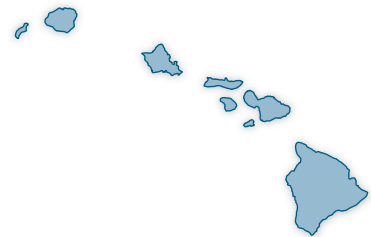




# Department of Energy Recovery Act State Memos

## Hawaii



For questions about DOE's Recovery Act activities, please contact the DOE Recovery Act Clearinghouse:  
1-888-DOE-RCVY (888-363-7289), Monday through Friday, 9 a.m. to 7 p.m. Eastern Time  
<https://recoveryclearinghouse.energy.gov/contactUs.htm>.

*All numbers and projects listed as of June 1, 2010*



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# American Recovery and Reinvestment Act



## U.S. DEPARTMENT OF ENERGY • HAWAII RECOVERY ACT SNAPSHOT

Funding for selected DOE projects: **\$86.1 million**

DOE Recovery Act projects in Hawaii: **17**

Clean energy tax credits and grants: **18**

For total Recovery Act jobs numbers in Hawaii go to [www.recovery.gov](http://www.recovery.gov)

Hawaii has substantial natural resources, including solar, biomass, geothermal, and hydroelectric power. The **American Recovery & Reinvestment Act (ARRA)** is making a meaningful down payment on the nation's energy and environmental future. The Recovery Act investments in Hawaii are supporting a broad range of clean energy projects, from energy efficiency and the smart grid to wind power and biofuels. Through these investments, Hawaii's businesses, universities, non-profits, and local governments are creating quality jobs today and positioning Hawaii to play an important role in the new energy economy of the future.

### EXAMPLES OF HAWAII FORMULA GRANTS

Program	State Energy Program	Weatherization Assistance Program	Energy Efficiency Conservation Block Grants	Energy Efficiency Appliance Rebate Program
Award (in millions)	<b>\$25.9</b>	<b>\$4</b>	<b>\$15.1</b>	<b>\$1.2</b>
	The Hawaii Department of Labor and Industrial Relations has received \$25.9 million to invest in state-level energy efficiency and renewable energy priorities.	The State of Hawaii has received \$4 million to scale-up existing weatherization efforts in the state, creating jobs, reducing carbon emissions, and saving money for Hawaii's low-income families. Over the course of the Recovery Act, Hawaii expects to weatherize nearly 700 homes. The program also includes workforce training and education as part of the state's efforts to develop a green workforce.	Five communities in Hawaii received a total of \$15.1 million to develop, promote, implement, and manage local energy efficiency programs.	The Hawaii Department of Business, Economic Development, and Tourism has received \$1.2 million to offer consumer rebates for purchasing certain ENERGY STAR® appliances, which reduce energy use and save money for families, while helping the environment and supporting the local economy.

### EXAMPLES OF HAWAII COMPETITIVE GRANTS, TAX CREDITS AND LOANS

Award	<b>\$117 million</b>	<b>\$24 million</b>	<b>\$5.5 million</b>	<b>\$5.3 million</b>
	<b>Kahuku Wind Power, LLC</b> , based in Kahuku, Hawaii, was offered a conditional commitment for a <b>\$117 million loan guarantee</b> to finance the construction and start-up of an innovative 30 megawatt wind energy project.	<b>UOP LLC</b> in Kapolei was awarded <b>\$24 million</b> to integrate existing technology from Ensyn and UOP to produce green gasoline, diesel, and jet fuel from agricultural residue, woody biomass, dedicated energy crops, and algae.	<b>The University of Hawaii System</b> in Honolulu was awarded <b>\$5.5 million</b> to explore the management of electricity distribution system resources for improved service quality and reliability, transmission congestion relief, and grid support functions.	<b>Hawaii Electric Co. Inc.</b> was awarded <b>\$5.3 million</b> for the <b>Smart Grid Investment Grant Program</b> to improve the reliability of the grid by automating high load distribution circuits feeding eastern Oahu.

## Funding Allocation Table (Figure 1)

Total dollar amounts in this document are accurate as of June 1, 2010. Please note that Recovery Act Programs are ongoing and the dollar amounts are subject to change. Recipient locations are based on project sites rather than recipients' headquarters locations.

