
U.S. Department of Energy Integrated Deployment Activities and the International Partnership for Energy Development in Island Nations (EDIN)



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EERE Integrated Deployment Activities: The Start



New Orleans

- DOE help New Orleans to rebuild after Hurricane Katrina in 2005
- DOE provided **on-the-ground help**
- **Schools**: Provided energy modeling, consultation and guidance on energy efficient design for 3 schools, resulting in designs that are 25-35% more efficient than ASHRAE 90.1-2004
- **City Policy**: Provided energy policy guidance
- **Homes**: Coordinated assistance that resulted in home designs achieving the **DOE Builder's Challenge** (first Builder's Challenge certified homes in Louisiana) – **20 homes to be completed by spring 2009**; also worked with Habitat for Humanity to increase efficiency of new builds

Greensburg, Kansas

- Tornado devastated town in 2007
- DOE again worked on-the-ground to **provide analysis, training, and expertise** to assist community to outline path forward with clean energy
- **Electricity** for the community will be "**100% renewable, 100% of the time**" (4 MW of wind firming by biodiesel)
- **All City-owned buildings will be LEED Platinum** (42% or better energy efficiency than code)
- Over 30 businesses and commercial buildings pursuing minimum of LEED Certification
- Greensburg's **John Deere dealership is pursuing LEED Platinum** (40% or better efficiency level and wind)

Hawaii Clean Energy Initiative (HCEI)



In January 2008 Governor Lingle and DOE established the HCEI: A long-term partnership to transform Hawaii to an economy based upon clean energy resources (one of the first in the world)

Components of HCEI

- I. Establish the Analytical Foundation
- II. Develop a Comprehensive Energy Policy
- III. Build Stakeholder Partnerships
- IV. Apply the Business Perspective
- V. Identify Early Successes

