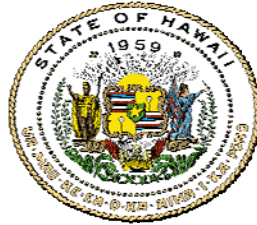


State of Hawaii



PROGRESS REPORT TO THE GOVERNOR AND THE LEGISLATURE OF THE STATE OF HAWAII

Pursuant to
SECTION 196-41, Hawaii Revised Statutes (HRS)

Submitted By
*State of Hawaii Department of Business, Economic Development and
Tourism*

January 4, 2010

**Progress Report to the Governor and the Legislature
Pursuant to
SECTION 196-41, Hawaii Revised Statutes (HRS)**

*Submitted by
The State of Hawaii Department of Business,
Economic Development and Tourism
January 4, 2010*

I. Introduction

This report is submitted by the State of Hawaii Department of Business, Economic Development and Tourism (DBEDT), pursuant to Section (§) 196-41 of Hawaii Revised Statutes (HRS) Chapter 196, Part III, relating to State support for achieving renewable portfolio standards (RPS), to fulfill the reporting requirement specifically assigned to DBEDT. HRS §196-41 was added to the HRS by Act 95 (2004). That Act also established the RPS within HRS Chapter 269. Act 155 (2009) increased the RPS by amending HRS §269-92 to raise the RPS levels to 25% by 2020, and to establish a 40% RPS by 2030. The Act also sets a precedent for electrical utility clean energy portfolio standards by including a separate goal for energy efficiency, establishing an energy efficiency portfolio standard (EEPS) in HRS §269-96. The law calls for the statewide reduction in electricity use of four thousand three hundred gigawatt-hours (4300 GWH) via efficiency measures by 2030 and directs the Hawai'i Public Utilities Commission (PUC) to establish incentives and penalties that foster compliance. The law also directs the PUC to establish interim goals for electricity use reduction to be achieved by 2015, 2020, and 2025.

Hawaii's RPS and EEPS are significant elements of the Hawaii Clean Energy Initiative (HCEI), which aims to achieve energy independence and security, economic diversity, and environmental protection through reduced dependence and use of imported fossil fuel, and to provide 70% of Hawaii's energy needs through clean energy by 2030. HRS §196-41(a) and (c) state DBEDT's specific role and reporting as follows:

[§196-41] State support for achieving renewable portfolio standards.

- (a) The department of land and natural resources and department of business, economic development, and tourism shall facilitate the private sector's development of renewable energy projects by supporting the private sector's attainment of the renewable portfolio standards in section 269-92. Both departments shall provide meaningful support in areas relevant to the mission and functions of each department as provided in this section, as well as in other areas the directors of each department may deem appropriate.

(c) The department of business, economic development, and tourism shall:

- 1) Develop a program to maximize the use of renewable energy and cost-effective conservation measures by state government agencies;
- 2) Work with federal agencies to develop as much research, development and demonstration funding, and technical assistance as possible to support Hawaii in its efforts to achieve its renewable portfolio standards; and
- 3) Biennially, beginning in January 2006, issue a progress report to the governor and legislature.

II. DBEDT Activities and Initiatives in Support of §196-41(c)(1) and DBEDT Activities and Initiatives in Support of §196-41(c)(2)

The following activities were implemented by DBEDT to maximize the use of renewable energy and cost-effective conservation measures by state government agencies pursuant to §196-41(c) (1), and/or in partnership with federal agencies to develop the maximum possible research, development and demonstration funding, as well as technical assistance, to support the State's efforts to achieve its renewable portfolio standards, pursuant to §196-41(c) (2):

A. Hawaii Clean Energy Initiative (HCEI):

Transforming Hawaii's energy economy within a single generation is the goal of the Hawaii Clean Energy Initiative (HCEI), a partnership between Hawaii and the U.S. Department of Energy (USDOE), which was publicly announced on January 28, 2008. HCEI will move Hawaii from near-total reliance on fossil fuels to attaining 70% of the state's energy from indigenous renewables and efficiency measures by 2030. Analyses produced for HCEI indicate that 70% clean electricity is attainable if significant efficiency programs, major grid modifications and about 1500 MW of new renewable energy capacity are implemented. However, achieving the 70% goal for ground transportation may be harder, even with strong programs for biofuels and electric vehicles.

1. State-HECO Energy Agreement, October 20, 2008:
Signaling agreement on key actions, the Hawaiian Electric Co. (HECO) family of utilities voluntarily agreed to a number of actions after extensive discussions with DBEDT and the USDOE. The Energy Agreement can be found in its entirety at:
www.hawaii.gov/dbedt/info/energy/agreement. In the Energy

Agreement, HECO and the state agreed to move from central-station, oil-based power to a more renewable, distributed- and intermittent-powered system while preserving the stability of the grid, minimizing disruption, and keeping the utilities financially sound. The Energy Agreement includes the following points:

- Increasing Renewable Portfolio Standard goals to 25% (from 20%) by 2020 and 40% by 2030.
 - Developing an Energy Efficiency Portfolio Standard.
 - Accelerated addition of clean energy resources on all islands.
 - Laying an undersea cable linking Oahu and wind farms on Molokai and/or Lanai.
 - Establishing feed-in tariffs to standardize rates for utilities' purchase of renewable power.
 - Decoupling utility revenue from electricity sales.
 - Removing system-wide caps on net energy metering.
 - New programs for solar water heating and photovoltaics
 - Aggressively supporting alternative fuel and electric vehicles.
 - Installation of advanced meters for customers who request them.
2. HCEI Working Groups: Five HCEI working groups, End-Use Efficiency, Electricity, Fuels, Transportation, and Integration are co-chaired by DBEDT and USDOE professionals, assisted by experts from national laboratories and the private sector. Utilities, renewable energy companies, legislators, federal agencies, and others are participating in the working group process.
3. Legislation: HCEI has produced a proactive package of new legislation and regulatory policies to implement changes in electricity consumption, power generation, grid management and transportation. Several HCEI-initiatives proposed in the 2009 legislature were enacted into law and effectively codified major elements of HCEI:
- In 2009 DBEDT provided analysis and recommendations regarding Act 155, which made Hawaii's Renewable Portfolio Standard (RPS) more aggressive, bringing its objectives in line with the Hawaii Clean Energy Initiative (HCEI); the goal is now 40% renewable electricity by 2030. The bill also created a new Energy Efficiency Portfolio Standard (EEPS) which mandates measures to save 4,300 gigawatt-hours of electricity by 2030. With its dual goals of 30% energy efficiency and 40% renewable energy, the Clean Energy Omnibus Bill puts Hawai'i's electrical generation sector directly in line with the

Hawai‘i Clean Energy Initiative goal of 70% clean energy by 2030. The measure also established that the State Energy Resources Coordinator has the authority to designate Renewable Energy Zones, and the role of the energy permitting facilitator has been expanded and clarified. Act 155 also changes the renewable energy tax credit to attract more private investment. The changes also allow Hawaii residents who do not have a tax liability to receive a refund instead of a tax credit for the installation of renewable energy equipment. The bill also eliminated a tax loophole in Hawaii’s law mandating solar water heaters on new residential construction.

- DBEDT in 2009 also provided analysis and recommendations regarding Act 154, amending an existing law, in effect since 1990, which provided personal and corporate tax credits of up to 35% of the cost of installing solar electric and solar thermal equipment and up to 20% of the cost of installing wind turbines. As amended, the law now enables individuals and corporations to receive a tax refund when their earned tax credits under this program exceed their state income tax for the year.
 - DBEDT also provided analysis and recommendations regarding Act 050, 2009, which deletes avoided cost by a utility in determining a just and reasonable rate for non-fossil fuel generated electricity, allowing wholesale electricity purchases to be priced on a basis other than the changing price of oil. For example, the utility may purchase electricity at a fixed price.
 - DBEDT assisted in the passage of Act 156, which seeks to make Hawai‘i residents more comfortable investing in electric and plug-in hybrid electric vehicles (PHEVs) by fostering development of electric-vehicle infrastructure. The new law requires parking lots to include spaces dedicated to electrically charged vehicles and sets up a grant program for building electric-vehicle infrastructure.
4. HCEI Projects: HCEI has already instigated a number of projects which will contribute to the transformation of Hawaii’s energy economy by 2030. Some of these projects are being undertaken by HCEI partners at national laboratories and within the private sector, in consultation with DBEDT and local utilities. Others are complementary efforts pursued by the University of Hawaii,

cooperating federal agencies and other parties in both the public and private sectors. The projects include:

- Modeling electricity grids on all islands
- Wind resource and storage testing
- Maui grid integration
- 100% renewable Lanai
- Forest City (Navy) highly efficient communities
- National Marine Renewable Energy Center at the Hawaii Natural Energy Institute (HNEI) of the University of Hawaii (UH)
- Bioenergy Master Plan
- Regulatory framework development
- Interisland cable feasibility and cost/benefit studies
- Economic modeling of energy system
- Technical and economic assessment of plug-in hybrid and electric vehicles
- Hawaii greenhouse gas carbon tax/abatement analysis
- 70% clean energy scenario analyses

5. 2008 Federal Grants:

- A USDOE grant in 2008 providing \$7 million over three years will allow HNEI, HECO and other partners to determine ways of maximizing the use of intermittent renewable electricity through grid improvements, focusing on a substation on Maui. An additional \$8 million in matching funds is committed by the private sector.
- Innovative demand side management, electrical storage, smart grid technologies and electrical transmission and delivery technologies are among the policy options which will be applied to utility grid infrastructure under a \$500,000 grant to DBEDT in 2008 from USDOE.
- USDOE Grid studies project: Developing product concepts for integrating commercial and residential photovoltaic generation with the electrical grid is the goal of another USDOE project started in 2008, involving Sandia National Laboratories, GE, Sentech and HECO. Improvements are expected to reduce homeowner utility bills as well as the utilities' peak loads.

6. National Governors Association (NGA) grant: In 2008, a \$50,000 grant to support the HCEI by analyzing the costs and benefits of

electric vehicles was received in 2008 from the NGA Center for Best Practices. Infrastructure improvements needed to support electric vehicles will also be studied. Hawaii was one of 12 states to receive the grant.

7. 2009 American Recovery and Reinvestment Act (ARRA): Some federal ARRA stimulus funds received by DBEDT have been translated into a number of temporary staff positions which will engage in renewable energy permitting, grants management, public outreach and other tasks.
8. DBEDT received an Energy Assurance grant under ARRA in the amount of \$318,000 that will address the protection of critical energy infrastructure and the means by which its resiliency can be strengthened through secure information sharing and communication, better coordination and planning, and attention to physical, operational, and cybersecurity considerations. Best practices will be identified for response actions, procedures, and policies for both non-fossil fuel energy sources and specific renewable energy portfolios, such as renewables, biofuels, and Smart Grid technologies, etc., thus supporting more comprehensive, and effective State pre-planning and response measures.
9. Renewable Energy Zones (REZ): As a part of HCEI, DBEDT staff held extensive discussions on REZ with staff of Department of Land and Natural Resources (DLNR), NREL and others to discuss scope and approach of the REZ effort. Staff participated in several webinars on REZ activities in other states to obtain background information and identify commonalities. On September 29, 2009, staff held a renewable energy data meeting to review available resource data, discuss improvements needed, and coordinate data gathering and analysis efforts.
10. The National Renewable Energy Laboratory (NREL): NREL in Colorado provided professional staff support in 2009 to HCEI. Two researchers were assigned to Hawaii to work with HCEI on electric utility and efficiency issues.
11. Energy Development in Island Nations (EDIN): The United States and New Zealand in 2008, later joined by Iceland in 2009, launched EDIN, which aims to further the development of energy efficiency

and renewable energy technologies in island nations and territories. Governor Linda Lingle attended the signing ceremony in the Commonwealth of The Bahamas during June 2008, and a subsequent EDIN meeting with representatives from the three founding nations, was held in Honolulu in April 2009, with participation by DBEDT staff. Hawaii's clean energy initiative will serve as a model for other island entities.

