

UHERO

THE ECONOMIC RESEARCH ORGANIZATION
AT THE UNIVERSITY OF HAWAII

**Energy & Greenhouse Gas Solutions
(EGGS)**

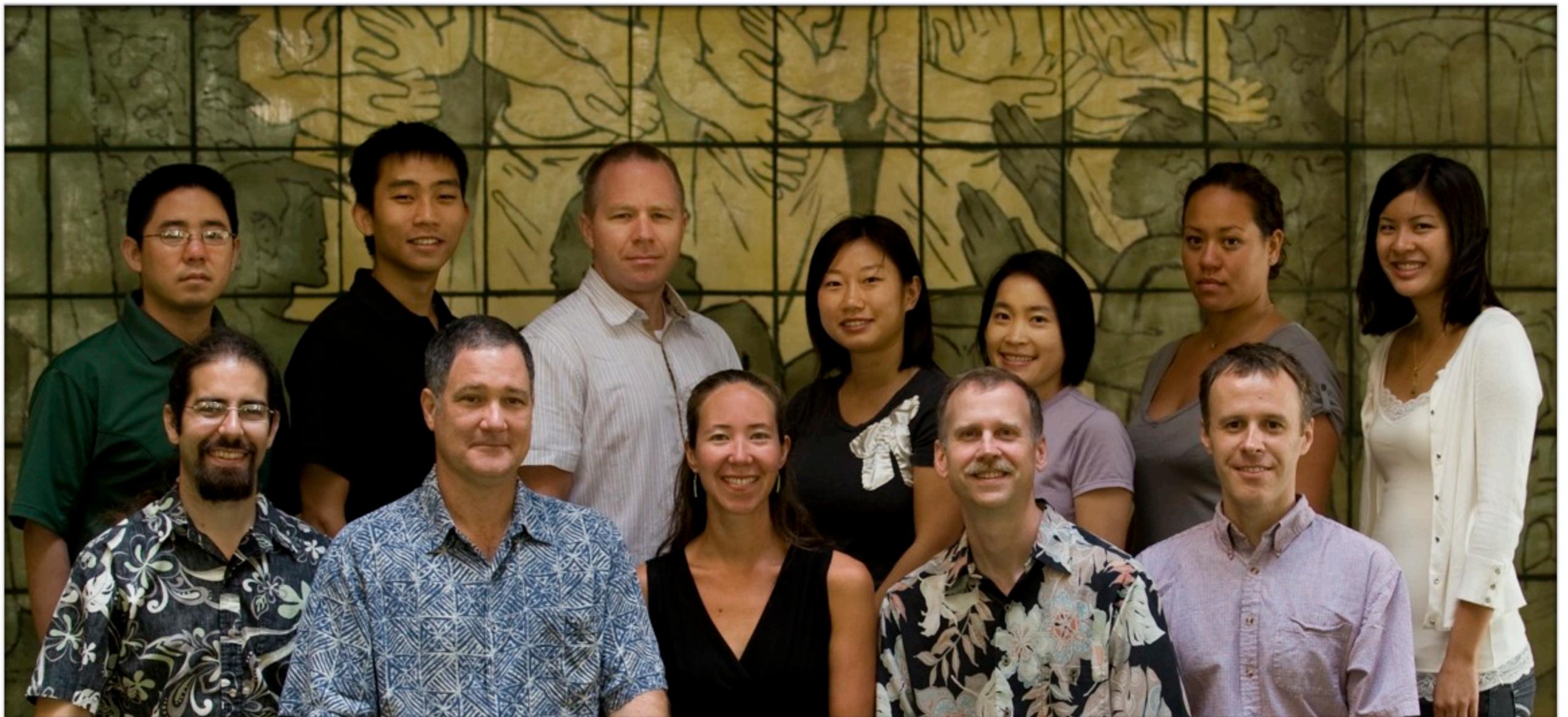
THE CASE TO CONNECT ENERGY TO THE ECONOMY

DENISE EBY KONAN

Asia Pacific Clean Energy Summit - Metrics Panel
September 14, 2011

UHERO - THE UNIVERSITY OF HAWAII ECONOMIC RESEARCH ORGANIZATION

Mission: To inform public- and private-sector decision making through rigorous, independent economic research on the people, environment, and economies of Hawai`i and the Asia-Pacific region.



