Energy Program
Island of Hawai`i

Energy Coordinator
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Accomplished Energy Project Portfolio

2012-2013-2014
• Green Govt. Action Plan
• Energy Program Update
• No-Cost Initiatives
• Efficiency Retrofits
• 1000 LED Lamps
• PHEV Fleet
• PUC Dockets

2014-2015-2016
• DWS – 3.3 MW Wind Farm
• Biodiesel Transition 20-100%
• PV + Battery + EV Sites
• EV Charger Network
• +9000 LED Lamps
• ASU-Partnerships

STRATEGIC INITIATIVES LAUNCHED
• U.S. & World Leaders in Renewable Energy 50% Trajectory to 100%
• Renewable Energy to Innovative Storage Solutions
• Excess Renewable Generation to Transportation
• Complete Solutions : PV + EV + Battery
• NELHA - Energy Research RD&D
• Biodiesel and Hydrogen Buses
• Island EV Charger Network
Island of Hawai`i 50% Renewable State of Hawaii Energy Leader

200 MW Electric System

- Geothermal - 38 MW
- South Wind Farm – 20 MW
- North Wind Farm – 11 MW
- Hydro – 16 MW
- Photovoltaic – 70+ MW
- NELHA OTEC – 100 kW

- **Vision from Partners:**
  - Model Island of Hawai`i Systems
  - Energy System as Sustainable Island
  - Demonstration for wider applications

- **Partnership Vision:**
  - Sector Integration: water, energy, food, health and education systems
  - Sustainable Energy Sector: Integration of Supply & Demand
  - RE, EE, Transportation Resiliency

- **Vision from Hawai`i:**
  - Revive traditional “affluent subsistence”
  - Demonstrate 21st century technologies
  - World Leader
On-Site Renewables
Generation + Storage + Transportation
On-Site Renewables

West Hawai`i Civic Center:

– LEED Silver Certified
– 250 kW Photovoltaic Array
– 100 kW – 250 kWh Lithium-Ion Battery
– 100% Renewable Government Center
– 5 Plug-in Hybrid Electric Vehicles
– 6 Level 2 Chargers
Lālāmilo Wind Farm
On-Site Renewables

Lālāmilo Wind Farm:

– Wind Turbines Up - April 2016
– Wind Farm Power - September 2016
– Up to $1 Million Savings to Ratepayers
– Top Wind Site in Hawai`i & United States
– Fifty (50) year Low-cost Lease with DLNR
– Electricity is 50% Cost of Water Distribution
– 3.3 MW Wind Farm = 5 x 660 kW Wind Turbines
Electric Vehicles
Biodiesel

- A fuel for Any Fossil Diesel Engine
- Non-toxic and Biodegradable
- Non-flammable / Renewable / Recycled
- Superior Lubrication
- Low Emissions
- Ultra Low Sulfur (<15 ppm)
BIG ISLAND BIODIESEL

- First commercial scale refinery built in the State in four decades
- Price is competitive – in some areas it is cheaper than diesel fuel
- Capacity is 5.5 million gallons per year = 50% annual amount diesel
- Plan another 5.5 million gallon refinery on West-side when market arrives
Transportation Initiatives

- Electric Vehicle Fleet Begins
- Bio-Diesel for Mass Transit, Fire, DPW
- Electric Vehicle Charging Network Begins
- Hydrogen Fueling Station to be built at NELHA
- 2 Hydrogen Buses for Volcanoes National Park
- 1 Hydrogen Bus for County of Hawai`i Kona Routes
- County of Hawai`i Initiates Large Fleet Owners Association
- Fleet Optimization Partnerships Initiated with Utility & Private
- Bio-Diesel Refinery for Transportation up to 5M Gallons/year
County of Hawai`i Responsibility

- **Advocate** to reduce energy costs, promote economic development and preserve environments

- **Engage** all sectors: residents, businesses, independent power producers and utilities

- **Prepare** for emergencies
County’s Approach to Energy

- Energy Efficiency
- On-Site Renewables
- Transportation Projects
- Utility Partnership Programs
- Energy Research and Development
- Education and Economic Development
Energy Efficiency Education

- LED Street Lamp Retrofit
- Interior Light Project Replacement
- DPW – Facilities – HVAC Retrofits
- Parks & Recreation Pumps & Lights
- DWS – Water Pumping Equipment Projects
- DEM – Clean & Renewable Energy Projects
- All Departments on Revolving Energy Projects
Research and Development
Energy Program Project Analysis

- Quality of Life
- Return on Investment
- Economic Development
- Public-Private-Partnerships
- Power Purchase Agreements
- Biofuels Evaluation Framework
- Technical & Financial Analysis Tools
Light-Emitting-Diode (LED) Lamp
High-Efficiency LED Lamps to Darken the Night Sky
Fifty (50)% Reduction in Electricity Costs
Astronomy Community Approved
High Visibility = Safer Roads
Human and Animal Friendly
PUC Dockets

- Intra-Governmental Wheeling (COH Intervener – Docket Open)
- Energy Efficiency Portfolio Standards (COH set high Energy Efficiency Standards and drove Energy Efficiency $ to low-income residents)
- Reliability Standards Working Group (COH led Demand-Side Options Group – starting new PUC Docket in Demand Response)
- AKP Biodiesel (PUC closed)
- Integrated Resource Planning (COH Intervener)
- Decoupling (COH Intervener revised interest rate)
- NextEra and HEI Merger (COH Intervener - PUC closed)
- Power Supply Improvement Plans (COH Intervener – Docket Open)
- Potential PUC Dockets on:
  - Utility of the Future
  - Business Model of the Future
  - Regulatory Model of the Future
Young Geology = Steep Bathymetry
Access to Pristine Ocean
Energy Demonstration Sites
Natural Energy Lab - NELHA

KEAHOLE POINT RESEARCH CAMPUS
MAHALO