12. HCEI Outreach:

- Hawaii Powered, Clean Energy Festival: The Hawai'i State Energy Office, Blue Planet Foundation, the Hawaii Energy Efficiency Program and the Hawaii Energy Policy Forum celebrated landmark energy bills passed in the 2009 legislative session and raised awareness of HCEI's pivotal role in securing Hawaii's energy independence on July 18, 2009 at the Hawaii Powered, Clean Energy Festival. The Hawaii State Energy Office and US Department of Energy, as the two founding partners for the Initiative, presented the new HCEI logo and the vision for the next steps for Hawaii's clean energy future. Exhibitors showcased clean energy products and tools, exchanged old incandescent light bulbs with new CFL light bulbs, demonstrated how to make bio-diesel, offered free test rides of electric bikes, and displayed the new Tesla high speed electric roadster, VW Biodiesel Car and other eco-friendly vehicles. Over 100 eco-friendly prizes and giveaways were donated.
- DBEDT staff and a representative from the Hawaii Public Housing Authority attended the GovEnergy 2008 conference and exhibit in Phoenix, Arizona, from August 3-6, 2008. Over 2,500 participants from federal, state and county agencies and more than 200 exhibitors participated in this event. Participants from the State included the Hawaii Army National Guard; Department of Education (DOE); Department of Accounting and General Service (DAGS), the City and County of Honolulu; and the County of Kaua'i. There were more than 100 technical training sessions offered. Staff focused on the financing track (alternative financing mechanisms, cutting edge financing mechanisms, renewable energy financing, and lender's perspective on alternative financing).
- Newsletter: *Hawai'i Powered News*, launched in July, 2009, is a quarterly e-mail newsletter that discusses recent news and events about the HCEI.

- Website: The new HCEI website was developed in partnership by the National Renewable Energy Lab and DBEDT; <http://www.hawaiiicleanenergyinitiative.org>.
- HCEI Brochure was developed and launched in 2009.

B. Other RPS - related legislation:

1. Recognizing that obtaining permits for renewable energy projects has been a major barrier, in 2008 DBEDT worked to help reduce the complexity by providing analysis and recommendations regarding Act 207, which enables streamlining of permitting. Act 207 assigns responsibility for designing a streamlined permitting process to DBEDT's director. A new renewable energy facilitator position within DBEDT was created by Act 208. The facilitator, who was hired in August 2008, coordinates energy projects and proposes changes to the permitting process.
2. To encouraging both renewable energy and agriculture, DBEDT worked with the 2008 legislature to create a new loan program which was signed into law by Governor Lingle as Act 209. Full-time farmers, ranchers and aquaculturalists can reduce their dependence on fossil fuels by generating renewable electricity or fuel for their farms. Funds can be used for infrastructure, equipment, land improvement and operating costs.

C. Renewable Energy Activities and Projects:

1. Streamlining Permitting: Rules for coordinating permitting of renewable energy projects, as called for by Act 207, Hawaii Revised Statutes (HRS) 201N, have been drafted. The rules will also allow DBEDT to collect fees from renewable energy developers in order to expedite permits.
2. DBEDT permitting staff are working with Sentech and NREL to identify all of the permits necessary for renewable energy projects in Hawaii. The project will produce breakdowns of federal and state

permits required for geothermal, hydro, OTEC, wave, wind, waste to energy, biomass and solar projects as well a relevant county permits for each Hawaiian Island. The project team is currently drafting process flow charts and requirements for each permit, and consulting with the respective agencies on the permitting requirements. The project is expected to be complete in January of 2010. Following submission of the report, DBEDT plans to meet with renewable energy companies and permitting agencies to develop streamlined approaches to development.

3. Working with DBEDT, the Department of Health (DOH) will create an on-line system to shorten and simplify the permitting process for renewable energy projects. The project will allow permit applicants to fill out permit applications online give the DOH the ability to track and process permit applications more quickly.
4. Interisland Cable: Oahu, with its dense population, has comparatively few renewable energy resources. On the other hand, Lanai and Molokai have vast wind resources, far more than can be used locally. In order to achieve the goals of HCEI, the state, HECO, landowners and renewable energy developers envision developing 200 MW of wind on each of the smaller islands and transporting it via undersea cable to Oahu. Initial steps are being taken to define the project, and numerous meetings were held in 2009 with the potentially affected communities. Community concerns include aesthetics and access. To better understand the challenges posed by the undersea terrain, the UH School of Ocean and Earth Science and Technology has completed an ocean floor survey which will support analyses of possible routes and landing sites. DBEDT has issued a Request for Proposals for an environmental impact statement, to be prepared beginning in 2010. The cable could save Hawaii taxpayers some \$5.7 billion over 20 years by avoiding purchase of 2 million barrels of imported oil annually.
5. Bioenergy Master Plan: The state's Bioenergy Master Plan was kicked off in May 2008, a draft was provided June 30, 2009 and the final was completed for submission to the legislature in December, 2009, as required by the legislature. The work was orchestrated by HNEI under contract to DBEDT. The issues and outcomes were studied in the context of four major industry components: feedstock production, conversion, distribution, and end use. Recommendations from nine separate studies were used to form a roadmap for

bioenergy in Hawaii. The plan outlines priority actions, including policy development, providing incentives for early implementation, developing an evaluation methodology based on life cycle principles, and performing a cost/benefit analysis of the reuse of treated water. A sampling of the meetings and events held during the process of the Plan development include:

- The "Bioenergy Master Plan - A Conversation with Hawaii's Agricultural Sector," held on September 5, 2008 (presentations are posted: <http://hawaii.gov/dbedt/info/energy/renewable/bioenergy/ag2008/>).
 - The Bioenergy Master Plan project Stakeholders Meeting was held on April 2, 2009.
6. Training, Education, and Information: DBEDT staff held numerous and varied educational and training events and meetings, as public interest in renewable fuels, electric, energy-efficient, and plug-in hybrid vehicles continued to grow. Among them were the following:
- 2008: DBEDT staff presented information on Hawaii's biofuels projects & programs at the July Conservation Conference; in August attended the Land Use workshop sponsored by the Hawaii Community Foundation, introduced the Bioenergy Master plan, requested input, and distributed surveys; presented information to the Pacific Peer Exchange on September 17; made a presentation to the Dept. of Labor and Industrial Relations on September 18; presented on Hawaii's energy alternatives at the Air Cargo Day event on October 14; at the Chemistry Forum at Windward Community College, October 29; and to the car rental association (CATRALA), November 20.
 - 2009: Staff made a presentation on alternative transportation fuels to the annual meeting of the Aloha Petroleum fuel distributors in January; presented information on Hawaii's energy alternatives at the Women's History Month event at Pearl Harbor Naval Base in March; and presented on alternative fuel vehicles to the Rebuild Hawaii Consortium in June.

7. Electric Vehicles:

- Six Toyota Prius vehicles were converted to plug in hybrids under an Idaho National Laboratory program in January, 2009. Vehicles are being used by Hawaiian electric Company, Maui Electric Company, Maui County, the University of Hawaii, the Hawaii State Energy Office, and the US Air Force.
- DBEDT is working with the Hawaii Auto Dealer's Association and automobile manufacturers to promote electric vehicles and develop electric vehicle charging infrastructure compatible with industry standards

8. In 2009, DBEDT assisted UH-Hilo in developing an RFP for a photovoltaic (PV) installation.

9. In 2009 DBEDT met with several renewable energy companies that are seeking to develop projects throughout the state. DBEDT is working with these companies and several federal, state, and county agencies to help make these projects come on line in the coming years. By island, these projects have the following proposed capacities:

- Kauai – 30 MW , 17.8 MGPY Biofuel
- Oahu – 130 MW, 3 MGPY Biofuel
- Maui – 45.5 MW
- Lanai – 200 MW
- Molokai – 200MW
- Hawaii – 45 MW, 5 MGPY Biofuel

D. Public Utilities Commission (PUC) Dockets:

The Energy Agreement entered into between the State and the HECO Companies in October 2008 under the auspices of HCEI, propelled several clean energy policy-related issues that require regulatory decisions, resulting in the initiation of several dockets by the Public Utilities Commission (PUC). DBEDT/SID is an intervener in several of these dockets affecting the achievement of the HCEI goal of transforming Hawaii from the most fossil-fuel dependent economy to a 70% clean and renewable energy-based economy by 2030.

1. Decoupling: One major transformative change to the Hawaii utility regulation currently being considered by the PUC is the implementation of a decoupling mechanism for the HECO Companies. Decoupling is an alternative form of utility ratemaking which de-links the utility's revenues from its kilowatt-hour sales. The regulatory process on the implementation of a decoupling mechanism commenced with the initiation of Docket No. 2008-0274 by the PUC in October 2008, and followed an accelerated schedule that included technical workshops, the filing of information requests, statement of position, panel hearings, and post hearings briefs by the parties – which all together provided extensive record on the many issues raised in the docket. The docket is now awaiting the PUC decision and order on the issues raised in the docket.

2. Feed-in Tariffs: In October 2008, the PUC initiated another groundbreaking docket to examine the design and implementation of feed-in tariffs for the HECO Companies to accelerate the use and addition of renewable resources in the utilities' generation portfolio pursuant to the Energy Agreement. Feed-in tariffs are designed to encourage increased development of renewable energy generation by providing certainty and stability to the purchased power rates (and therefore, to the developer's revenue stream), as well as a more transparent and streamlined utility procurement and interconnection process. In September 2009, the PUC issued its order on the general principles for the design of feed-in tariffs for the HECO Companies. The second phase of the docket schedule is in-progress and focuses on developing the feed-in tariffs in accordance with the PUC guidelines.

3. PV Host: Pursuant to the Energy Agreement, the HECO companies filed a proposal with the PUC in April 2009 to implement a two-year PV Host Pilot Program which would target the installation of 8MW of PV systems on Oahu, 4MW on Maui, and 4 MW on Hawaii (Big Island). Under the program, the utilities will lease rooftops and other sites, and will target governmental facilities including the County, State, and Federal sites where appropriate. The HECO Companies envision the program as another mechanism for increasing the amount of renewable energy in their generation portfolio.

4. Clean Energy Scenario Planning (CESP): Another initiative supported by the Energy Agreement is the implementation of CESP in developing the utilities resource plan to meet Hawaii's future energy needs. Since 1992, the utilities' long-term resource planning focused

mainly on generation planning and was governed by the Integrated Resource Planning (IRP) Framework established by the PUC in 1992. The 1992 IRP Framework required the utilities, both gas and electric utilities, to identify the mix of supply-side and demand-side resources for meeting future energy needs at the lowest reasonable cost. In May 2009, the PUC issued an order initiating the CESP docket to examine proposed amendments to the 1992 IRP Framework to guide the utilities resource planning for a clean energy future and focuses not only on generation planning but also on transmission and delivery infrastructure planning.