THE UHERO DATA PORTAL

AT A GLANCE

TABLES

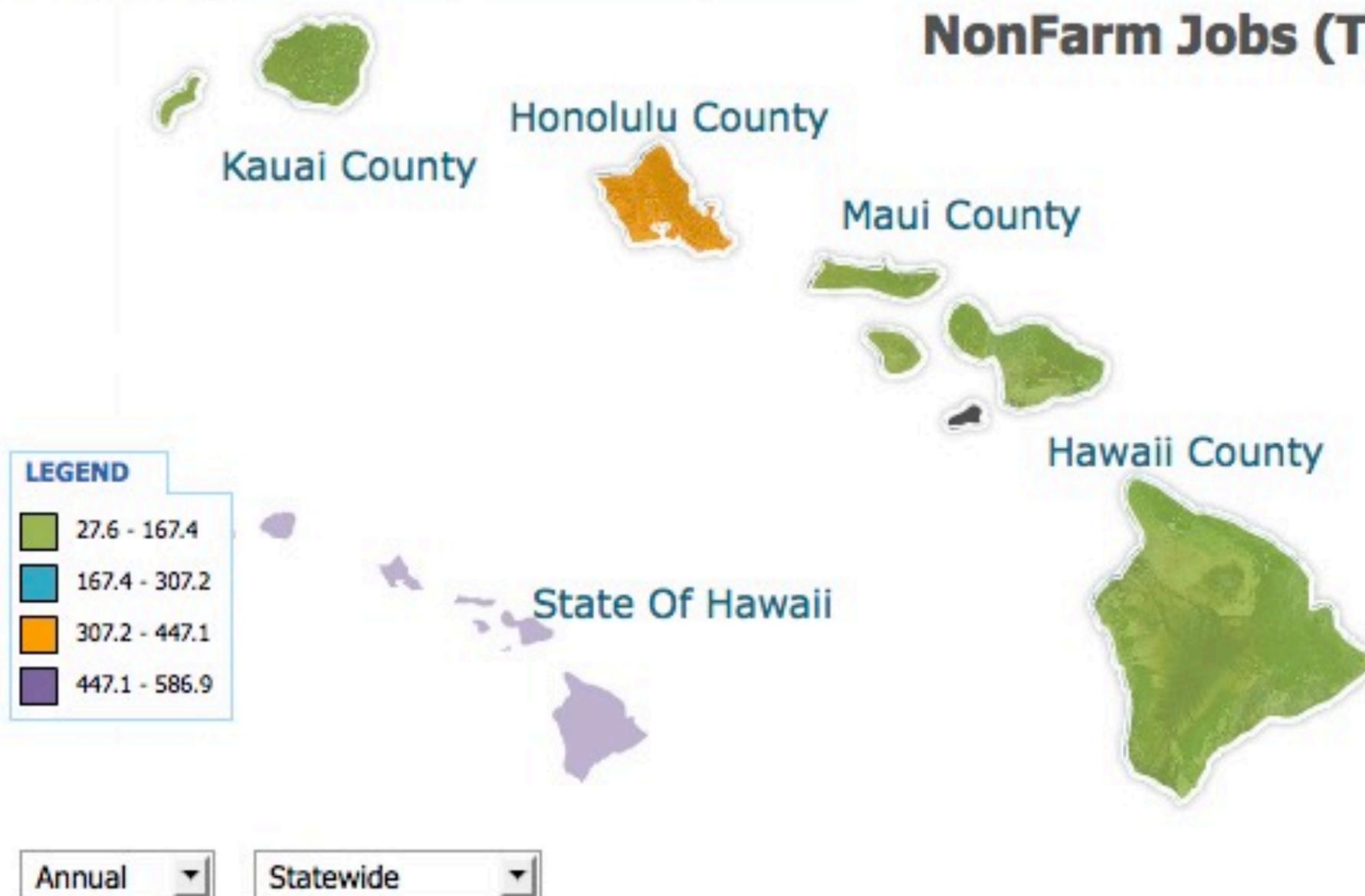
GRAPHS

ANALYZER

FORECASTS

UHERO HOME

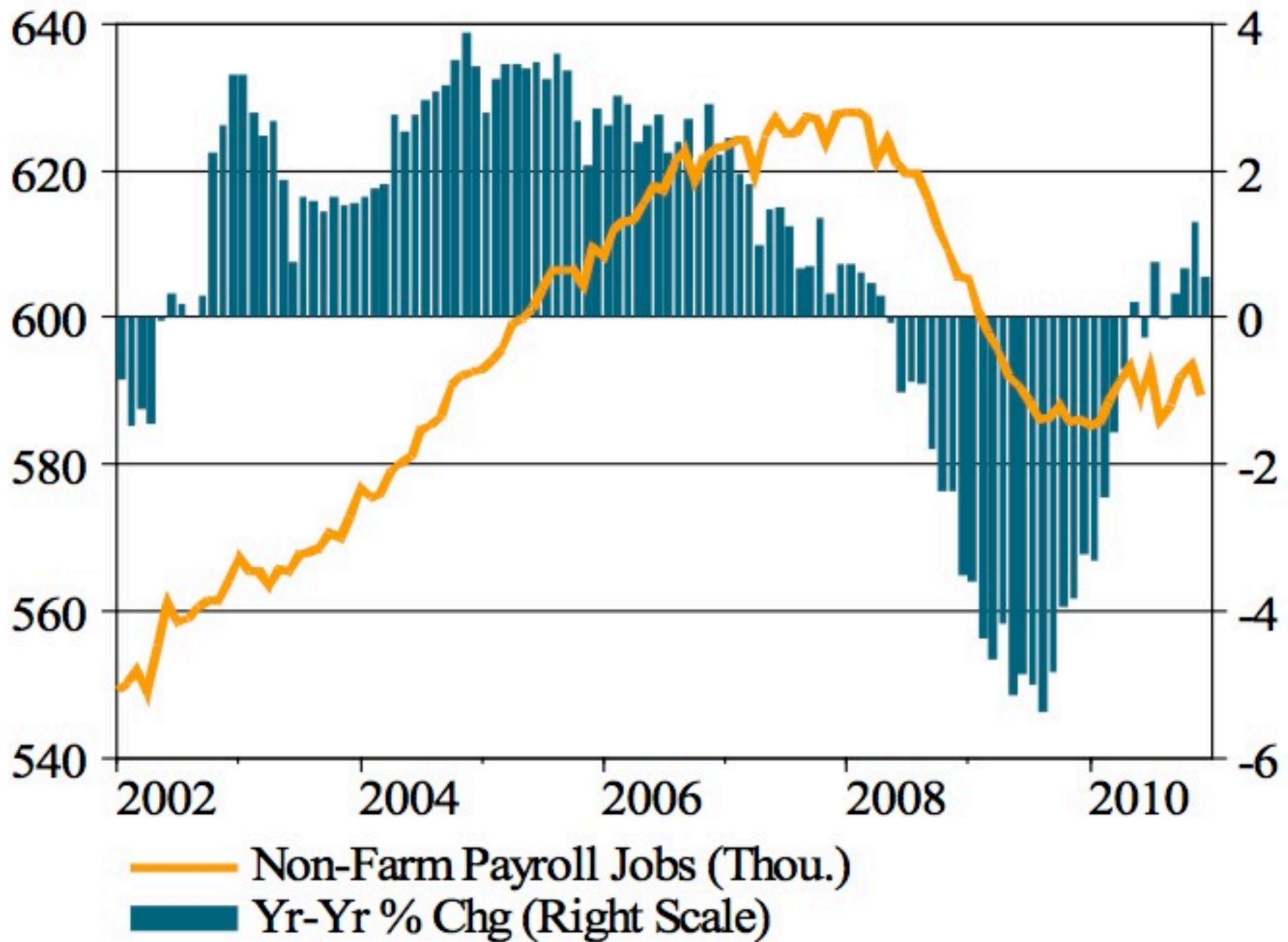
NonFarm Jobs (Thou.), 2010



Statewide At a Glance

Indicators	Source	2005	2006	2007	2008	2009	2010
NonFarm Jobs (Thou.)		601.6	617.1	624.9	619.2	591.7	586.9
Population (Thou.)		1,264.5	1,275.3	1,277.4	1,288.2	1,295.2	1,360.3
Real Per Capita Income (1982-84\$Thou.)		17.7	17.9	18.2	17.9	17.6	17.5
