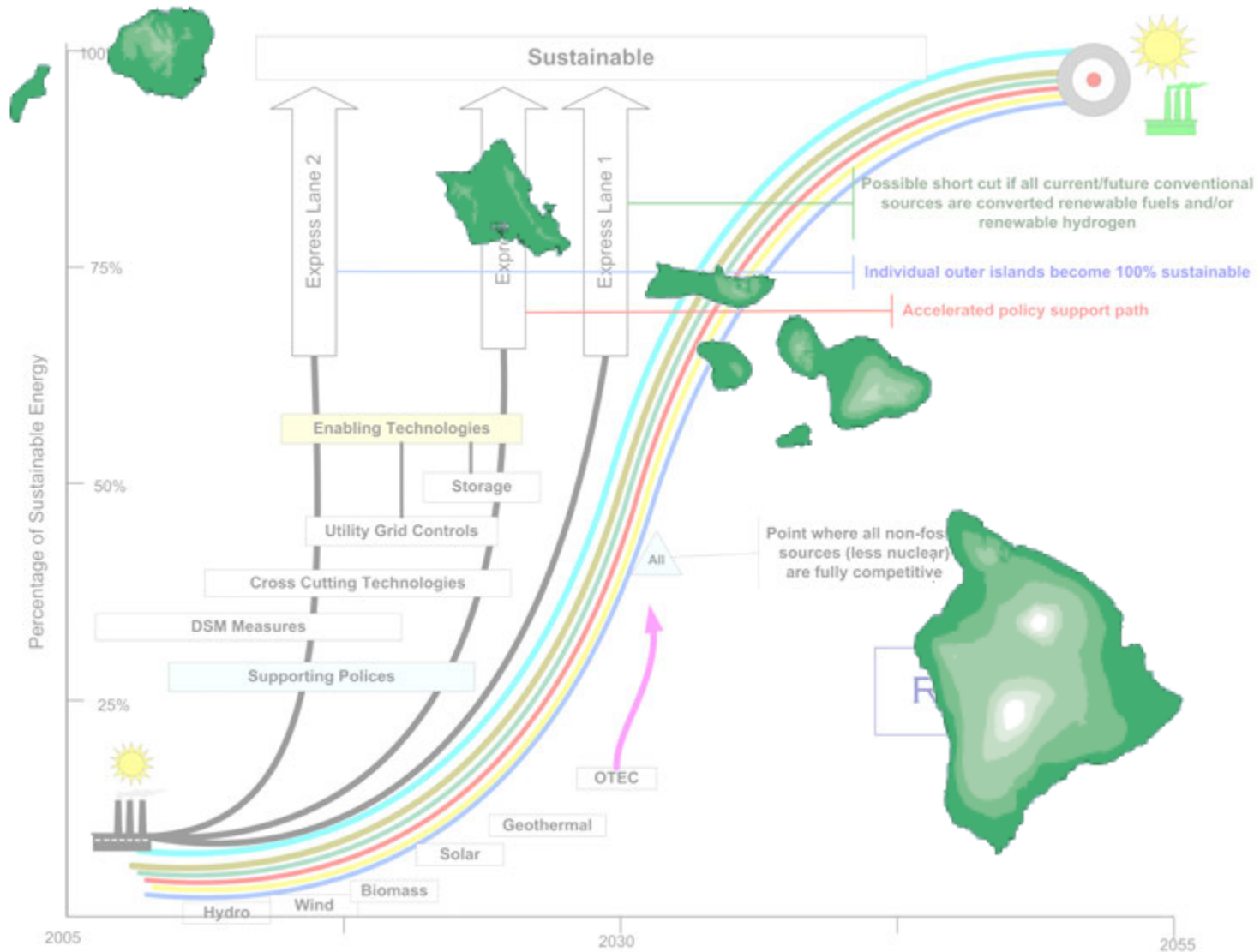


# Panel Presentation

## Sustainable Energy for an Island State: Hawaii's Efforts in Meeting the Challenge to Achieve our Sustainable Energy Vision