5. Other Clean Energy Dockets: There are several other clean energy related dockets before the PUC resulting from the Energy Agreement including the HECO Companies' proposal relating to the implementation of Advanced Metering Infrastructure (AMI), Lifeline Rates, Clean Energy Infrastructure Surcharge, several purchased power agreements, as well as the bio-fuel testing of the HECO Companies' generation units.

E. Energy Efficiency:

Energy efficiency efforts in Hawaii received significant federal stimulus funding, and notable progress was made in improving building codes, among other achievements for 2009:

1. Stimulus Funding: USDOE awarded DBEDT \$9.5 million in Energy Efficiency and Conservation Block Grant funds. The grant includes funding for DAGS and DHHL, which will use the funds for photovoltaics, solar water heaters, and efficient lighting. DBEDT will use the grant to augment current rebate programs to retrofit government and nonprofit buildings with energy-efficient appliances and lighting. Additional stimulus money will be spent by community action agencies on efficient equipment for low-income residents. Other stimulus funds will encourage consumers to replace old appliances with efficient Energy Star models.
2. Public Benefits Fund: Efficiency and demand-side management programs which had been run by Hawaii's public electric utilities got a new manager in 2009. After considering a number of proposals, the Public Utilities Commission contracted with SAIC to operate the

Hawaii Energy Efficiency Program. The expanded program will continue to be funded by a surcharge on monthly electricity bills.

3. Lead By Example (LBE): Spearheaded by DBEDT, the LBE initiative tracks state agencies' electricity consumption and expenditure. Vehicle mileage and information on efficiency improvements and renewable energy projects are also collected, as directed by Acts 96 and 160, SLH 2006, as well as Administrative Directive 06-01. LBE focused on improving data collection and analysis and acknowledging the energy efficiency achievements of executive departments. Between 2008 and 2009, state agencies' electricity consumption decreased by 5.8%, but costs still rose 1.2% due to the cost of imported oil.
 - DBEDT reviewed the draft State Clean Energy Lead By Example Guide at the request of the US Environmental Protection Agency. The Guide provides information on best practices for energy efficiency in state buildings.
 - Starting in 2008, DBEDT has issued a Green Government Challenge to other state agencies. The first applications were accepted in November 2008, and recognition is valid for one year. Agencies can enroll repeatedly to achieve recognition as part of the Lead By Example program. Participating agencies complete a checklist to document their "green" actions, and may receive a site check to verify responses. Green Government recognition acknowledges agencies that go beyond compliance with energy, water and resource-efficient operations, resulting in lower costs.
 - Training and Project Development. In 2008, as part of a week-long technical assistance program for Commissioning/Retrocommissioning (Cx/RCx), DBEDT staff and a representative of DBEDT's consultant for commissioning, Keithly Barber Associates (KBA), conducted 11 meetings and training courses for the University of Hawaii at Hilo; Department of Accounting and General Services; Department of Public Safety and the College of Tropical Agriculture and Human Resources (CTAHR). There were 93 attendees, some of whom attended more than one session.
 - In October 2008, staff met with University of Hawaii Facilities Management Office staff to discuss the status of technical assistance for an RCx project at Coconut Island, the new version of the Cx/RCx Guide, and types of technical assistance

available from KBA through DBEDT. Staff also met with the College of Tropical Agriculture and Human Resources (CTAHR) to discuss technical assistance for analyzing energy savings opportunities in 129 CTAHR small buildings, and possible performance contracting and photovoltaics for those buildings

- Types of technical assistance being offered to UH by DBEDT include walkthrough assessments of energy and water efficiency opportunities and identifying no-cost/lowcost options by building, updating contracting specs and guides to include more definitive requirements for commissioning, and gathering and inputting data from buildings into EnergyStar Portfolio Manager. Technical assistance being requested from CTAHR includes information on energy performance contracting and power purchase agreements.
- Also in October 2008, DBEDT staff met with Department of Accounting and General Services and Department of Public Safety for review of the DAGS Design Consultant Criteria Manual, discussion of technical assistance available from DBEDT, a presentation for project managers on implementing projects using the Cx/RCx Guide, and two hands-on sessions on data logging, including a day of hands-on training for data logging at the University of Hawaii at Hilo
- Walk Through Energy Assessments. As a result of meetings held with DAGS, DPS, UH-Hilo, and UH-Manoa facilities staff during the October 2008, commissioning consultant KBA, through DBEDT, conducted walk-through assessments and analysis of water and energy usage at Halawa Correctional Facility (HCF) and two buildings at the UH-Hilo campus. These assessments provided a savings and cost analysis of low-cost/no-cost energy and water savings measures, as well as a listing of potential capital improvements and their estimated potential costs and savings. Besides being utilized by the HCF and UH-H to plan improvements, the data is entered into EnergyStar Portfolio Manager to provide a Statement of Energy Performance.

4. LEED (Leadership in Energy and Environmental Design) Program:

- State agencies are also directed to design all new buildings to meet LEED Silver efficiency standards, if possible. The State of Hawaii has 6 buildings which are LEED certified and an

additional 49 projects are in various stages of planning, design and construction, including projects at the State Capitol and other additional buildings to achieve LEED Silver ratings. Ten state buildings in the Capitol District are being retrofitted by the Department of Accounting and General Services (DAGS) at a cost of \$34 million, an investment which will save \$3.2 million annually. The 20-year project is expected to reduce the buildings' utility bills by 30%. The buildings encompass about 1.3 million square feet. Improvements will include efficient lighting, new building power controls, low-flow plumbing fixtures, upgraded a/c and more efficient generators. The project is expected to create about 350 jobs over the next two years during the retrofit, and up to 30 permanent maintenance and servicing jobs. The contract is funded from previously approved bonds and a loan. The work will be completed by September 2011.