Visitors (Thou.)		7,416.6	7,528.1	7,496.8	6,713.4	6,420.4	6,982.4
Unemployment Rate (%)		2.7	2.5	2.7	4.0	6.8	6.6

UHERO ECONOMIC FORECASTS



STATEWIDE NON-FARM JOBS

UHERO ENERGY & GREENHOUSE GAS SOLUTIONS

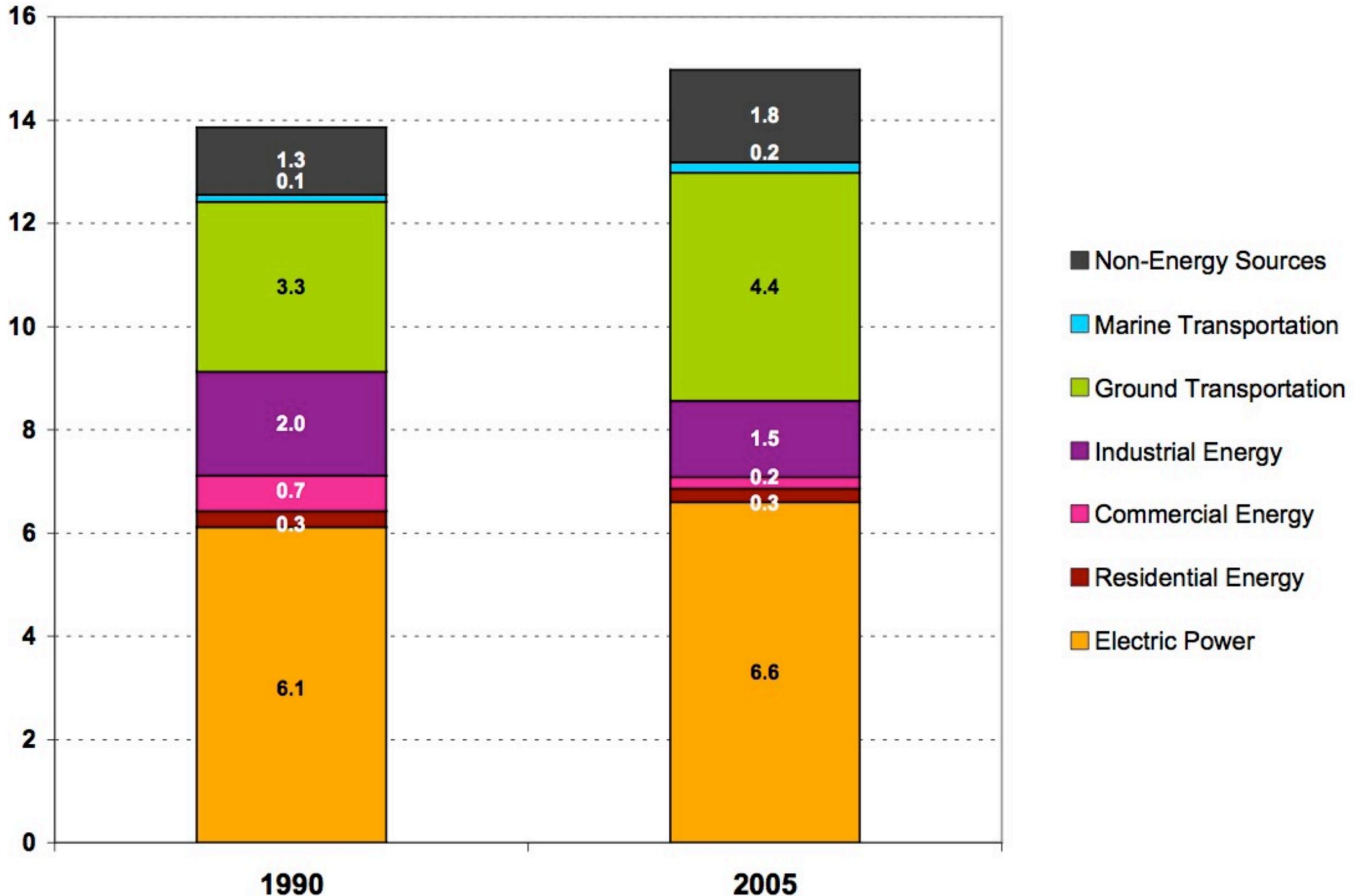
Mission: To analyze and tailor energy and climate change policy for Hawai'i by assessing various technology options and the associated environmental and economic impacts



