

# THE FUTURE IS BRIGHT

Advancing Hawaii's clean energy industry





## *Special Message from Governor Neil Abercrombie*

Presented in recognition of the 2<sup>nd</sup> edition of  
***The Future is Bright: Advancing Hawai'i's Clean Energy Industry***



On behalf of people of Hawai'i, I am pleased to extend a warm *aloha* to those who have dedicated much time and effort to moving our state toward energy independence.

Hawai'i's energy objectives are rightfully ambitious. The State Energy Office, overseen by Department of Business, Economic Development and Tourism (DEBDT) Director Richard Lim and led by State Energy Administrator Mark Glick, has been at the forefront of our transformation to a clean energy future.

As outlined in this edition of *The Future is Bright: Advancing Hawai'i's Clean Energy Industry*, the Aloha State is a recognized global clean energy leader, focused on innovative solutions that will reduce our dependency on foreign oil, maximize our diverse portfolio of natural resources and create employment and investment opportunities throughout the Hawaiian Islands. We are also succeeding in removing unnecessary barriers to allow a greater segment of our community to invest in and benefit from renewable energy.

I congratulate DBEDT, the State Energy Office and our partners on driving our state's bold energy agenda.

Sincerely,

**NEIL ABERCROMBIE**  
Governor, State of Hawai'i

# HAWAII: THE PROVING GROUND FOR PROMISING TECHNOLOGIES

The Hawaii Clean Energy Initiative set us on a new trajectory that moves away from fossil fuels and the economic drain from our reliance on imported oil. In the first partnership of its kind, the U.S. Department of Energy and the State of Hawaii joined forces to convene public and private sector stakeholders in order to build consensus that the current trajectory was unsustainable and to set our State on a new path. Since then we have implemented many of the foundational policies and projects needed, earning us recognition as a clean energy leader. However, our next chapter will require thoughtful decisions, innovative technology, and renewed commitment.

The new energy paradigm is driven by the policy directives of the Abercrombie Administration outlined in this brochure. Hawaii's 21st century energy agenda is based on the following five principles:

- Diversifying our energy portfolio
- Connecting the islands through integrated, modernized grids
- Balancing technical, economic, environmental, and cultural considerations
- Leveraging our international status as a clean energy test bed
- Allowing the market to pick winners

Our clear strategy and abundant natural resources makes us the ideal proving ground for clean energy solutions that can be utilized worldwide. To help maximize this potential, the Hawaii State Energy Office is providing developers and investors with the tools and technical assistance to accelerate a project's journey from inception to the marketplace. The success of this approach can be seen through the following projects implemented in the last 18 months alone:

Puna Geothermal Expansion • HPOWER Expansion • Kalaehoa Solar Power 2 • Auwahi Wind Farm • Kawailoa Wind • Big Island Biodiesel • Port Allen Solar Facility • Off-Grid Agricultural Pumping Wind Project

Each project's success will spawn even greater success by stimulating the development of supporting industries, providing high paying jobs and energy security for our children and future generations. We hope you will join us in Hawaii's energy and economic transformation.

Aloha,

Richard C. Lim  
Director

State of Hawaii Department of Business, Economic Development & Tourism

# The Solution is Innovation. The Proving Ground is Here.

## **GEMS: Removing barriers to clean energy independence.**

Achieving our clean energy goal of 70% by 2030 will require innovative solutions and policies that make sense. Groundbreaking programs like Green Energy Market Securitization (GEMS) enable the state to reduce its dependence on fossil fuels, while helping consumers lower their energy costs. Many consumers have been unable to invest in clean energy and energy efficient devices, often due to a lack of financing options.

Hawaii's 2013 law levels the playing field for everyone, but especially for the underserved, including low- and moderate-income owners, renters, non-profits and small businesses. Its potent combination of secure bonds and low-cost financing helps consumers transition to a more efficient system now, and enjoy immediate savings, without incurring any upfront costs.

Thanks to GEMS, consumers will be able to overcome these financing barriers, bringing clean energy into reach for a wider audience.