- DBEDT met in 2009 with the State Office of Planning, NREL and Green Building Service representatives to discuss the State of Hawaii's position on DR Horton's petition to the Land Use Commission for a 10,000 unit development on the Ewa plain of Oahu. LEED for Neighborhood Development and LEED for Homes, in addition to use of the Green Communities Initiative and Net Zero Energy Homes, was included in the testimony submitted to the Office of Planning and the Land Use Commission. As a consequence of the community's and other comments, the Land Use Commission asked DR Horton to address the concerns before the next hearing regarding this project.
- DBEDT worked with Department of Hawaiian Home Lands (DHHL), Group 70 International, and National Renewable Energy Lab (NREL) on the design for the Kaupuni Net Zero Energy 18 Home development with a community center in Waianae and used the Enterprise Foundation's Green Communities Initiative Greening Affordable Housing Criteria and the US Green Building Council's Leadership in Energy and Environmental Design's (LEED) Home Criteria. The RFP for construction of this project should be issued next quarter. DHHL and DBEDT representatives included the Kaupuni project as one of this year's National Governors Association Energy Policy Forum projects.
- DBEDT conducted training on Updates to LEED 2009's Green Building Design and Construction as well as Green Building Operations and Maintenance was conducted during this quarter

for State agency and related consultants. This provided State agency representatives with information on the changes to the program as well as updates on credentialing maintenance programs for LEED Accredited Professionals in the State. Over 20 state agency representatives and over 20 consultants participated in the training events.

- DBEDT coordinated Green Building Site Tour and Breakout session at the Hawaii Congress of Planning Officials Annual Conference in September 2009. Site tour focused on Military, State and Private Green Building projects on Oahu: Actus Lend Lease's LEED for Homes, University of Hawaii's Frear Hall Dormitory LEED Silver, Sustainable Saunders Hall and the JN Cycle City Harley Davidson Showroom were all featured. DHHL's Kaupuni Net Zero Energy Home development in addition to LEED for Neighborhood Development and Actus' projects on Oahu were featured during the breakout sessions.
 - A useful document developed by DBEDT in 2009 is the *Best Practices Guide for Selected LEED for Existing Building Operations and Maintenance*. It was prepared at DAGS' request to provide a non-technical overview and help state agencies meet LEED building commissioning requirements.
 - Using data from walk-through audits and retrocommissioning investigations, DBEDT staff did estimates and analysis regarding energy efficiency measures at an additional eight state buildings, two buildings at the University of Hawaii at Hilo, and two buildings at the Halawa Correctional Facility.
5. Other state buildings' efficiency achievements are being documented through the federal Energy Star® program, which acknowledges buildings that are among the top 25% in their class. In 2008, the following state buildings qualified for Energy Star® certification:
- Keoni Ana Building
 - Hilo State Office Building
 - Abner Paki Hale Courthouse
 - Kapolei State Building
 - State Office Tower
 - Waipahu Civic Center

6. State agencies are also retro-commissioning a number of facilities statewide to ensure that their energy systems are functioning properly and efficiently. DAGS is retro-commissioning 11 projects on four islands with DBEDT assistance.

7. DBEDT is working with the State of Hawaii Department of Transportation on a plan to expand and modernize the Kona Airport and Honolulu International Airport. The Kona Airport plans include a Sustainability Design Goal and net-zero energy goal. The goals for the Honolulu airport modernization also focus on sustainability, energy efficiency, LEED guidelines, and the use of renewable energy technologies, including electric airport vehicles. In July, an array of 16 small-scale wind turbines was installed on the roofline of a new electrical vault at the Honolulu International Airport. Each is rated at one (1) kilowatt. The approximate installed cost for the wind turbine system (manufacturer: Aerovironment, Inc.) was \$100,000. Each unit measures 6' x 8.5'. The wind turbines will be monitored.

8. DBEDT conducted Green Purchasing and Green Government presentations at the State Procurement Office for 20 state agency representatives and 25 attendees at the Department of Health as well as Green Business's presentations at the Hotel Engineer's Council Meeting in August and September. Also, DBEDT coordinated Green Office Tours in cooperation with *The Honolulu Weekly's* Green Market and distributed Green Business and recycling information at Tamarind Square in downtown Honolulu.

9. In 2008, DBEDT assisted the Department of Hawaiian Home Lands (DHHL) with plans to integrate Hawaii BuiltGreen™ requirements into specifications for 350 housing units at East Kapolei.

10. In 2009, two DBEDT staff attended the National Governors Association (NGA) Policy Academy on Advanced Energy Strategies for Buildings NGA Policy Academy, along with two DHHL staff members. They received training and technical assistance which supported building code amendments, Energy Star for Waikiki hotels, and outreach efforts. Using federal stimulus funds, DHHL will upgrade about 400 homestead residences with solar water heaters and compact fluorescent lamps.

11. Building Codes: Two major projects involving building codes are underway at DBEDT. Updating the energy efficiency provisions of building codes has a lasting effect on energy consumption since buildings are used for decades.

Starting in 2008, DBEDT participated in the Hawaii Building Code Council by chairing the International Energy Conservation Code (IECC) subcommittee. The Council includes representatives from each of the four counties since code compliance is a county function. The approved amendments to the IECC which adapt the code to Hawaii's climate include: offering five ways to achieve R-19 roof insulation or its equivalent, ensuring that non-air conditioned homes comply with building envelope requirements, and requiring building commissioning to ensure proper operation of energy systems. The new structural code would also protect structures from 120 mph winds and flying debris. In 2009, testimony by DBEDT experts in favor of the 2006 IECC resulted in adoption of updated codes in Hawaii, Maui and Honolulu Counties. Kauai County is considering a bill to adopt IECC 2009.