UHERO EGGS RESEARCH

Hawai'i Greenhouse Gas Emissions Profile 1990 and 2005

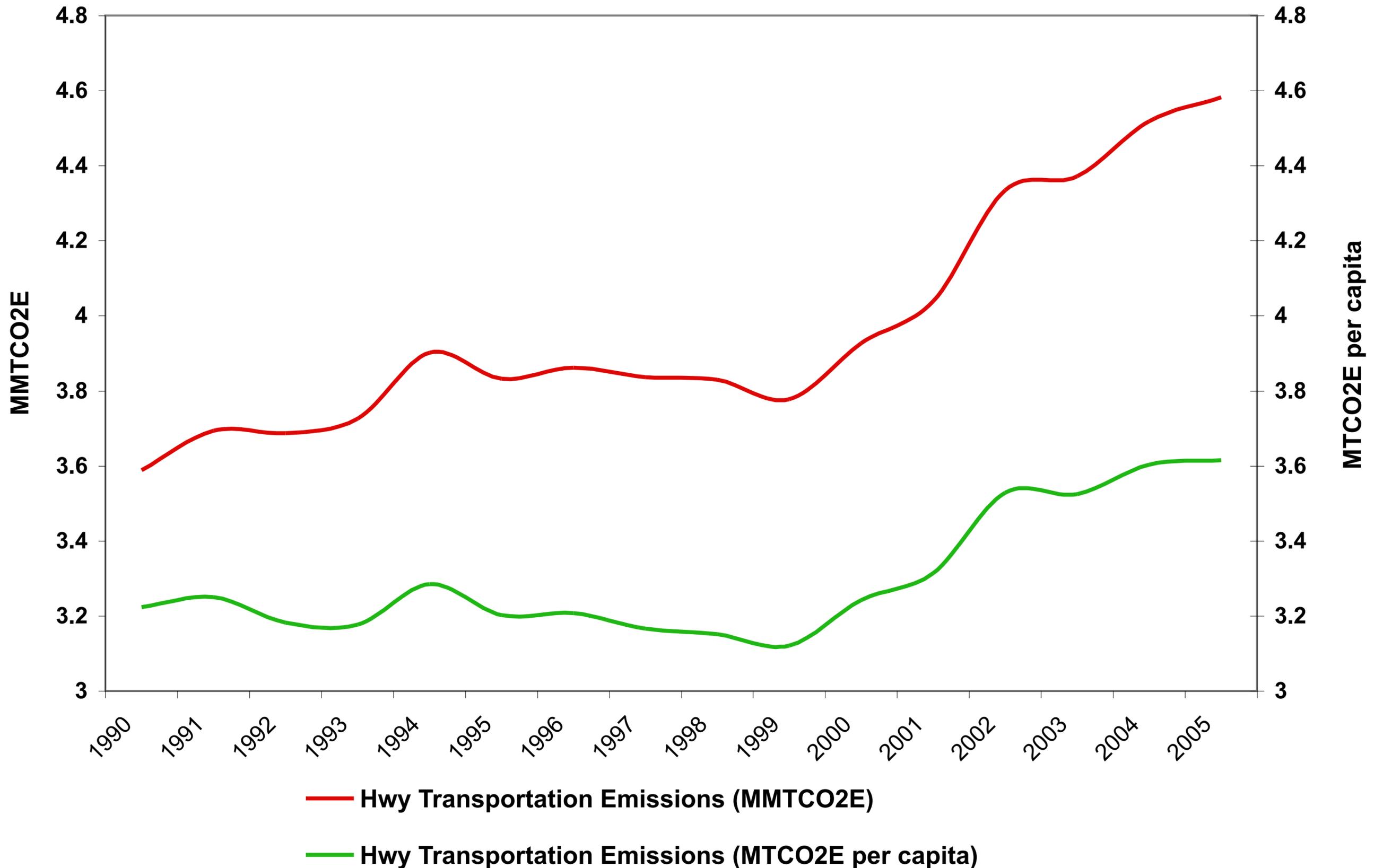