Recovery Act Pillar	Flagship Program Names & Funding Type <sup>1</sup>	Number of Selections	Selected Amount (in millions) <sup>2</sup>
Energy Efficiency	<i>Weatherization Assistance Program (F)</i>	1	\$4.0
	<i>State Energy Program (F)</i>	1	\$25.9
	<i>Energy Efficiency and Conservation Block Grant (F)</i>	5	\$15.1
	<i>Energy Efficient Appliance Rebate (F)</i>	1	\$1.2
	<b>TOTAL Energy Efficiency</b>	<b>8</b>	<b>\$46.2</b>
Renewable Energy	<i>Wind (CM)</i>	1	\$0.8
	<b>TOTAL Renewable Energy</b>	<b>1</b>	<b>\$0.8</b>
Electric Grid	<i>Smart Grid Investment and Demonstrations Project (CM)</i> <sup>3</sup>	2	\$10.9
	<i>State and Local Energy Assurance and Regulatory Assistance (F)</i>	2	\$1.1
	<i>Smart Grid Workforce Training (CM)</i>	2	\$3.3
	<b>TOTAL Electric Grid</b>	<b>6</b>	<b>\$15.3</b>
Transportation	<i>Advanced Fuels (CM)</i>	1	\$23.7
	<b>TOTAL Transportation</b>	<b>2</b>	<b>\$23.7</b>
Science and Innovation	<i>Small Business Research (SBIR/STTR) (CM)</i>	1	\$0.1
	<b>TOTAL Science and Innovation</b>	<b>1</b>	<b>\$0.1</b>
<b>TOTAL - DOE Programs<sup>4</sup></b>		<b>17</b>	<b>\$86.1</b>
Tax Credits/ Payments <sup>5</sup>	<i>Payments for Renewable Energy Generation in Lieu of Tax Credits (1603)</i>	18	\$4.1
	<b>TOTAL Tax Incentives</b>	<b>18</b>	<b>\$4.1</b>
<b>TOTAL - DOE/Treasury + DOE<sup>6</sup></b>		<b>36</b>	<b>\$90.2</b>
<sup>1</sup> F=Formula Grant, CM=Competitive Grant, C=Contract			
<sup>2</sup> "Selected" indicates DOE has selected a potential funding recipient, which begins the process of negotiating an agreement. This does not necessarily indicate that a final agreement has been reached			
<sup>3</sup> Projects may cross state boundaries, signifies HQ location.			
<sup>4</sup> Total does not include administrative funds.			
<sup>5</sup> Jointly administered by DOE and the U.S. Department of Treasury.			

## **ENERGY EFFICIENCY – 8 projects totaling \$46.2 million**

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*Helping millions of American families cut utility bills by making homes and appliances more energy efficient, expanding the home efficiency industry in sales and manufacturing. For more information, visit <http://www.energy.gov/recovery/energyefficiency.htm>.*

### **Award(s): \$4 million, Weatherization Assistance Program (WAP)**

#### **Location: Statewide**

The State of Hawaii received \$4 million to scale-up existing weatherization efforts in the state, creating jobs, reducing carbon emissions and saving money for Hawaii's low-income families. Over the course of the Recovery Act, Hawaii expects to weatherize nearly 700 homes. The program also includes workforce training and education as part of the state's efforts to develop a green workforce.

### **Award(s): \$25.9 million, State Energy Program (SEP)**

#### **Location: Statewide**

The Hawaii Department of Labor and Industrial Relations received \$25.9 million to invest in state-level energy efficiency and renewable energy priorities. Hawaii's energy efficiency strategy directly funds high-performance buildings, state government and residential building retrofits and energy efficiency measures in the hospitality industry. The program provides technical assistance and training to building owners, developers, design professionals and county building code officials to ensure that new and renovated buildings are designed and built with high-efficiency measures. Hawaii is updating buildings to meet ENERGY STAR® and Leadership in Energy and Environmental Design (LEED) standards.