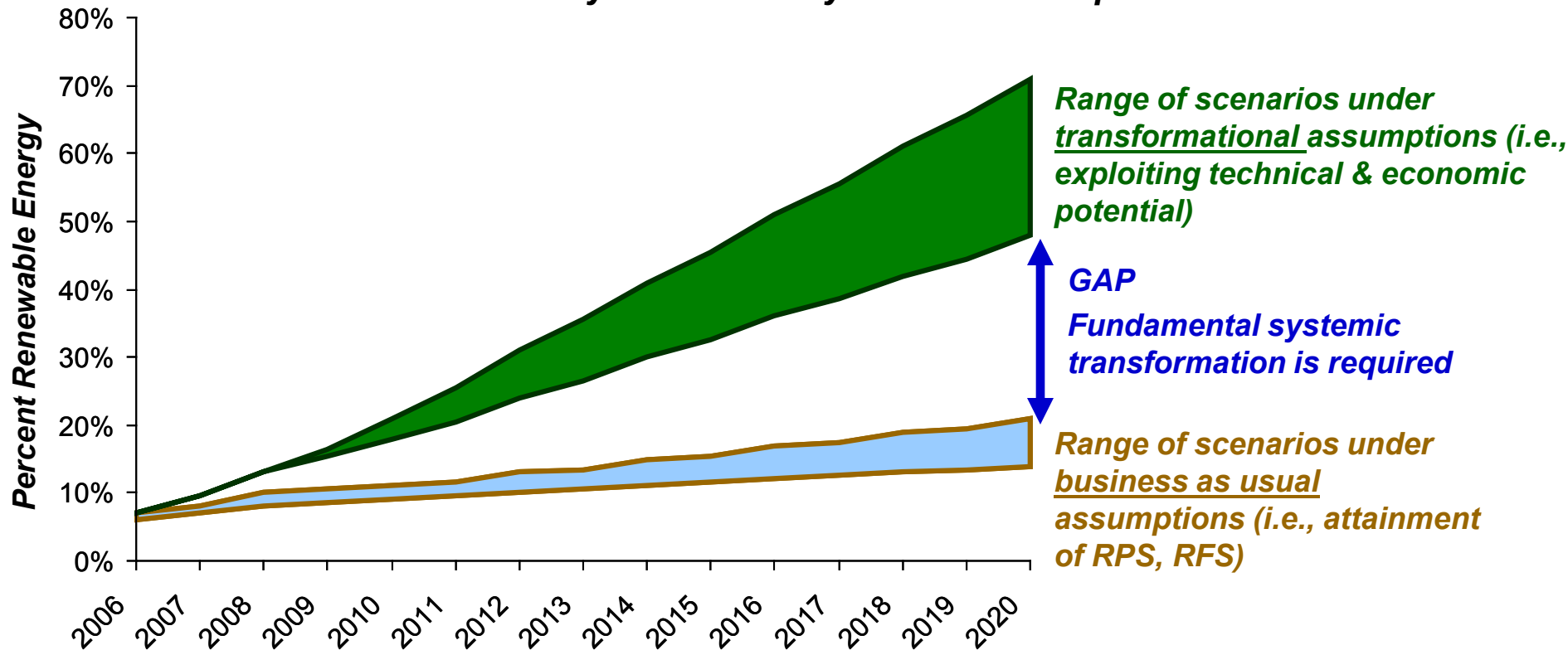


GOAL: Hawaii has pledged to meet 70% of the state's energy needs from clean energy (primarily indigenous renewable energy sources and increased energy efficiency) by 2030

Hawaii urgently needs to transition to an economy powered by clean energy, instead of imported foreign oil



In 2004, Hawaii's energy portfolio included 6% renewable energy, a proportion which is set to increase only incrementally under current plans



...but doing so will require a substantive transformation of regulatory, financial, and institutional systems

The Hawaii Model for Transformation to Clean Energy



I. Establish the Analytical Foundation

1. energy baseline and load profile
2. renewable resource assessment
3. characterization of current generation mix
4. grid reliability constraints and stability requirements

→ **Example completed analysis: 70% Clean Energy Scenario Analysis**

II. Develop comprehensive energy policy

1. establish regulatory framework that enables utilities to increase renewables and efficiency without a negative bottom line impact
2. establish legislative recommendations that enable businesses and homeowners to build and buy more energy efficiently

→ **Currently Legislative Package under review (includes transmission, efficiency and transportation measures)**

