

Clean Energy Solutions

Hawai'i as a Clean Energy Model

Dr. Denise Eby Konan, Dean
April 7, 2014

HAWAI'I IN BRIEF

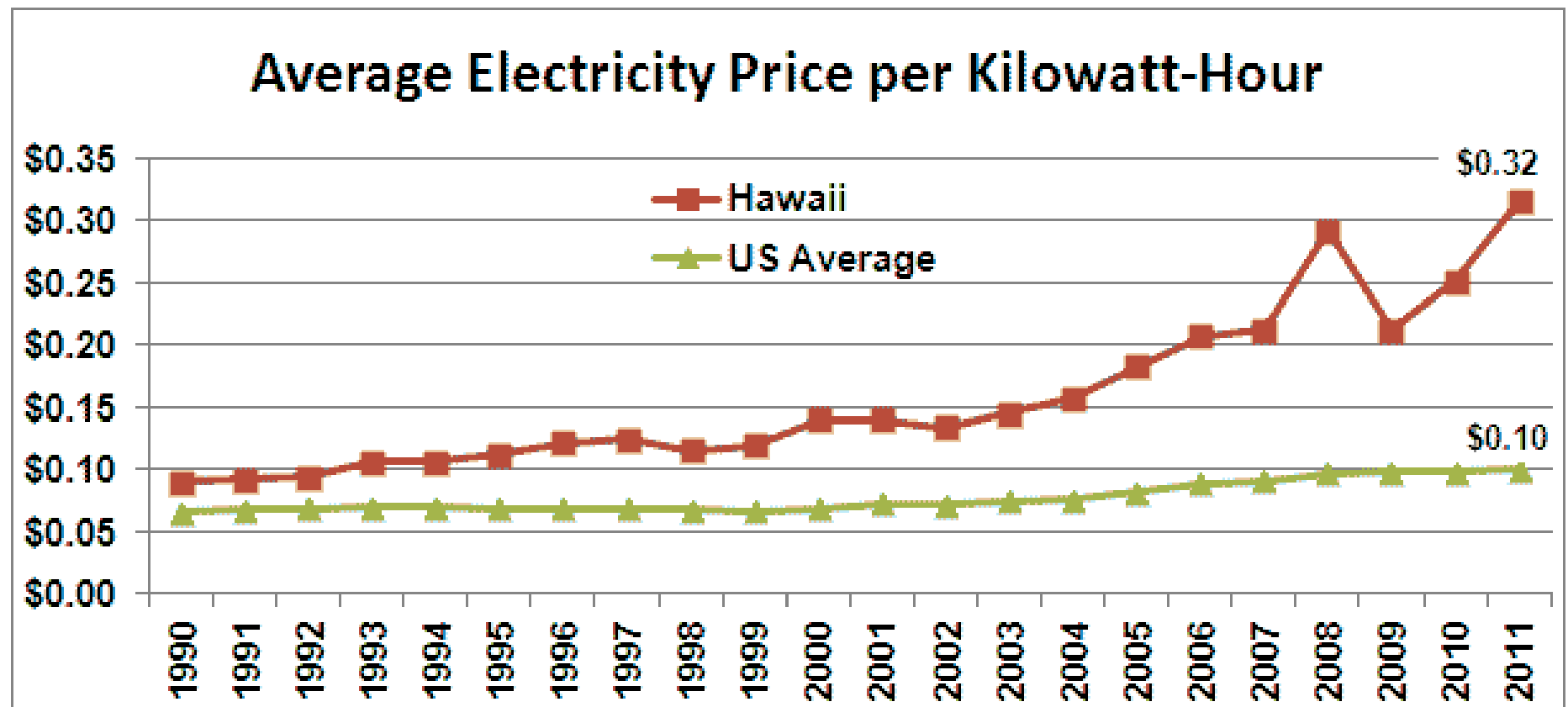
- One of youngest geological formations in the world, formed by undersea volcanoes
- Three active volcanoes:
 - Maunaloa (last eruption 1984)
 - Kilauea (continuous eruption since 1983)
 - Loihi (underwater off southern coast of Hawai'i island).
- Population of more than 1.39 million
- Birthplace of modern surfing, the hula and Hawai'i Regional Cuisine
- Former seat of a royal kingdom and home to the only royal palace on U.S. soil

ENERGY IN HAWAI'I

- Mild tropical climate, 3rd lowest per capita energy use in U.S.
- Imports 94% of its energy.
- World's largest commercial electricity generator fueled exclusively with biofuels.
- In 2011:
 - 25% of Hawai'i's renewable net electricity generation from geothermal energy.
 - Solar photovoltaic (PV) capacity increased 150%.
 - Hawai'i's total primary energy expenditure reached peak of about \$6.1 billion.

ENERGY IN HAWAI'I

Hawai'i's electricity prices highest in the nation.



A RESEARCH UNIVERSITY



- University of Hawai‘i founded in 1907.
- Land-, Sea- and Space Grant university.
- Located on 320 acres in Honolulu’s beautiful Mānoa Valley on the island of O‘ahu.
- Carnegie “Very High Research Active.”
- Member of the Association of Pacific Rim Universities, a network of 45 premier research universities from 16 economies throughout the Pacific Rim.
- \$335 million in research awards.