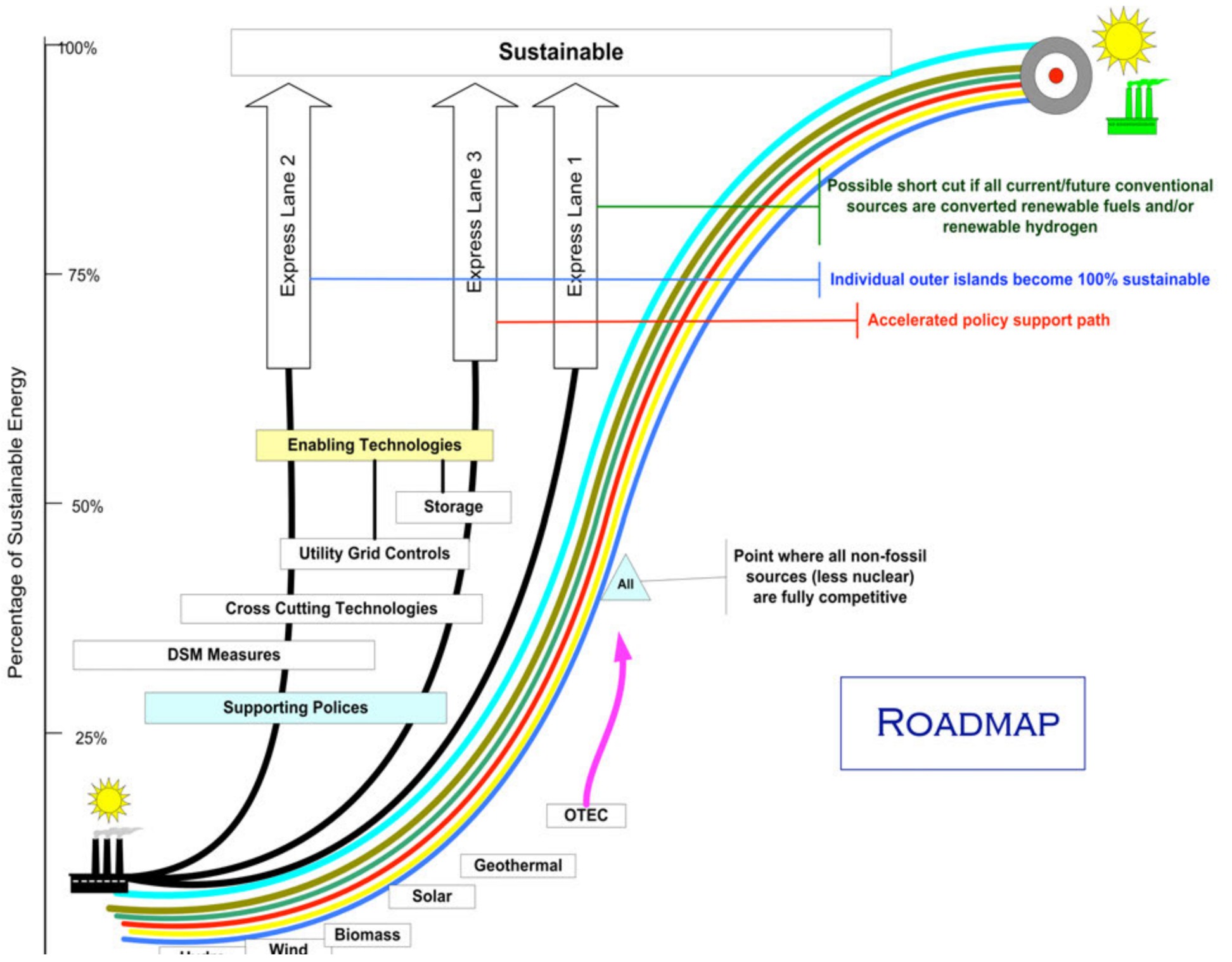


# Hawaii's Energy Policy: Where are we going and who is driving the bus?

## Representative Hermina Morita

Hawaii State House of Representatives  
Chair, Energy & Environmental Protection  
Committee





**Sustainable**



Possible short cut if all current/future conventional sources are converted renewable fuels and/or renewable hydrogen

Individual outer islands become 100% sustainable

Accelerated policy support path

Express Lane 2

Express Lane 3

Express Lane 1

Enabling Technologies

Storage

Utility Grid Controls

Cross Cutting Technologies

DSM Measures

Supporting Polices

All

Point where all non-fossil sources (less nuclear) are fully competitive

ROADMAP

OTEC

Geothermal

Solar

Biomass

Wind

Percentage of Sustainable Energy

100%

75%

50%

25%



# Hawaii's Energy Challenges

- Isolated island state with no indigenous fossil fuel (over 2,000 miles to nearest land mass)
- More than 90% of our energy is imported crude oil
- Vulnerable to supply disruptions
- Economy directly impacted by the price of crude oil
- Energy costs have risen by \$1,850/household in the past three years, gasoline \$3.77/gallon; electricity \$.25-.30/kwh
- 2006 energy cost each household in Hawaii an average of \$7,300
  - More than three times what an average household pays for state income tax