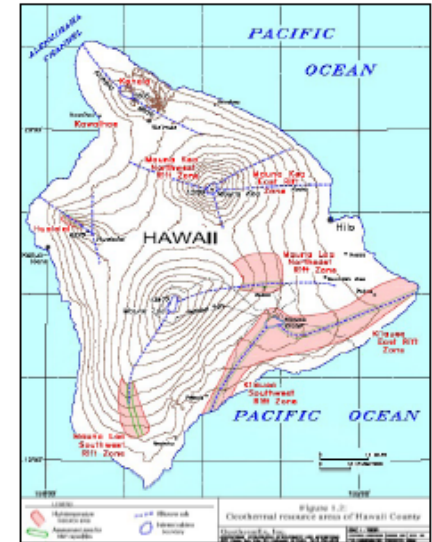


Figure 10. Geothermal Resources on the Island of Hawaii

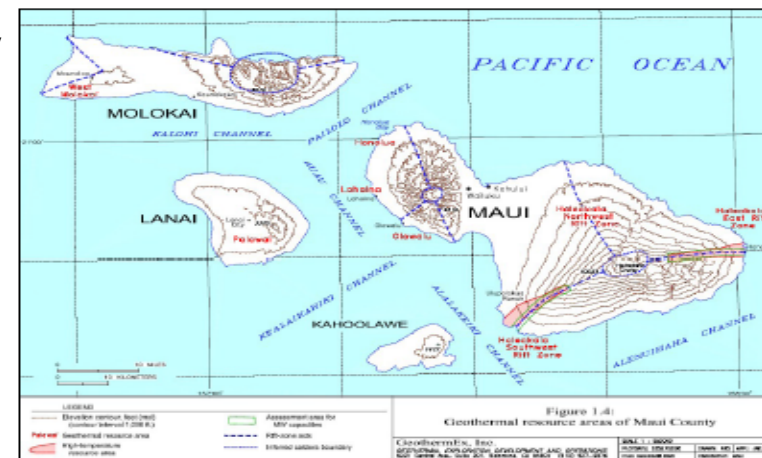
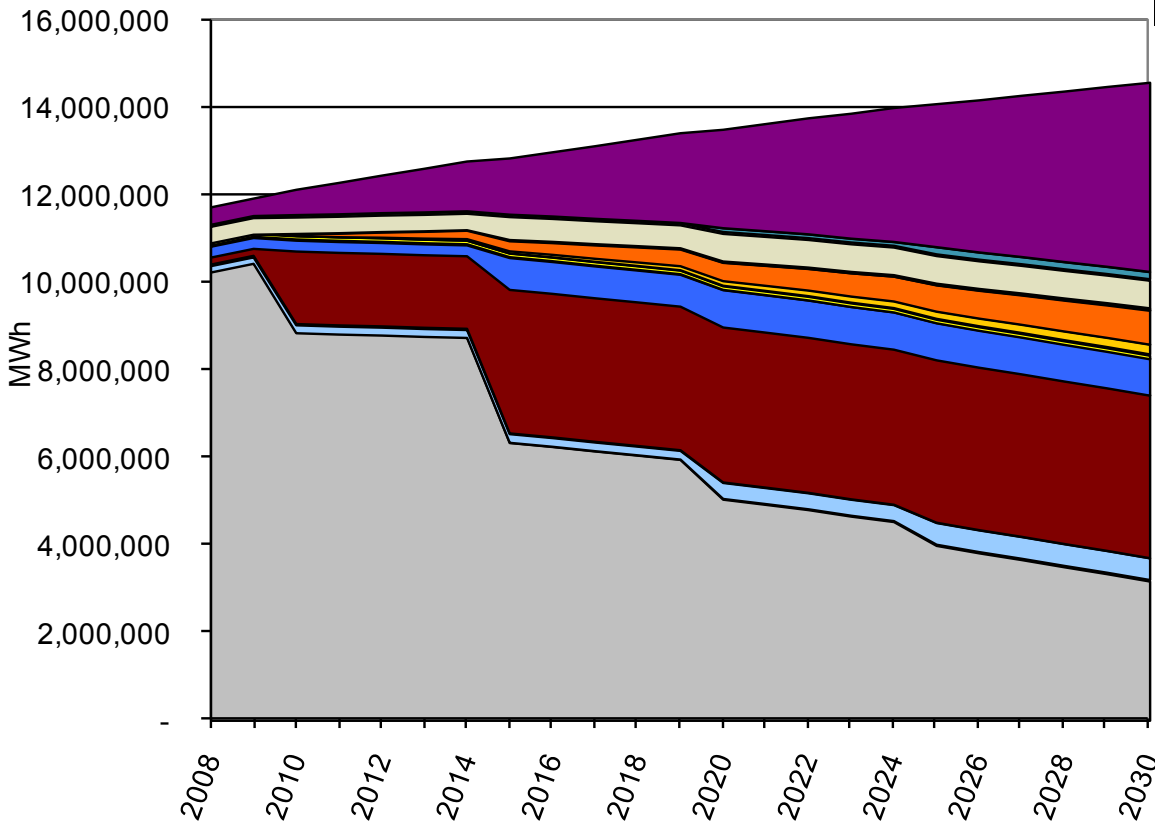


