 MW in capacity.*




(Public Utilities Commission)

# “We’re Seeing Economic Benefits”

*Hawaii is expected to have over 14,000 green jobs by 2012*

**Kauai County**

460 Green Jobs
1.9% of County Jobs

71 Additional Green Jobs by 2012

**Honolulu County**

6,866 Green Jobs
2.0% of County Jobs

1,885 Additional Green Jobs by 2012

**Maui County**

2,597 Green Jobs
4.6% of County Jobs

437 Additional Green Jobs by 2012

**Hawaii County**

1,222 Green Jobs
2.5% of County Jobs

510 Additional Green Jobs by 2012

**State of Hawaii Total**

11,145 Green Jobs
2.4% of Private Employment

2,903 Additional Green Jobs by 2012

Source: *Hawaii’s Green Workforce: A Baseline Assessment*, December 2010 (Department of Labor and Industrial Relations)

Department of Business, Economic Development & Tourism

# "We're Getting Results"

**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)

# "Next Level Test Bed - Energy Accelerator"

| | |
|---|---|
| **Hawaii's first clean energy accelerator program.** | Starting Fall 2012 |
| **HREDV will award $600,000 ($20,000 - $100,000 per company) to 3-8 companies with clean energy technologies that advance Hawaii's energy needs and can scale for global impact** | To support and grow Hawaii"s energy technology community.<br><br>A five-month program to provide entrepreneurs and companies tools and networks to develop their businesses. |

# “Let’s Work Together”

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