### **Award(s): 5 totaling \$15.1 million, Energy Efficiency and Conservation Block Grant Program (EECBG)**

#### **Location: Statewide**

**Recipients:** Maui County, Hawaii County, Hawaii State Energy Office, Honolulu, Kauai County

Five communities in Hawaii received a total of \$15.1 million to develop, promote, implement and manage local energy efficiency programs.

This project assists states, U.S. territories, Indian tribes, counties and cities to develop, promote, implement and manage localized energy efficiency programs through individual program grants. The project funds programs which reduce fossil fuel emissions in a manner that is environmentally sustainable and maximizes cost savings, reduces the total energy use of eligible entities and improves energy efficiency in the transportation, building and other appropriate sectors.

### **Award(s): \$1.2 million, Energy Efficient Appliance Rebate Programs**

#### **Location: Statewide**

The Hawaii Department of Business, Economic Development and Tourism has received \$1.2 million to offer consumer rebates for purchasing certain ENERGY STAR appliances, which reduce energy use and save money for families, while helping the environment and supporting the local economy. The Hawaii Energy Efficiency Program offers incentives for residential customers on Oahu with the ENERGY STAR Appliance Rebate Program. Rebates are available for a variety of appliances, including the servicing of central air conditioners. Appliances must be installed in Oahu and participants must apply for a rebate within six months of purchasing the appliance. The incentive is limited to one for

each appliance, with the exception of ceiling fans and air conditioners, for which participants can claim rebates for up to five purchases.

## **RENEWABLE ENERGY – 19 projects totaling \$4.9**

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*Developing the clean renewable resources in order to double our supply of renewable energy and boost domestic renewable manufacturing capacity. For more information, visit <http://www.energy.gov/recovery/renewableenergy.htm>.*

**Award(s): 18 payments totaling \$4.1 million from DOE / Treasury, 1603 Payments for Renewable Energy Generation**

**Location: Statewide**

\*For current number of 1603 awards, see the weekly update at <http://www.treas.gov/recovery/1603.shtml>

- **Hoku Solar Power I, LLC, Kahului (2) - \$929,000**  
Hoku Solar Power I, LLC, in Kahului received two awards totaling \$929,000 for solar electricity projects.
- **Hoku Solar Power I, LLC, Lihue (3) - \$917,000**  
Hoku Solar Power I, LLC, in Lihue received three awards totaling \$917,000 for solar electricity projects.
- **LOGANEnergy Corporation, Kekaha - \$900,000**  
LOGANEnergy Corporation in Kekaha received \$900,000 for a fuel cell project.
- **Hoku Solar Power I, LLC, Hilo - \$280,000**  
Hoku Solar Power I, LLC, in Hilo received \$280,000 for a solar electricity project.
- **MayDow Electric Company, Inc, Hilo - \$219,000**  
MayDow Electric Company, Inc., in Hilo received \$219,000 for a solar electricity project.
- **Distributed Energy Partners, Aiea - \$206,000**  
Distributed Energy Partners in Aiea received \$206,000 for a solar electricity project.
- **BK Holdings, LLC, Waipahu - \$177,000**  
BK Holdings, LLC, in Waipahu received \$177,000 for a solar electricity project.
- **Hoku Solar Power I, LLC, Kona - \$155,000**  
Hoku Solar Power I, LLC, in Kona received \$155,000 for a solar electricity project.
- **Avatar Solar, LLC, Pahoehoe (2) - \$141,000**  
Avatar Solar, LLC, in Pahoehoe received two awards totaling \$141,000 for a solar electricity project.
- **Wailea Gateway Center, Kihei - \$85,000**  
Wailea Gateway Center in Kihei received \$85,000 for a solar electricity project.
- **Lipoa Land, LLC, Kihei - \$54,000**  
Lipoa Land, LLC, in Kihei received \$54,000 for a solar electricity project.



- **Island Soap Company, Kapaa - \$23,000**  
Island Soap Company in Kapaa received \$23,000 for a solar electricity project.
- **DKK Properties, LLC, Kihei - \$15,000**  
DKK Properties, LLC, in Kihei received \$15,000 for a solar electricity project.
- **Jennifer Butts, Honolulu - \$6,000**  
Jennifer Butts in Honolulu received \$6,000 for a solar thermal project.