Figure 11. Geothermal Resources on Maui

70% Clean Energy Scenario: Identify Targets

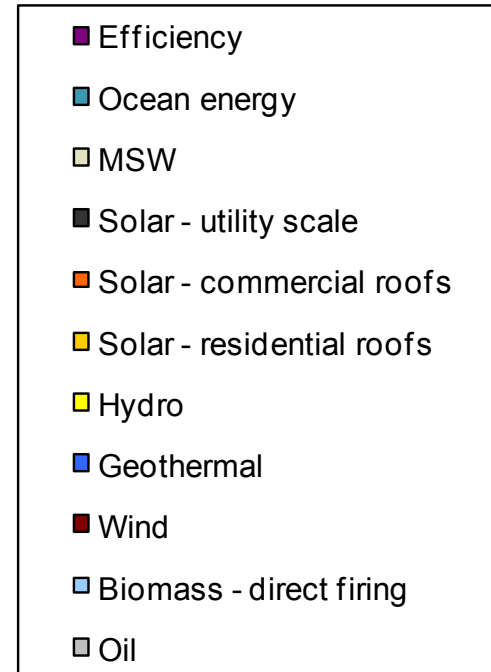


State of Hawaii electricity generation
(Delivered capacity)



Summary of 2030 Electricity Results

Clean energy achieved	70%
Oil reduction (million bbl/yr)	17.3
CO₂ avoided (million ton/yr)	8.8



The Hawaii Model for Transformation to Clean Energy



III. Build Stakeholder Partnerships

1. working groups across all industry and government areas
2. technical experts on each working group
3. focus on needs, gaps, and potential
→ *Involvement of government, utilities, industry, etc.*

IV. Apply the Business Perspective

1. Establish a profitable business case for the stakeholders
2. Take steps to minimize risk
3. Find or establish possible financing tools
→ *Economic model under development*

V. Early Successes

1. Early adopters need to be identified and incentivized to get early successes and validate performance of the technology approach
2. Document successes to educate and inform decision makers
→ *Many underway! (e.g., Forest City Hawaii: First Wind/NREL REMRAP; OE Maui Grid Modeling & Analysis)*

Continued Focus on Islands: EERE's involvement in EDIN builds upon HCEI



Islands face unique energy challenges

- Islands are often **highly dependent on fossil fuels** for electricity and transportation and often have very high retail electricity rates
 - In 2008, Hawaiians paid 3 times the national average for electricity; CNMI \$0.40/kWh; Cayman Islands \$0.70/kWh (U.S. average in 2008 was \$0.10/kWh)
- Islands often have **abundant renewable resources and small populations**, so are ideal places to showcase the potential of renewable energy penetration
- Islands are **vulnerable to the impacts of climate change**, such as sea level rise and greater severity and frequency of hurricanes

EERE in EDIN Pilot Project plans to utilize similar model as HCEI

The International Partnership for Energy Development in Island Nations (EDIN)



Purpose: EDIN helps islands across the globe adopt energy efficiency measures and deploy renewable energy technologies

Areas of Participant Energy Expertise

Policy



Finance



Technology



Two types of Participants:

- **Partner Nations:** Currently, Iceland, New Zealand and U.S.
- **Project Participants:** Will work with EDIN on a project-by-project basis to address areas most crucial to EE/RE deployment; will benefit from a transfer of technical expertise

All Participants' Goal: Strive to deploy the maximum amount of RE and EE possible; endeavor to articulate and attain measurable clean energy targets



The U.S. Virgin Islands have been chosen as a Pilot Project Participant in EDIN

- Four main residential islands of USVI
 - Saint Croix, Saint John, Saint Thomas and Water Island
- The utility in USVI is 100% dependent upon fossil fuel and existing generation equipment is due for retirement
 - Summer 2008 electricity prices ~\$0.50/kWh
- DOE has received indications of support from Governor, utility, and legislature
- **Many clean energy projects have been identified in USVI and we are excited to begin!**



American Recovery and Reinvestment Act of 2009 Funds Available to Territories



Territory/District	Weatherization	State Energy Program	EE & Conservation Block Grant Program	Total
American Samoa	\$719,511	\$18,550,000	\$9,593,500	\$28,863,011
Guam	\$1,119,297	\$19,098,000	\$9,593,500	\$29,810,797
Puerto Rico	\$48,865,588	\$37,086,000	\$33,977,000	\$119,928,588
Northern Mariana Islands	\$795,206	\$18,651,000	\$9,593,500	\$29,039,706
Virgin Islands	\$1,415,429	\$20,678,000	\$9,593,500	\$31,686,929

<http://www.energy.gov/recovery/7008.htm>