MTCO₂E per Capita



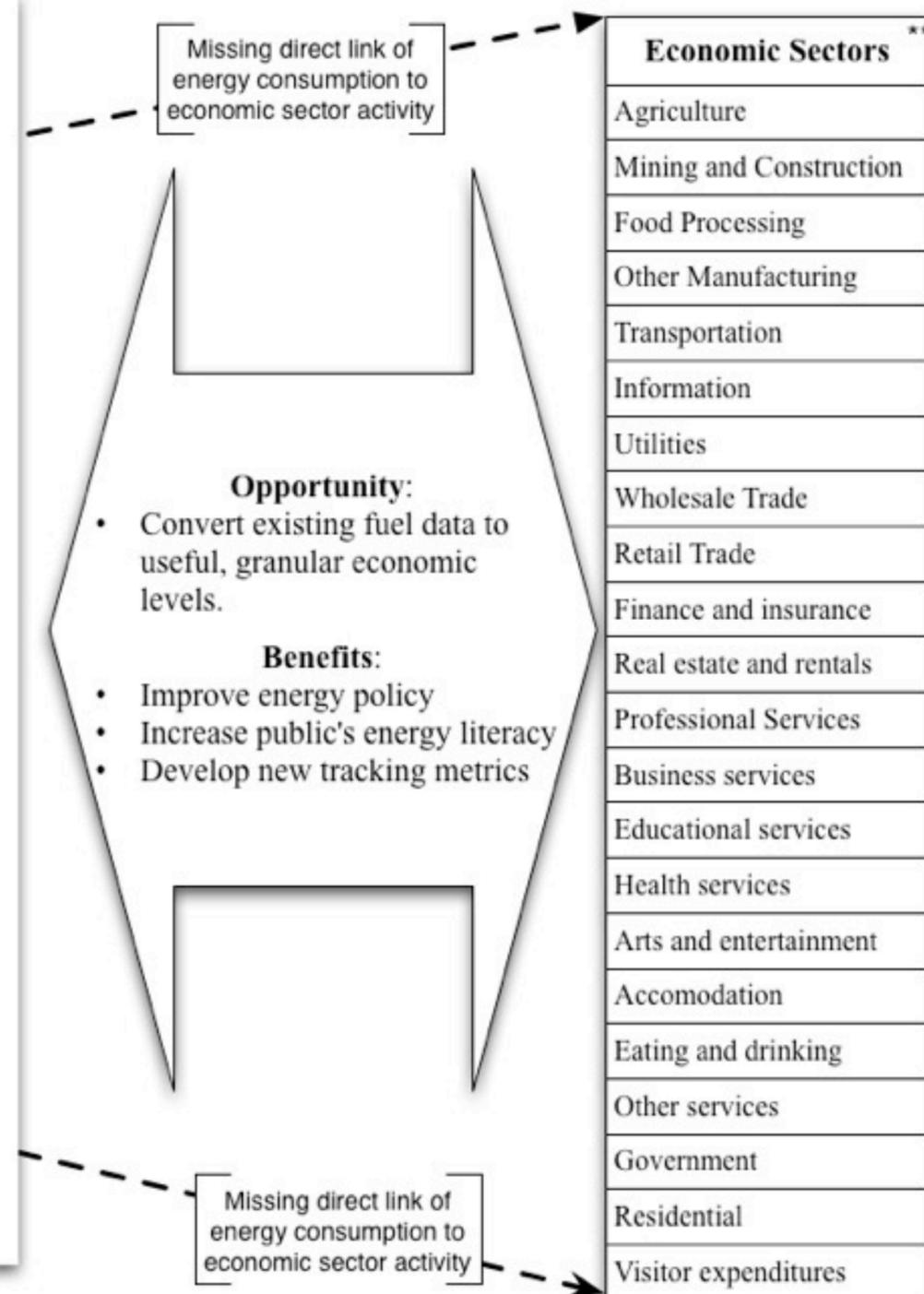
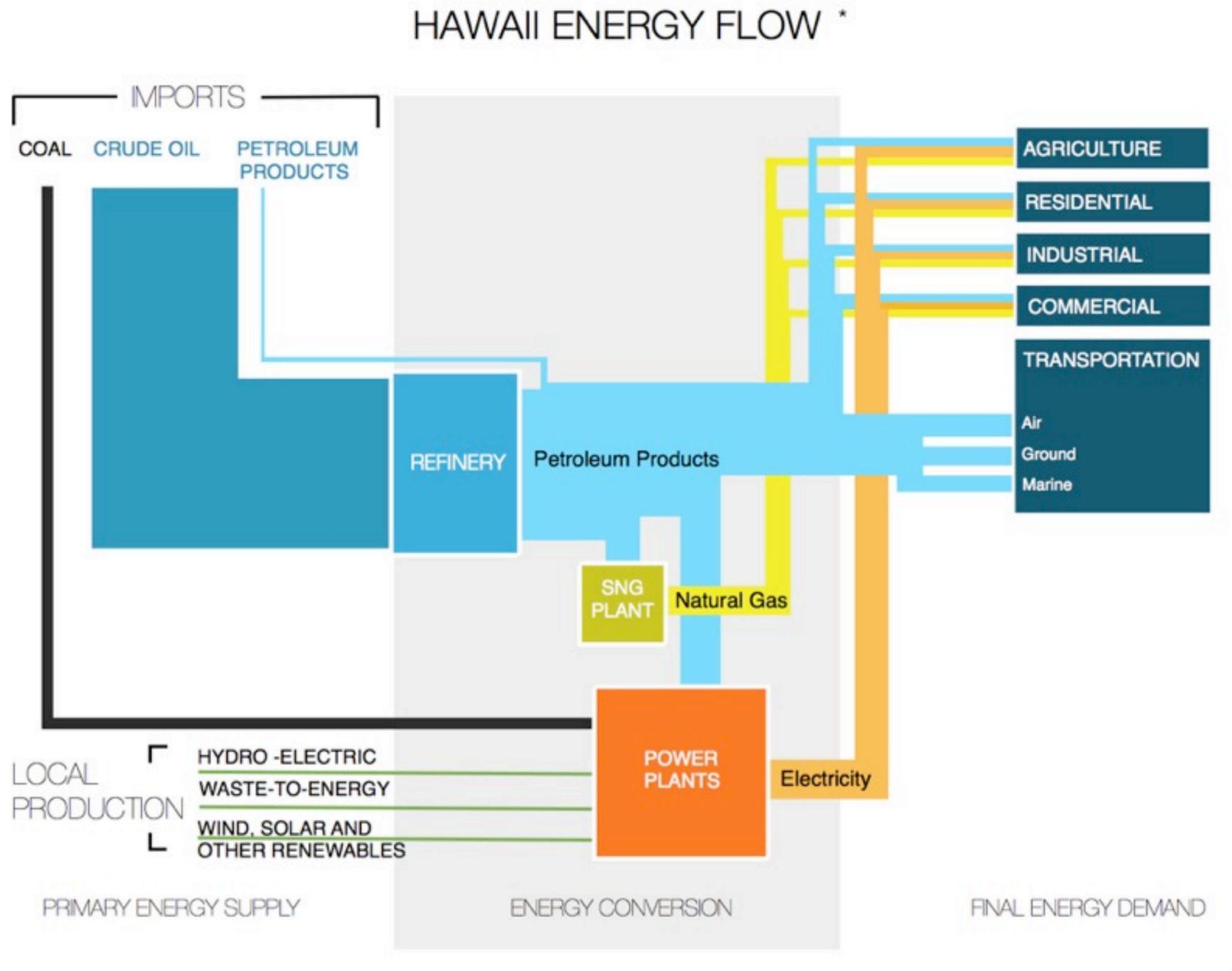
UHERO EGGS RESEARCH