# Hawaii's Unique Island Energy Systems

- **Small isolated grids**
  - Unique challenges on each island
  - Significant potential for renewable energy
  - Oahu remains most challenging—largest load, least prospects for renewables
- **High average energy cost**
  - Customers motivated—distributed generation, solar water heating
- **Unique transmission and demand characteristics**
  - Early evening peak; strained transmission systems
  - On Big Island lower night demand requires curtailment of renewable resources
  - Challenge to maintain reliability and grid quality
  - Technical solutions need to be developed: electronics, storage, hydrogen
- **Unique transportation characteristics**
  - Traffic congestion becoming more of an issue
  - Limited driving distances, perfect for demo of new vehicle technology

# Hawaii's Energy Opportunities

- Rich in renewable resources - solar, geothermal, wind, ocean, hydroelectric and biomass
- Ethanol (E10) blending mandate anticipating ethanol production from two existing sugar plantations
- Excellent potential as a demonstration site for new technologies because of unique island grid system

# Getting on the bus in the 1970's

## Initial Development of the Hawaii Energy Strategy

# Hawaii Energy Objectives

- (1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of Hawaii's people (1978);
- (2) Energy self-sufficiency where the ratio of indigenous to imported energy use is increased (1978);
- (3) Greater energy security in the face of threats to Hawaii's energy supplies and systems (1981);
- (4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use (2000)

§26-18, Hawaii Revised Statutes



# Framework for the Hawaii State Energy Program

Define the Role of Government

Identify State Energy Program Goals

Develop Overall Program Strategy

Objectives, policies & implementing actions

Prioritizing Actions

# Policy Development Studies and Plans











- Hawaii Integrated Energy Assessment (1981)
- Hawaii Integrated Energy Policy Development Program (1991)
- Hawaii Energy Strategy (1995)
- Hawaii Climate Change Action Plan (1998)
- Hawaii Energy Strategy 2000 (2000)
- 2007 Strategy in progress

**1980's – Veering off course and losing  
passengers along the way**

**2000 - Understanding the destination and  
embracing the mission**

**Regaining the momentum . . .**

# Hawaii Energy Strategy 2000 Recommendations

-  **New state energy objective related to climate change (2000)**
-  **Production and sale of 10% ethanol blend gasoline (2002)**
-  **Renewable portfolio standard (2002)**
-  **Public benefits fund to increase funding for DSM and renewable energy (2006)**
-  **Increase fleet use of alternative fueled vehicles (2006)**
-  **Continue state income tax credits for energy efficiency/renewable energy (2006)**
-  **Adoption of residential building model energy code in all counties**
-  **Expand Hawaii State Government energy performance contracting and financing for energy projects (2006)**
-  **Complete energy emergency generator inventories and database documentation for emergency and essential service facilities (2001)**
-  **Work with USDOE to provide rule-making for priority access to the US Strategic Petroleum Reserve obtained by Sen. Akaka (2006)**

# Energy Efficiency Initiatives

- Public Utilities Commission (PUC) to establish a public benefits fund
- Requires new or renovated state facilities to meet LEED silver
- Requires efficiency standard and use of biofuel blends in state vehicles
- Requires that state agencies purchase Energy Star products when cost-effective
- Establish a priority permit processing system for County building permits for structures utilizing LEED silver guidelines
- Establish an advisory committee for state energy management
- \$5,000,000 for a photovoltaic, net energy metered pilot project in public schools
- Establish a “pay as you save” solar water heating pilot program to be administered by the PUC

# Renewable Energy Initiatives

- 20% by 2020 Renewable Portfolio Standard law
- Net-metering law
- Renewable energy technologies income tax credit for certain solar-thermal, wind-powered, and photovoltaic energy systems
- Authorizes the PUC to determine whether the fuel adjustment clause should better allocate fuel price risks between the public utility and its customers
- Directs the PUC to de-link payments for renewable energy from fossil fuel charges

# Biomass/Biofuel Initiatives

- Statewide renewable fuels standard of 20 percent of highway fuel demand to be obtained from alternate fuels by 2020 law
- Biofuels purchase preference for the State
- 2006 - \$200,000 for a statewide multi-fuel biofuels assessment
- 2006 - \$150,000 to assist farmers with developing energy projects, especially biofuels, and to seek funding from federal and other sources
- 2007 - \$300,000 bio-energy master plan
- 2007 - \$450,000 bio-energy/food integrated strategy study

# Renewable Hydrogen/Technology Initiatives

- Established the Hawaii renewable hydrogen program
- Established the hydrogen investment capital special fund and appropriates \$10,000,000 for the fund
  - Funding for cost share and venture investments
- Funding for a hydrogen system program manager in the University of Hawaii's Hawaii Natural Energy Institute



# Environmental Initiative

- Established a climate change policy
  - Hawaii to reduce greenhouse gas emissions at or below 1990 levels by January 1, 2020