Natural Energy Laboratory of Hawaii Authority (NELHA) Gateway Energy Center

## **A proving ground for global energy solutions.**

Hawaii is unique in so many ways. Our wide variety of natural resources, including sun, wind, geothermal, bioenergy, hydropower and ocean power, makes us the ideal setting for renewable clean energy projects that can later be deployed to island nations in the Asia-Pacific region and worldwide. The Hawaii clean energy revolution is already happening. Many clean energy projects are now operating successfully in the islands, with more underway.

*For project information, go to [energy.hawaii.gov](http://energy.hawaii.gov), click on "Resources" and "Hawaii Renewable Energy Projects Directory."*

Hawaii is the proving ground for clean energy innovation; clean energy that will power our economic engine. The Hawaii State Energy Office is working to achieve these clean energy goals by accelerating innovation to help boost economic growth now and in the future.

## **Taking the Initiative.**

The Hawaii Clean Energy Initiative (HCEI) is a ground-breaking partnership between the State of Hawaii, U.S. Department of Energy, the military and private sectors. Launched in 2008, HCEI is focused on reducing our dependence on imported fossil fuels and moving towards a clean energy future. As a result of this initiative Hawaii now has an internationally acclaimed 70% clean energy goal by 2030 as part of state law. This is the guiding principle in pursuing our state's energy independence.

The Hawaii State Energy Office is working toward the HCEI goal to accelerate innovation and boost economic growth within a single generation.



Visit [energy.hawaii.gov](http://energy.hawaii.gov) for more information



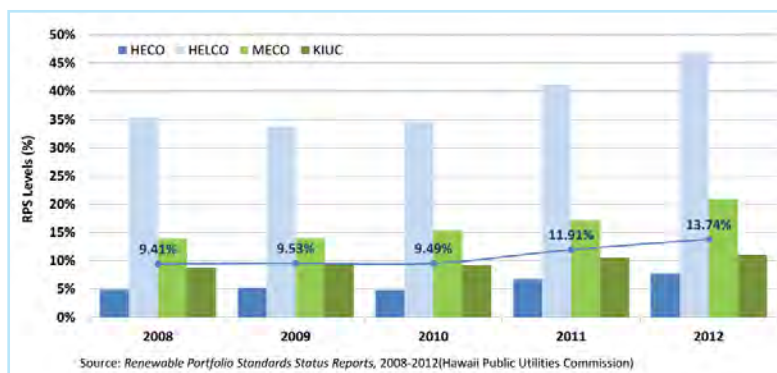
## Securing the renewable energy future.

To achieve our goal of 70% energy independence by 2030, Hawaii has undertaken a dynamic two pronged approach. Within the 70% goal, locally generated renewable sources represents 40% of our total energy consumption, while achieving greater energy efficiency makes up the remaining 30%.

In 2009, the state began enforcing the Renewable Energy Portfolio Standard (RPS), significantly increasing the amount of renewable power our utilities are required to generate. To assist in this effort, Hawaii is updating government regulations, breaking down barriers to renewable energy deployment, investing in smart infrastructure and exploring next generation technologies.

By harnessing power from renewable resources such as solar, wind, geothermal, hydro, ocean, biomass and biofuels, we reached an important new milestone, generating a record 13.74% of our energy from renewable resources in 2012.

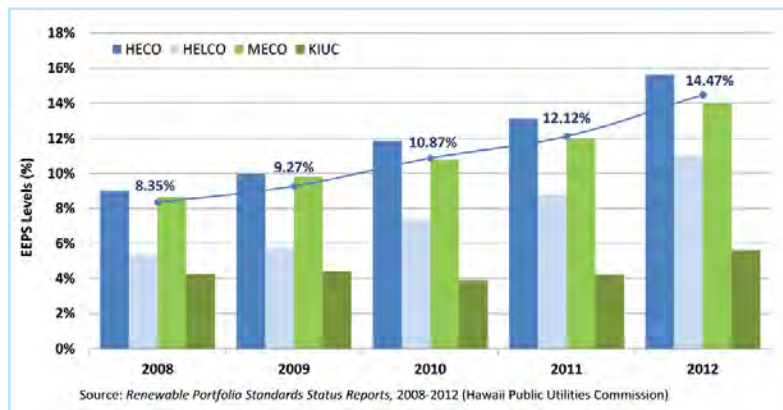
### Hawaii Renewable Portfolio Standard (RPS) Levels 2008-2012