Scaled between 3 to 4.8

Hawaii's Ground Transportation Emissions



GOAL: TO LINK ENERGY TO ECONOMICS



* Konan, DE and HL Chan. 2009. "Greenhouse gas emissions in Hawaii i: Household and visitor expenditure analysis." Energy Economics.

** DBEDT. 2008. Condensed table categorization used in "The 2005 State Input-Output Study For Hawaii".

Resident Versus Visitor Energy and GHG Emissions

	Energy, trillion BTU	GHG emissions MMTCO ₂ e
Total	323.3	23.4
Resident	126.4	9.3
Visitor	72.9	5.2
Visitor less air	33.5	2.4
<hr/>		
Per annum	MBTU	GHG metric tons
Resident	104	7.7
Visitor	464	32.9
Visitor less air	213	15.4
Per capita	267	19.3
Visitor factor	4.4	4.3
Visitor factor less air	2.0	2.0

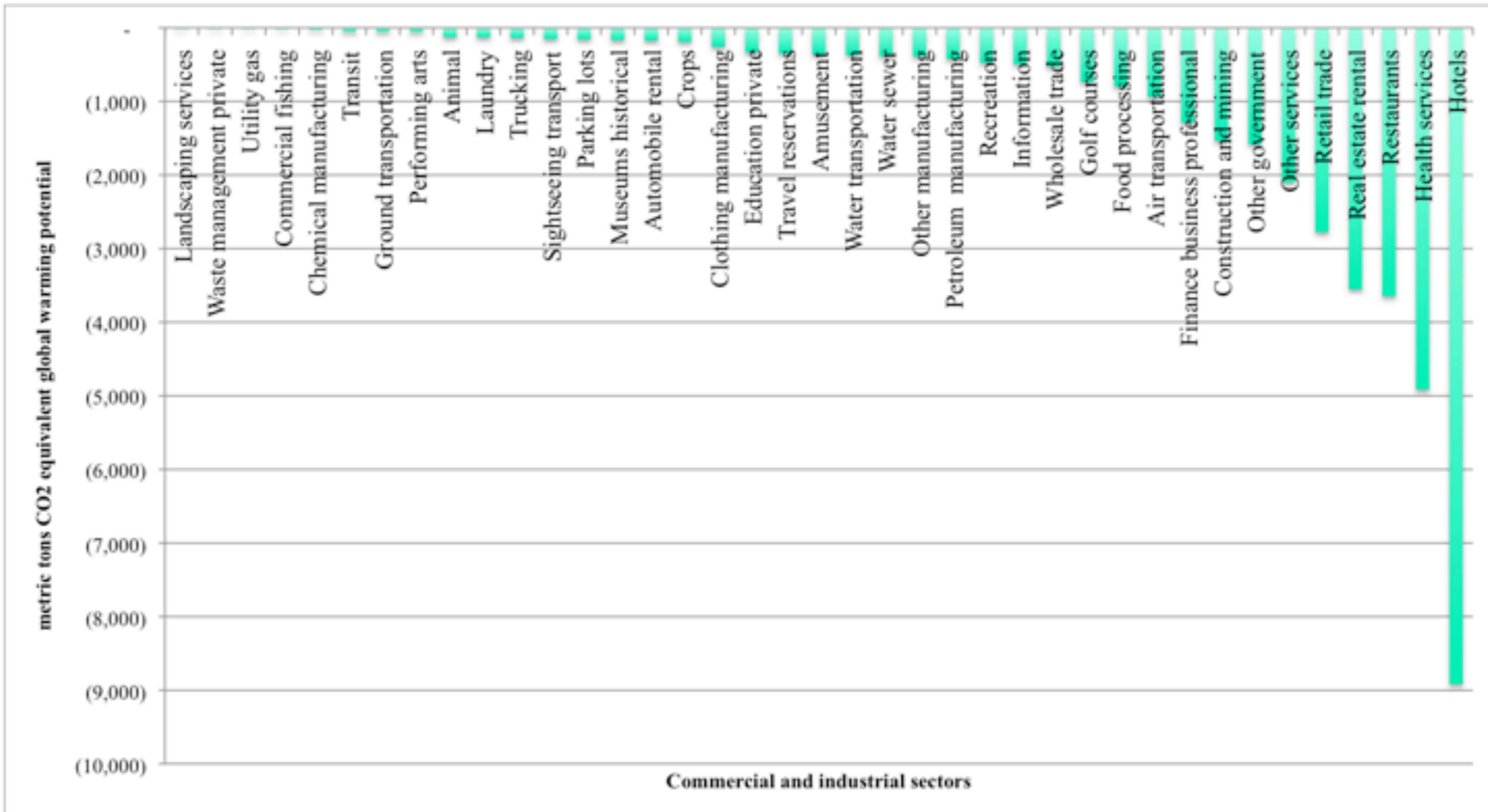
EGGS ENERGY ECONOMICS MODELING

Carbon intensity of industries per \$million produced (metric tons CO2E)