## Potential Impacts on Hawaii's Economy by 2020

- Displace 110 million barrels of crude oil
- Retain \$6.3 billion in Hawaii's economy
- Eliminate 49 million tons of CO<sub>2</sub>
- Result in 65,700 job-years of employment
- **Equivalent to stopping all flows of oil into the state for 2 years between now and 2020**

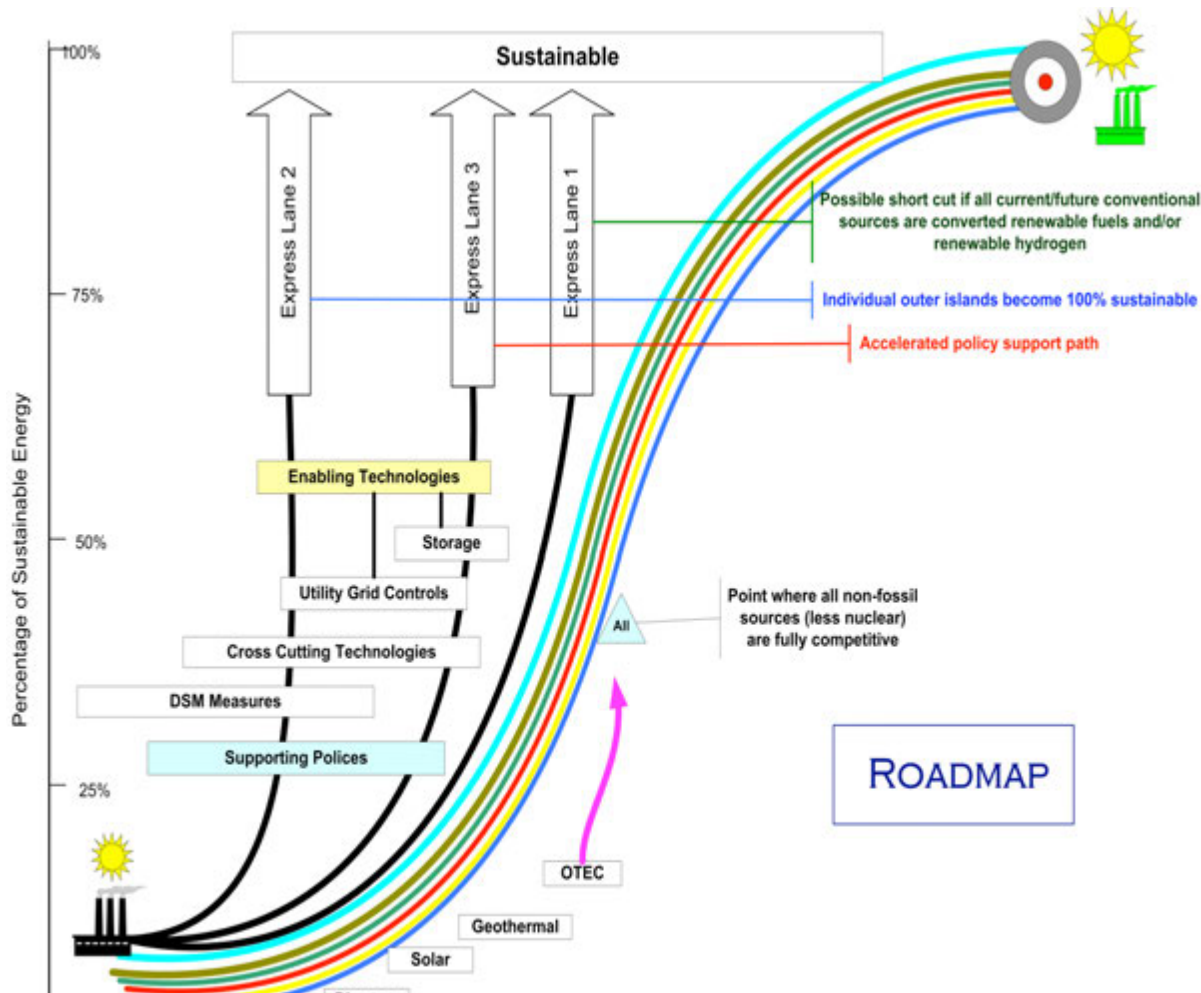
# Who's Driving the Bus?

**Hawaii's energy strategy is a long-term planning effort**

Who will continue to navigate us to our final destination?

How do we measure our progress?

# Striving for our final destination . . . to meet our moral obligation to future generations for a healthy, secure and prosperous Hawaii.



**Ua mau ke ea o ka aina i ka pono**

The life of the land is perpetuated  
in righteousness.