## Setting the course to greater efficiency.

By 2030, Hawaii must reduce electricity usage by no less than 30%. Leading by example, the state implements its own program to place buildings, fleets and personnel at the forefront of energy efficiency and conservation through energy savings performance contracting. Government buildings are being retrofitted, and construction policies and building codes strengthened to meet new, more exacting efficiency standards.

### Hawaii Energy Efficiency Portfolio Standard (EEPS) Levels 2008-2012



In 2008, the Hawaii Clean Energy Initiative (HCEI) established the Energy Efficiency Portfolio Standard (EEPS) which outlines several important policy targets. As an example, until 2015 energy savings achieved through technologies such as solar water heating, solar air-conditioning and sea water air-conditioning are calculated to fulfill RPS standards. Beginning in 2015, these same technologies will be transferred to help meet the EEPS goal of reducing electricity use by 4,300 gigawatt-hours by 2030.

Setting targets helps us meet our goals. Case in point: As of 2012, Hawaii has reduced energy consumption by 14.47%. And we're just getting started.

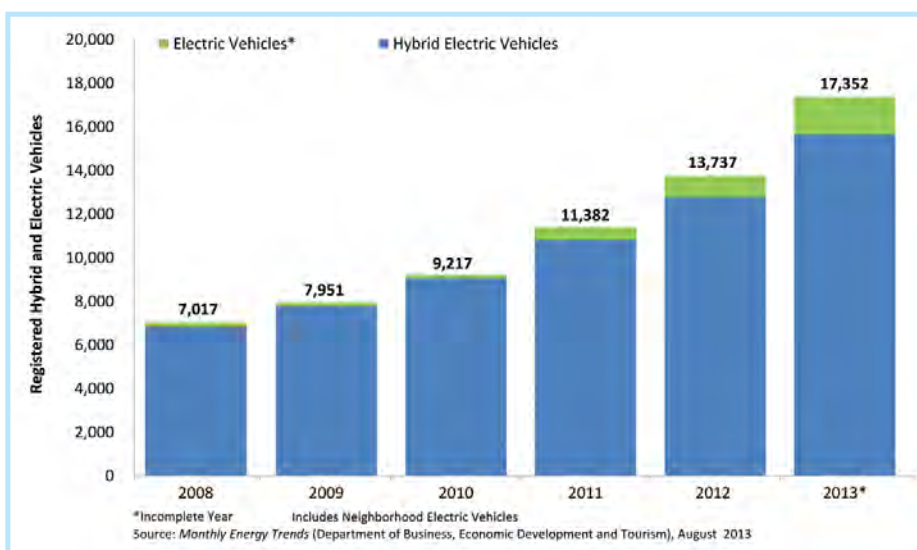


## EVs on the Move

Transportation accounts for more than 60% of Hawaii's petroleum consumption. If we are to achieve our clean energy goals, we must embrace clean transportation and encourage alternatives such as electric vehicles (EVs), increase biofuel use, add mass transit options and update Hawaii's infrastructure to support ongoing innovation.

We're making exciting headway in the clean transportation sector. Presently, there are over 1,500 EVs on Hawaii's roads, supported by over 350 publicly available charging stations statewide. We've also launched a free mobile app, "EV Stations Hawaii." Available for both Apple and Android devices, it gives directions to nearby public EV charging stations based on the user's location.