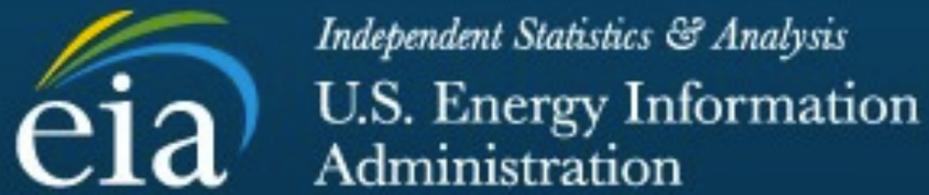
Electricity	7,179.7	Chemical manufacturing	232.9
Utility gas	2,680.2	Parking lots	226.7
Air transportation	1,771.8	Automobile rental	225.8
Commercial fishing	1,484.3	Waste management	225.3
Petroleum manufacturing	765.2	Construction and mining	224.6
Sightseeing transport	443.2	Crops	214.3
Transit	405.3	Other manufacturing	209.4
Ground transportation	400.6	Animal	202.0
Recreation	378.3	Clothing manufacturing	182.9
Food processing	378.1	Health services	178.6
Golf courses	363.0	Travel reservations	165.4
Laundry	345.0	Education private	122.5
Hotels	337.0	Retail trade	106.6
Other services	326.4	Wholesale trade	93.5
Trucking	291.4	Information	85.3
Water sewer	286.9	Real estate rental	81.9
Water transportation	285.8	Landscaping services	75.0
Restaurants	273.8	Finance business	73.8
Amusement	271.5	Performing arts	68.1
Museums historical	254.4	Other government	29.9