**Award(s): \$117 million from DOE / Treasury, Loan Guarantee Program**

**Location: Kahuku**

Kahuku Wind Power, LLC, based in Kahuku, received a conditional commitment for a \$117 million loan guarantee to finance the construction and start-up of an innovative thirty megawatt wind energy project.

**Award(s): \$750,000, Wind Energy Technology R&D and Testing**

**Location: Honolulu**

Hawaiian Electric Company, Inc., in Honolulu received \$750,000 to perform utility integration.

## **MODERNIZING THE ELECTRIC GRID – 6 projects totaling \$15.3 million**

*Harnessing clean energy sources and integrating them onto a modernized electric grid, while giving consumers better choices and more control over their energy use. For more information, visit <http://www.energy.gov/recovery/smartgrid.htm>.*

**Award(s): \$318,000, Enhancing State and Local Governments' Energy Assurance**

**Location: Honolulu**

The Hawaii State Department of Business, Economic Development & Tourism received \$318,000 for State Energy Assurance Planning. This project focuses on building regional energy assurance capability by enhancing inter- and intra- state coordination and cooperation during energy emergencies. The project funds states to update or develop State Energy Assurance Plans incorporating new energy portfolios such as wind, renewables and biofuels. The project also funds cities to update or develop Local Energy Assurance Plans. The two sets of funding are used to hire or retrain staff to build in-house expertise in dealing with Smart Grid technologies, critical energy infrastructure interdependencies and cyber-security.

**Award(s): \$5.3 million, Smart Grid Investment Grant Program (EISA 1306)**

**Location: Statewide**

Hawaii Electric Co., Inc., received \$5.3 million for the Smart Grid Investment Grant Program to improve grid reliability by automating high-load distribution circuits feeding eastern Oahu.

**Award(s): \$5.5 million, Smart Grid Regional and Energy Storage Demonstration Project (EISA 1304)**

**Location: Honolulu**

The University of Hawaii System in Honolulu received \$5.5 million to explore the management of electricity distribution system resources for improved service quality and reliability, transmission congestion relief and grid support functions.

**Award(s): 2 totaling \$3.3 million, Smart Grid Workforce Training**

**Location: Honolulu**

- **University of Hawaii, Honolulu - \$2.5 million**

The University of Hawaii in Honolulu received \$2.5 million for Smart Grid Workforce Training. Funds are being used to develop a cross-disciplinary program that includes Responsive and Dynamic (RAD) training coupled with foundational research-based curricula in the areas of clean energy technologies, renewable energy production, storage, integration and Smart Grid technologies. The program enables formal and tailored training techniques, in rotational and short courses, to provide community outreach and technology transfer opportunities.

- **Pacific Center for Advanced Technology Training (University of Hawaii Community Colleges), Honolulu - \$750,000**

The Pacific Center in Honolulu received \$750,000 for Smart Grid Workforce Training. Funds are being used to develop and enhance a career pathway for technicians that deploy and maintain electric power transmission and distribution through the application of Smart Grid technology. Using a two-year certification program, the project offers courses for traditional high school graduates interested in becoming Smart Grid technicians. The program also offers industry-certified courses for displaced workers, non-traditional students and the incumbent workforce.

**Award(s): \$783,000, State Assistance on Electricity Policies**

**Location: Honolulu**

The Department of Budget & Finance received \$783,000 for State Assistance on Electricity Policies for the State Public Utility Commission in addressing its Recovery Act electricity workload by hiring staff trained to facilitate the review of time-sensitive requests approving electric utility expenditures.

**TRANSPORTATION – 2 projects totaling \$23.7 million**

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*Investing in a new generation of advanced fuels and vehicles to reduce our dependence on foreign oil and revitalize domestic manufacturing. For more information, visit <http://www.energy.gov/recovery/vehicles.htm>.*

**Award(s): \$23.7 million, Modify Integrated Biorefinery Solicitation Program for Pilot and Demonstration Scale Biorefineries**

**Location: Kapolei**

UOP, LLC, in Kapolei received \$23.7 million to update existing technology from Ensyn and UOP to produce green gasoline, diesel and jet fuel from agricultural residue, woody biomass, dedicated energy crops and algae.