In addition to the IECC work, DBEDT managed a Tropical Codes project which will improve the energy codes in Guam, Puerto Rico, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands. A 21-page Model Code adaption of ASHRAE 90.1-2004 was drafted in 2008 and modifications made to accommodate situations unique to each territory and commonwealth. In 2009, Hawaii's expertise in building codes appropriate for tropical climates was shared with representatives from Guam, the Commonwealth of the Northern Mariana Islands (CNMI), the US Virgin Islands and Puerto Rico at a mini-conference in Portland, OR. DBEDT chaired the conference, which was the culmination of the USDOE-funded project. DBEDT staff traveled twice to Guam and the CNMI to serve as a keynote speaker at an environmental conference and train code officials in the new codes.

12. Hawaii Rebuild America Partnership: A consortium of public and private agencies is working to improve energy efficiency in buildings through the Hawaii Rebuild America Partnership. Technical assistance, alternative financing support and building surveys were provided to partners. Among its accomplishments were:

- Replacement of an inefficient compressor used by the Hawaii Air National Guard at Hickam Air Force Base,

saving \$37,000 in electricity and \$11,000 in water costs annually.

- Assistance to the Hawaii Public Housing Authority on energy performance contracting, including staff training, savings analyses, and preparation of a request for proposals relating to an \$80 million project for energy and water improvements at 5,300 federally-funded housing units.
- Revision of the 1998 *Guide to Energy Performance Contracting*, updating it and making it easier to use.

13. Rebuild Hawaii Consortium: The Rebuild Hawaii Consortium met quarterly to share information on a wide variety of projects, ranging from the Sustainable Saunders effort at UH-Manoa, the restaurant benchmarking project, cold seawater agriculture and alternative-fuel vehicles to the use of plastics for fuel.

14. DBEDT_co-sponsored the 2008 Efficient Electro-Technology Expo and Conference, which was conducted by Hawaiian Electric Company (HECO) and held on September 18, 2008, at the Hawaii Convention Center, Honolulu. The event focused on energy technologies as well as renewable energy solutions, sustainability, and energy management practices. Over 600 people attended the event, including 58 from the mainland and 5 from Guam/American Samoa/Northern Marianas. HECO estimates that to date the use of energy efficient technologies have saved enough energy to serve nearly 31,511 residences.

15. The Hawaii Green Business Program: Co-sponsored by DBEDT, the Dept. of Health, the Chamber of Commerce of Hawaii and other local government agencies, the Hawaii Green Business Program has expanded to include offices and retail businesses. Previous to 2008, the program focused on hotels and resorts, offering recognition to businesses which have applied environmentally responsible measures.

- The Green Office and Retail Program Pilot is cosponsored by the Building Owners and Managers Association and the International Facility Management Association Hawaii. In both the hotel/resort program and the new retail/office pilot, the objectives are to reduce energy and water consumption, promote recycling, prevent pollution, reduce emissions, and to

educate employees and customers about environmental practices. Meetings are held periodically to update participating businesses. DBEDT and DOH provide Green Business support to local enterprises interested in making their operations more sustainable. Green Business enrollment applications and check lists have been received from over 30 hotels, offices, retailers and restaurants.

- The Green Hotel Forum was held October 29, 2008, at the Hyatt Regency Waikiki Resort and Spa. Green Hotel forums, cosponsored by DBEDT, DOH, Chamber of Commerce of Hawaii, and the Hawaii Hotel and Lodging Association, were held on Oahu and Maui in 2009. The forums highlighted energy- and resource-efficient measures implemented by hotels. Some properties are recycling over 50% of their recyclables, while others have installed LED lighting, new HVAC equipment, and occupancy sensors. Some hotels have achieved Energy Star building ratings, while others are seeking LEED certification. A pilot Green Restaurant and Food Service program involves seven local businesses.
 - DBEDT presented the Hawaii Green Business Program and related green workforce opportunities during a Green Industry panel at a 2009 Oahu Workforce Investment Board monthly Board meeting. Other panelists included representatives from the building and solar industries as well as from University of Hawaii and Dept. of Labor and Industrial Relations. About 50 people attended.
16. DBEDT staff participated in developing and issuing the final report of the Western Regional Collaborative, as Rebuild America State representatives from Hawaii, alongside other representatives Idaho, Oregon and Washington which made up the collaborative group. The report examined Energy Star Portfolio Manager as an appropriate benchmarking tool for the region. The group held periodic teleconferences during 2007-2009 and participated in a multi-state Peer Exchange Webinar in April 29, 2009. While several issues that were discussed remain for further study, the group concluded that Portfolio Manager was best suited for the general marketplace as it gives building owners/operators some means of comparing the performance they are getting from their building with buildings in the national database.

17. Through partnerships and teamwork, Hawaii provides assistance to other states and islands while accessing national technical resources.
 - EPA Partnership: Through the U.S. Environmental Protection Agency (EPA) Clean Energy-Environment Partnership, Hawaii has been focusing on green power purchasing, climate change, building efficiency, financing, biofuels and environmentally preferable purchasing. In 2008, EPA provided technical assistance in identifying best practices for efficiency in low-income housing, greenhouse gas inventories and financing, among other topics.
 - Pacific Islands: Collaboration continues with U.S. Pacific Island territories, sharing successful energy project information at annual meetings. DBEDT arranged a briefing for the American Samoa Power Authority on energy policies as well as renewable and efficiency projects of mutual interest. Guidance was also provided to agencies offering assistance to non-U.S. Pacific island countries.
 - Other States: Working with a collaborative of other Western States, Hawaii is gaining a voice in regional projects. Hawaii has also assisted the University of Washington and the Minnesota Dept. of Commerce on building efficiency matters.