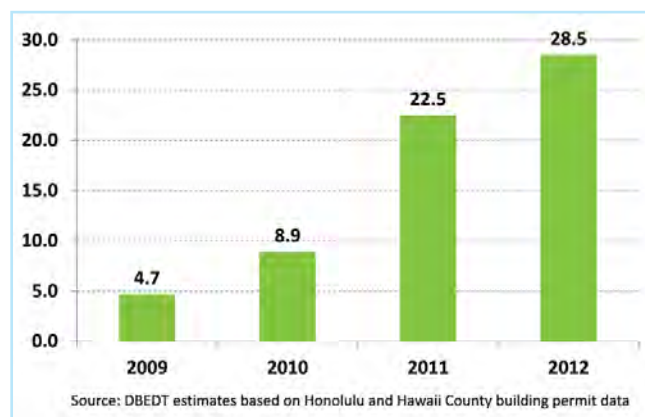
**Hawaii Cumulative Hybrid and Electric Vehicles Registered 2008-2013**



From EV use to biofuels, Hawaii is a proving ground for clean energy innovation, the engine that will power our economic growth..

## Solar-Related Construction Expenditures

Value of solar projects as % of total building permit value



## Powering the Economy

Hawaii enjoys a robust clean energy industry. Innovation is accelerating at a rapid rate, which in turn stimulates our economic growth. To help drive this energy revolution, the Hawaii State Energy Office works as a catalyst by fostering bold policy solutions and providing tools and roadmaps to assist energy developers and attract international investment.

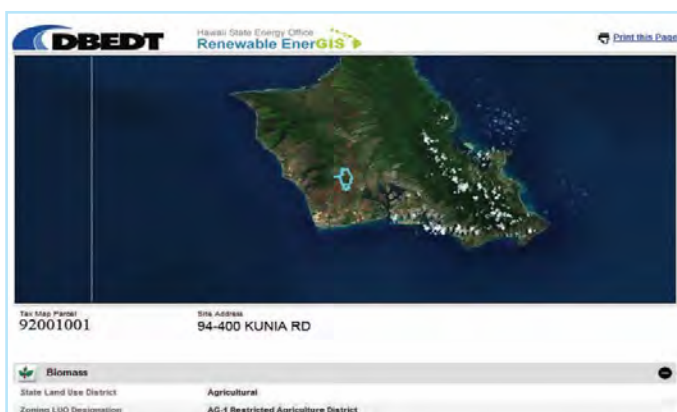
The state's commitment is at the cutting edge of the clean energy revolution. At the 2013 Clinton Global Initiative America (CGIA) annual meeting in Chicago, Hawaii committed to increase the energy efficiency of state and county buildings and facilities by expanding its use of energy savings performance contracting. The Hawaii State Energy Office is providing government agencies with the technical assistance they need to review proposals, prepare baseline development, and to monitor and verify savings. All this equates to jobs – from engineers to building operators to equipment installers.

## SELF-HELP ENERGY SUITE

The Self-Help Energy Suite of tools is another important step undertaken by the Hawaii State Energy Office to advance high impact, clean energy solutions.

### Renewable Energy Permitting Wizard [wizard.hawaiiicleanenergyinitiative.org](http://wizard.hawaiiicleanenergyinitiative.org)

The Permitting Wizard helps developers and investors understand what county, state and federal permits may be required for their renewable energy projects in Hawaii. Based on responses to questions about the proposed project, the Permitting Wizard provides a list of required permits and typical timeframes.



### Renewable EnerGIS Map [energy.hawaii.gov/resources/renewable-energis-map](http://energy.hawaii.gov/resources/renewable-energis-map)

This Geographic Information Systems (GIS) Map supports innovation by helping landowners, developers and policy makers determine the renewable energy potential for specific Hawaii locations. While site surveys are recommended to determine actual attributes, the EnerGIS will help with preliminary site decisions. GIS files are based on publicly available data from the State of Hawaii Office of Planning.

### Hawaii Renewable Energy Projects Directory

[energy.hawaii.gov/epd/public/energy-projects-map.html](http://energy.hawaii.gov/epd/public/energy-projects-map.html)

Want to know where innovation is happening in Hawaii? The Directory lists renewable energy projects statewide, showcasing the variety of renewable energy resources that are being harnessed to move us closer to our overall clean energy goals. It also indicates projects by island, specific location, type of resource and production capacity. Each project lists its status, whether it is active/ongoing or in the planning stage, as well as the name of developer and project description.