## **SCIENCE AND INNOVATION – 1 project totaling \$150,000**

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*Renewing our commitment to science and innovation to ensure global competitiveness in the future. For more information, visit <http://www.energy.gov/recovery/innovation.htm>.*

**Award(s): \$150,000 from DOE, Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) Round 1**

**Location: Kailua**

Ocean Thermal Energy Conversion (OTEC) in Kailua received \$150,000 for Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR). OTEC has the capacity to supply massive quantities of renewable and clean energy to consumers but current costs are too high for the continental US market. This program evaluates whether a unique Mist Lift Open Cycle process in a large OTEC plant can significantly lower OTEC costs making their product viable nationally.

ENERGYEMPOWERS.GOV

# Recovery Act Success Stories

Energy Empowers is a U.S. Department of Energy clean energy information service. Our team produces stories featuring the people and businesses that are fueling the energy transformation and economic recovery in America.  
*For more stories from your state, go to [energyempowers.gov/Hawaii](http://energyempowers.gov/Hawaii)*



The Hawaii Clean Energy Initiative's goal is to generate 70 percent of the state's power using clean energy such as wind. | Photo Courtesy of the State of Hawaii

## Initiative guides Hawaii from 90 percent dependence on oil

With 90 percent of its energy coming from oil, Hawaii is the most oil-dependent state in the nation. The Hawaii Clean Energy Initiative is an ambitious plan to reverse that. A partnership between the state and the federal Department of Energy, the HCEI uses a combination of increased energy efficiency and renewable energy sources to work toward the state's goal of meeting at least 70 percent of its energy needs from clean energy - 30 percent from efficiency and 40 percent from renewables - by 2030.

"What we're up to is, I think, one of the most daunting transformation projects in the state's history," says Ted Peck, the State of Hawaii's Energy Administrator. "We are attempting to totally shift our energy system to a clean energy system."

Launched in January of 2008, the HCEI has already helped spur the passage of multiple bills on clean energy. Among these include allowing utilities to base payments for renewable energy on factors other than the price of oil and another that sets incentives and penalties for Hawaiian utilities to reduce energy waste and increase renewable use. Other bills require solar water heaters in each new Hawaiian home and provide tax incentives for use of alternative fuels and renewable energy.

Transportation is a special energy challenge for Hawaii, where travel to and between the islands often requires airplanes. However, life

on an island means shorter driving distances, Ted says, allowing the HCEI to explore all-electric vehicles. It also calls for increased use of alternative fuels, which will be aided by Recovery Act grants of over \$28 million for biofuel development in Hawaii. The money will fund a new biorefinery outside Honolulu as well as exploration of technologies that turn agricultural waste, algae and other biomass into "green" gasoline, diesel and jet fuel. The projects are expected to create 600 new jobs.

To meet the efficiency goals, Ted says the HCEI has focused on replacing conventional water heaters, which use about 30 percent of a home's energy, with solar. He says 25 percent of Hawaiian homes already have solar water heaters, and his office is considering how to penetrate "that last 75 percent."

Hawaii's abundant natural resources mean it has several renewable energy sources to choose from, including hydroelectric, geothermal, wind, solar, wave, ocean thermal and biomass. Many of these are already generating small amounts of the

islands' electricity, but the HCEI is following up in a big way with the Interisland Wind and Cable Project. The project would put wind farms on Molokai and Lanai, where turbines would produce up to 400 megawatts of renewable energy - over 10 percent of the state's needs. The electricity would then be transferred via undersea cables to other islands. Ted estimates that if the project goes as planned, the wind farms could be in place by 2014.

Ted says the state plans to go beyond its stated goals. "We're not stopping at 70 percent and we're not waiting until 2030," he says. "If we deliver on the current commitments in the pipeline, which we are on track to do, we will cut our carbon dioxide emissions in half by 2020."

## Alternative fuels created from unlikely sources

Innovation is key for ClearFuels Technology and Rentech Inc, partners in the energy field of biomass. Both companies work on projects to produce fuels that aren't just green but also cost-effective. They're working together to bring a viable alternative fuel to the marketplace.