18. DBEDT in 2008 was selected to participate in the National Governors Association's Policy Academy on Advanced Energy Strategies for Buildings, and will receive support to examine building codes, legislative initiatives and energy efficiency measures.

F. Education, Training and Public Outreach:

1. DBEDT staff continued to carry out education, training, public outreach, and information dissemination as a major function of the state's energy program in 2008. Staff appeared in several radio, TV and interactive internet programs. More than 14,000 people attended DBEDT-cosponsored energy events in 2008, including:
 - Hawaii Sustainable Design seminar, January 17
 - BIA Home Building & Remodeling Show, January 24-27

- U.S. Department of Defense energy management forums, March 17-18
- Hawaii BuiltGreen™ Program, Honolulu Board of Realtors Leeward Regional Meeting, March 19
- Houses That Work, March 19
- Commissioning and LEED, April 4
- Hawaii BuiltGreen™ Program, Iolani School Family Fair-Eco Square, April 18-19
- Making Your Building and Operations More Sustainable seminar, May 6
- Build New or Redo, KHVH Radio Show, May 17
- Build & Buy Green Conference and Expo, May 20-21
- Green Living Hour, KHVH Radio Show, June 7
- EnergyOcean conference in Galveston, June 24-26
- Sustainability workshop, June 27
- BIA Remodel It Right Expo, August 1-3
- GovEnergy 2008 conference in Phoenix, August 3-6
- Renewable Energy panel, US Coral Reef Task Force, August 25
- Zero Waste Conference, September 11-13
- 2008 Efficient Electro-Technology Exposition & Conference, September 18
- International Energy Code Council meeting, Minneapolis, September 20-22
- Sustainability for Business Forum, September 24
- Clean Energy for Hawaii workshop at 7th Annual Native Hawaiian Convention, October 1
- Green Hospitality Conference, October 3
- AIA Northwest & Pacific Regional Conference, October 7-10
- How to Save Energy & Money Right Now!, October 8
- Asia-Pacific Homeland Security Summit, October 8-10
- HECO's Live Energy Lite Expo, October 11
- A New Energy Code for Hawaii at AIA Kauai, October 11
- Statewide Building Codes Council, October 14
- LEED and green building, Maui Planning Commission, October 14
- Green Industries panel at Air Cargo Day, October 14
- LEED workshops series, October 20-24

- Hawaii Brownfields Forum #4, October 22-23
 - Green Hotel Forum, October 29
 - Green Purchasing, November 6
 - Clear Channel Green Team Hawaii kickoff, November 26
2. In 2009 55 DBEDT-sponsored energy conferences, seminars and meetings were held. Attendees included state agency representatives and members of the public. Staff also participated in radio and television programming. The events offered in 2009 included:
- Renewable Energy Grid Integration Systems Workshop on Lanai, January 12-15.
 - Home Building & Remodeling Show, conducted by the Building Industry Association of Hawaii, January 22-25.
 - Pearl City Neighborhood Board, January 27.
 - How to Conduct a LEED for Existing Building Assessment, February 24-25.
 - Rebuild Hawaii Consortium quarterly meeting, March 5.
 - Renewable Energy World, Las Vegas, March 10-12.
 - LEEDing by Example in Hawaii: Success Stories in Hawaii's Green Building Initiatives, at Hawaii Buildings, Facilities & Property Management Expo, March 11.
 - Earth Hour, worldwide efforts to turn off lights for one hour, March 28.
 - HCEI Projects Review, April 14.
 - Western States Energy Program Meeting, April 15-17.
 - FEMP training on building assessment for state facilities personnel, April 21-24.
 - How to Save Energy & Money with the Hawaii BuiltGreen Program, April 28.
 - 9th Annual Build and Buy Green Conference and Expo, May 19-20.
 - LEED Design for Homes, May 19-21, Oahu & Maui.
 - Sustainability and Saving Energy in Hawaii, May 31.
 - Renewable Energy Systems technical workshop, June 3.
 - Green Homes, HCEI and Legislative Update at Honolulu Board of Realtors, June 5.
 - UH Clean Energy Day, June 6.
 - Green Hotel Forum on Maui, June 25.

- Photovoltaics Inspection Seminars, July 15-16. Series held on Oahu, Kauai and Maui.
- Hawaii Powered Clean Energy Festival, July 18.
- PACOM Energy Security Joint Capability Technology Demonstration Workshop, July 23.
- Hawaii Green Business and Energy Star presentations to Hawaii Hotel Engineer's Council quarterly meeting, August 12.
- Hawaii's Energy Future: The Next 50 Years, 50th Statehood Day Commemoration, August 21. Energy workshop on HCEI, and HCEI booth in exhibitor area.
- Presentation on HCEI to Hawaii Transportation Association annual Leadership Conference, August 27.
- Asia Pacific Clean Energy Summit, August 31-September 3. HCEI booth in exhibitor area.
- Kauai Farm Fair, August 28-29
- State Purchasing Office Training Session: Green Purchasing, September 1.
- Technical Workshop on advanced lighting, September 9.
- Green Building and LEED Training, September 2-3.
- Presentation on energy efficiency at 2009 Hawaii Healthcare Pollution Prevention Workshop; September 8-9.
- Maui County Energy Expo 2009, September 10-11.
- Hawaii Green Schools Symposium, September 12.
- Hawaii County Fair, September 20.
- Military, Motorcycles, and Manoa: A Green Building, Green Community Design Site Tour, September 23.
- LEED for Neighborhood Development and Net Zero Energy Homes, September 24.
- Pacific Coast Electrical Association Conference and Exposition, October 7.
- LEED Green Building Design and Construction and Green Building Operations and Maintenance Workshops, October 20-23.
- Sustainable Tourism Education Program, October 23.