### EV Stations Hawaii Mobile Application

Access to information of publicly available charging stations statewide is available at your fingertips via your Apple or Android smartphone. "EV Stations Hawaii" is a free app that provides maps and driving directions to the closest charging station in your area, so you'll never run out of "juice." Created by the Hawaii State Energy Office, the Hawaii Information Consortium and Honolulu Clean Cities, the app uses the state's open data to provide a service to consumers. Changing the way we get around in Hawaii is vital in helping us reach our goal of 70% clean energy by 2030.

Tools like online resources and smartphone apps not only help consumers, they also support developers, investors and policymakers in their continuing search for cutting edge, clean energy solutions.

Visit [energy.hawaii.gov](http://energy.hawaii.gov) for more information

# POWERING OUR ECONOMY. SECURING OUR FUTURE.

The clean energy sector has become a significant driver in our state's economy. Entrepreneurs, driven by passion and powered by ingenuity, are helping to secure Hawaii's energy future by developing innovative technologies that can be deployed in communities statewide.

The investment in clean energy is paying off. In 2012, Hawaii generated 13.74% of its energy from renewable resources. We're close to our RPS goal of 15% in 2015, giving us a jumpstart on reaching our 2020 RPS target of 25%.

As we move forward, the Hawaii State Energy Office will play a vital role in the deployment of renewable energy projects, securing investors in the world's leading clean energy proving ground, and helping our state meet its energy needs well into the future.

Aloha,

Mark Glick  
State Energy Administrator  
Hawaii State Energy Office

## STATE OF HAWAII - ENERGY POLICY DIRECTIVES

Our state energy policy is rooted in one principle: a commitment to maximize the deployment of cost effective investments in clean energy production and management for the purpose of promoting Hawaii's energy security.

- **Diversifying our energy portfolio:** Diversity has always been one of Hawaii's greatest assets. Our energy resources are no exception; we are blessed with diverse resources such as solar, wind, hydro, bioenergy, geothermal, and energy efficiency. Among these resources, geothermal holds particular promise as a clean and firm energy source that is also low-cost. Biofuels, another important resource, should be targeted primarily for jet fuel, and used in electric generation only as a transitional use. Liquefied natural gas holds promise as a transitional fuel on a limited scale, if it can be deployed at a true cost savings.

- **Connecting the islands through integrated, modernized grids:** Hawaii is connected in many ways that make us stronger. Linking the islands enables us to utilize our islands' best resources, at a scale that will reduce costs. Levelizing electricity rates across connected islands will not only lower rates on neighbor islands, but may also improve overall system efficiency. Since existing technical analyses show that Oahu lacks resources and sites to economically move beyond 25-30% renewable energy on its own, investing in undersea cable infrastructure is the pathway to an energy future that breaks our addiction to fossil fuels. Our RPS and EEPs standards of 40% renewable energy and 30% energy efficiency by 2030 are important benchmarks, but we should not stop there. Maximizing affordable clean energy is a core strategic goal, and provides the most secure foundation for our economy and way of life.

- **Balancing technical, economic, environmental, and cultural considerations:** Most renewable energy sources are less expensive than oil, but to integrate these resources we often need to blaze new pathways both in technology and policy. Not all clean energy projects are created equal. In order to find the most beneficial long-term solutions, we must focus on projects that make the best use of land and resources. We are collaborating with partners in the public and private sectors to focus on the most beneficial projects, ensuring that challenges are met with a spirit of collaborative problem solving, not inaction.

- **Leveraging our position as a test bed to launch an energy innovation cluster:** Hawaii should not only demonstrate the future of clean energy, but should also help invent it. Our isolated, islanded grids, high energy costs, and connections to the Asia Pacific region make Hawaii an ideal test bed for new energy solutions. We're working to create an environment where our communities support innovative companies that are solving the world's toughest energy challenges – and creating new jobs and opportunities for investment for a knowledge-based economy right here in Hawaii. Innovation is the cornerstone of our economic diversification strategy.

- **Allowing the market to pick winners:** The private sector must make the investments needed to transition us away from oil. At the same time, solutions must be inclusive, lifting all of us. For this reason we have been developing programs and financing mechanisms that allow everyone to participate in our clean energy future.



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