The companies have been selected to receive a \$22.6 million grant from the Department of Energy. "DOE has recognized the benefits of these two technologies coming together" says Hunt Ramsbottom, CEO of Rentech.

Hawaii-based ClearFuels has developed a process to turn waste

into renewable fuel. They partner with local wood and sugar mills, collecting the waste left behind like sawdust and bagasse — the fibrous residue of sugarcane, for their alternative fuels projects. In California, Rentech is developing a process to turn synthetic gas from materials like tree stumps and branches into transportation fuel.

They will use the grant money to install a biomass gassifier at Rentech's synthetic fuels facility in Colorado. Combining the companies' methods of turning waste products into energy, the biomass gasifier will convert 7 to 20 tons of biomass a day into 420 gallons of renewable, clean fuel. The CEO's say they're hiring 40 employees to begin the first phase of the project and more in the future.

Both companies are confident in their ability to revitalize the current energy market as Eric Darmstaedter, CEO of ClearFuels says, "The funding helps us create a new industry and new jobs." Eric estimates they will be ready to start production in late 2011.

### DOE awards \$24 million for algae research

WASHINGTON — Algae is a promising biofuel, but making it accessible for drivers has proven difficult. It's expensive and converting it to usable energy is time consuming.

To tackle this, the Department of Energy has awarded \$24 million to three research groups of universities and biotech companies tasked with figuring out how to make algae-based biofuels commercially viable.

Assistant Secretary Cathy Zoi of the Office of Energy Efficiency and Renewable Energy called the funding the "latest investment to accelerate algal biofuels" at the 2010 World Congress on Industrial Biotechnology and Bioprocess conference on Monday.

"Biofuels derived from blue green algae, microalgae and macroalgae hold great potential but are far from being cost competitive," Zoi said. "Many technical and economic challenges must be overcome."

The three consortiums will address these challenges in separate projects that will last up to three years.

#### Roadmap to the future

Zoi said each project will tackle key hurdles in areas such as biochemical conversion of algae to fuels and products, algal crop protection and recycling, and integration of new algal harvesting technologies.

The assistant secretary also announced the release of the DOE's National Algal Biofuels Technology Roadmap, the first report in almost 15 years that summarizes the industry, the research needed and the roadblocks to clear to make this green fuel cost competitive.

"While algae gives us a look at the innovative future, scale up of today's technology remains a high-priority," Zoi said about the report.

According to the roadmap, algae technology has the potential to produce up to 6,500 gallons of oil per acre each year, which is 60 times higher than soybeans and 15 times more productive than jatropha, a flowering plant native to North America.



Novozymes, a biofuels company, showcased a Ford Fusion that runs on cellulosic E85 at the 7th annual World Congress on Industrial Biotechnology and Bioprocess held outside Washington, D.C. | Photo by Energy Empowers

### The research groups receiving DOE funding:

- Sustainable Algal Biofuels Consortium (Mesa, Ariz.) - Led by Arizona State University, this consortium will focus on testing the acceptability of algal biofuels as replacements for petroleum-based fuels.
- Consortium for Algal Biofuels Commercialization (San Diego, Calif.) - Led by the University of California, San Diego, this consortium will concentrate on developing algae as a robust biofuels feedstock.
- Cellana, LLC Consortium (Kailua-Kona, Hawaii) - Led by Cellana, LLC, this consortium will examine large-scale production of fuels and feed from microalgae grown in seawater.

### Funding research

The Recovery Act allowed the United States to invest nearly \$800 million in biofuel and biopower research. This most recent funding is the second award this year given to algal research consortiums to identify barriers. Zoi said that scaling up production of biofuels is among the DOE's primary goals.

"This administration is fully committed to biofuels and to tripling production in the next 12 years," Zoi said. "As you know, biofuels are a critical component of our nation's renewable energy portfolio."

The three-day conference attracted about 1,000 people from across the world. Technologies and research for biofuels such as cellulosic fuel made from wood chips and switchgrass and ethanol, were also highlighted during the conference, which took place at the Gaylord Convention Center in National Harbor, Md., just outside Washington, D.C.