A RESEARCH UNIVERSITY



- Among the National Science Foundation's top 30 public universities in federal research funding for engineering and science.
- Among the top 150 international universities in the world in the *2012 Academic Ranking of World Universities* (Shanghai Jiao Tong).
- First university in the world to build and launch satellites into space.
- Only university with:
 - Botanical gardens located in a tropical rainforest.
 - Research center and laboratory built on a coral reef.

OUR STUDENTS



- Over 20,000 students (14,000 undergraduates).
- Student/Faculty ratio of 14 : 1.
- Average class size: 21.
- More than 160,000 alumni residing in all 50 U.S. states and more than 108 countries worldwide.
- 96 Bachelor programs, 84 Master programs, 52 Doctoral programs.
- Tuition: \$9,840 resident; \$14,760 WUE, \$28,632 non-resident.
- Room and Board: \$10,500

DISTINGUISHED ALUMNI



- **Hao Ping, MA `95**, Vice Minister of Education in Beijing, China.
- **Arsenio Balisacan, PhD `85**, Socioeconomic Planning Secretary and Director-General of the National Economic and Development Authority of the Philippines.
- **Soon-Kwon Kim, PhD `74**, Professor at Kyungpook National University in Korea, Nobel Prize nominee for work on crop diseases and maize hybrids

DISTINGUISHED ALUMNI



- **Mo-Im Kim, MS `67**, Leader in Korean nursing, first woman to head a Korean government ministry.
- **Yoshiko Sakurai, BA `69**, Writer, former newscaster on Nippon Television Network.
- **Puongpun Sananikone, BA `68**, International development economist and business executive, president of PacMar.
- **Victor Yano, BS `74, MD `78**, Minister of health for the Republic of Palau, founded Belau Medical Clinic.

DISTINGUISHED ALUMNI



- **Jong-Wook Lee, MPH `81**, Director-general of the World Health Organization, advocate for childhood vaccinations, first Korean to head an international agency.
- **Hing Leung Sham, PhD `80**, Senior vice president of chemical sciences at Elan Biopharmaceuticals, inventor of two patented HIV protease inhibitor medications.

COLLEGE OF SOCIAL SCIENCES



- One of 18 colleges and schools at the University of Hawai'i at Mānoa.
- Among the largest of UH Mānoa's units.
- Offers a vibrant academic climate that provides exciting, intense interaction among students and faculty as they address fundamental questions about human behavior.

COLLEGE OF SOCIAL SCIENCES

Collective expertise in key areas made the college well-equipped to play an integral role in APEC Hawai'i 2011: Northeast Asia Economic Forum Expert Working Group on Energy Cooperation in Northeast Asia, Association for Asian Studies Annual Conference, Asia Pacific Trade Seminar, APEC Higher Education Conference and APEC Climate Change Symposium.



COLLEGE OF SOCIAL SCIENCES



- Committed to innovative research initiatives that build upon the college's strengths and provide unique social science perspectives in areas that play essential roles in the university's research efforts.
- Asia-Pacific Disaster Risk Reduction and Resilience.
- Health Informatics.
- Global Studies.
- Daniel K. Inouye Center for Democratic Leadership.

HAWAI'I: A NATURAL LABORATORY



- Unique geographical location and diverse ethnic population provides the perfect natural laboratory to study the interactions of humans with natural environmental systems.
- Hawai'i's Clean Energy Initiative
 - Partnership between U.S. Department of Energy and the state of Hawai'i.
 - Charting new paths to energy-independent future.
 - 40% Renewable
 - + 30% Efficiency
 -
 - = 70% Clean Energy

HAWAI'I: A NATURAL LABORATORY



College of Social Sciences is host to a broad range of sustainability research projects ranging from energy to the environment to natural resource management such as:

- UHERO's **Project Environment** that studies environmental policy and natural resource management.
- UHERO's **Energy & Greenhouse Gas Solutions** Project takes a transdisciplinary approach to research by bringing together economists, planners, engineers and system modeling experts to address urgent issues of energy and climate change mitigation.

HAWAI'I: A NATURAL LABORATORY



- The College's **Hawai'i Energy Policy Forum (HEPF)** is a unique experiment in collaborative energy planning and policy making. It is an organization of over 40 representatives from the electric utilities, oil and natural gas suppliers, environmental and community groups, renewable energy industry, academia, and federal, state and local government - all working together to seek smart energy solutions to sustain a healthy prosperous, and secure Hawaii.

HAWAI'I: A NATURAL LABORATORY



University of Hawai'i is also home to the **Hawaii Natural Energy Institute (HNEI)**.

Established within the University by the Legislature with a mandate of undertaking and coordinating research and development of the state's renewable energy resources

HNEI has become an acknowledged international leader in the energy field, and has broadened its expertise to encompass the development of technologies that will enable us to tap our oceans for energy, food, minerals, and other resources.