EGGS ENERGY ECONOMICS MODELING

Carbon Savings With 1% kWh Conservation



CURRENT SOURCES OF DATA



Hawaiian Electric Company



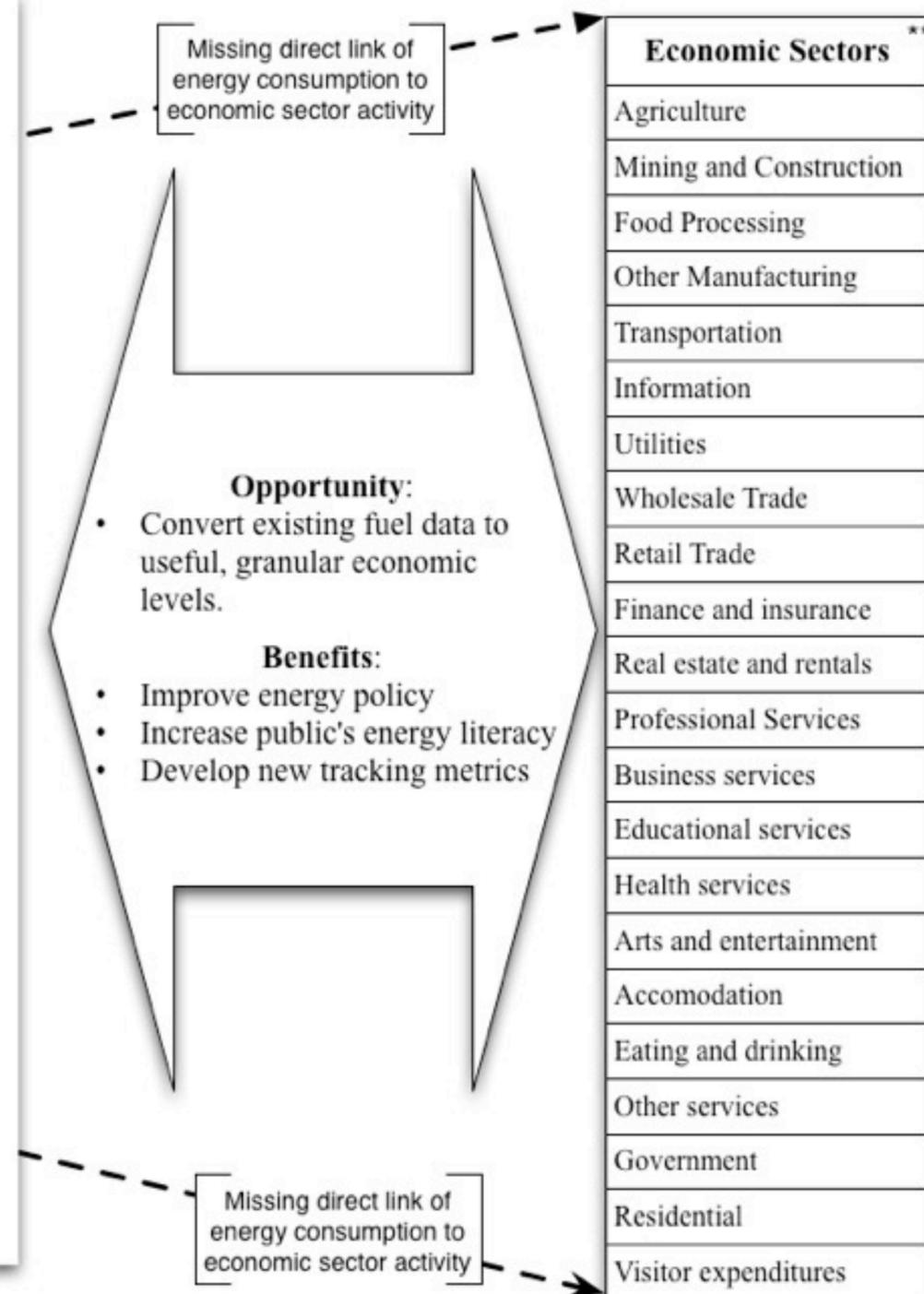
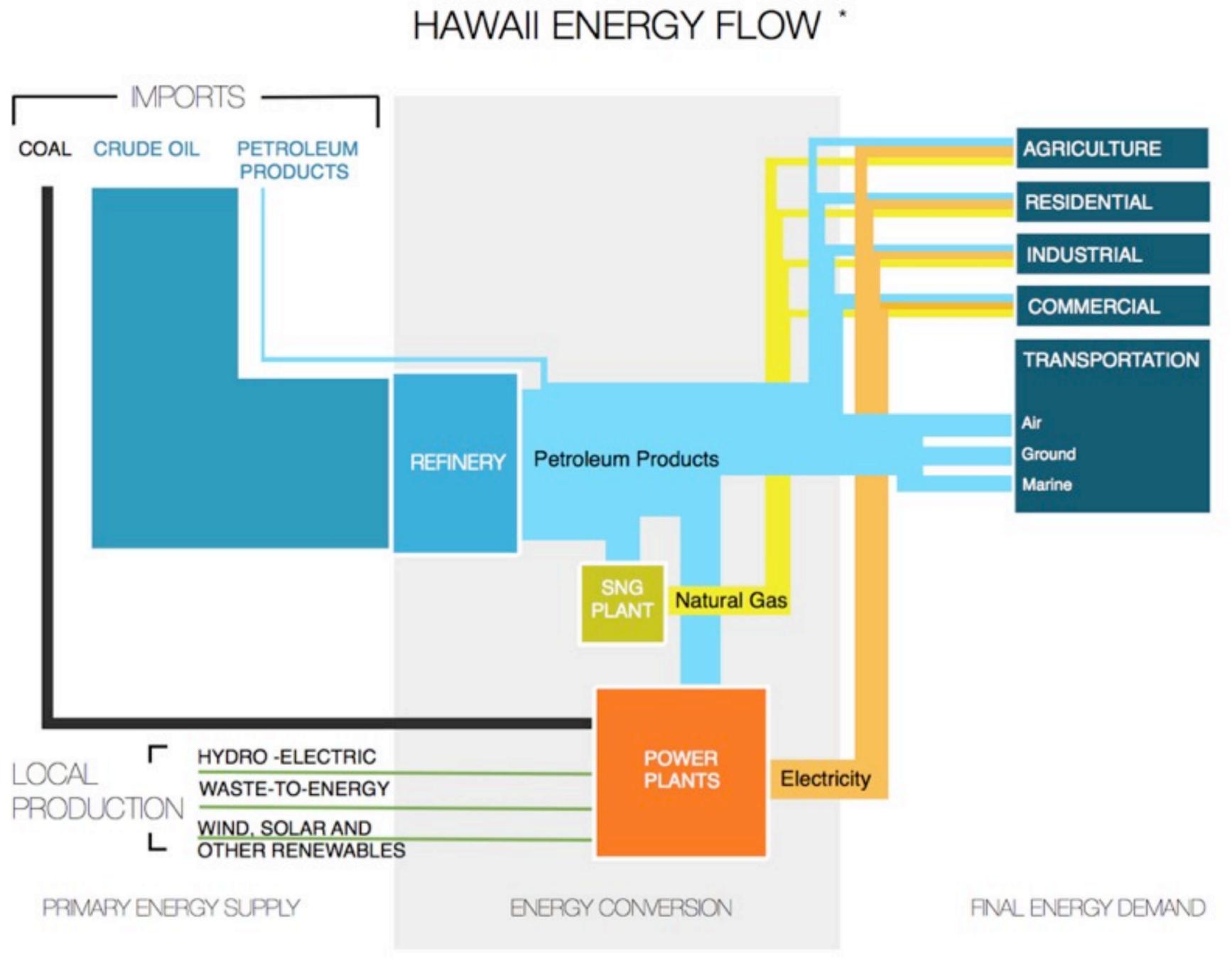
FERC

FEDERAL ENERGY REGULATORY COMMISSION



Major challenge - often times data doesn't match up and is incomplete.

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KEY LESSONS FOR A ENERGY METRICS PROGRAM

- **We need consistency - preference for local sources, standardized units, and time series**
- **Data needs to be centrally compiled and accessible - a one-stop-shop**
- **Data needs to be in a form for all levels of public understanding**

PARTNERSHIPS AND SUPPORT NEEDED

UHERO is a strong partner:

- We possess a dynamic, well stocked data portal
- We have energetic academics and graduate and undergraduates students
- We are a neutral, stable organization interested in supporting all other energy metric and research efforts

Present and prospective partners



Hawaiian Electric Company

