



**Hawaii Clean Energy Initiative
Public Stakeholder Meeting
August 26, 2015
3:00-5:00 p.m.
Ala Moana Hotel – Garden Lanai**

Act 97 has put Hawaii on a path to a 100 percent RPS. For Hawaii to be successful, thoughtful planning is required to integrate changing customer energy demands and technologies, a diverse portfolio of renewable resources and a resilient and reliable grid. HNEI and HSEO are working collaboratively to tackle pressing issues that need to be addressed in the road to an indigenous clean energy future.

Welcome

Luis P. Salaveria, Director
Department of Business, Economic Development, and Tourism

Moderator

Dawn Lippert, Chair
Hawaii Clean Energy Initiative Advisory Board

Modeling the Energy Eco-System

Chris Yunker, Program Manager
Hawaii State Energy Office

Modeling the Functional Grid

Rick Rocheleau, Director
Hawaii Natural Energy Institute

Derek Stenclik, Manager
Power Systems Strategy, GE Energy Management

Small Group Discussions

Closing Remarks

HAWAII'S CLEAN ENERGY FUTURE



CLEAN ENERGY VISION

The State Administration is determined to harness Hawaii's natural resources to achieve its goal of 100 percent renewable energy generation by 2045. Pursuing energy independence and transitioning off fossil fuels achieves a dual purpose: stimulating smart growth that benefits future generations in Hawaii and delivering cost-effective energy that is environmental friendly.

STATE ENERGY OFFICE ENERGY POLICY GOALS:

Hawaii is the perfect setting for a comprehensive clean energy transformation to occur. Our leadership in renewable energy penetration, coupled with isolated islanded grids and high-energy costs make Hawaii a unique laboratory for clean energy solutions.

Under the leadership of the Energy Resource Coordinator (ERC), the Hawaii State Energy Office (HSEO) is driving Hawaii's clean energy transformation.

HSEO has set forth five key energy policy directives:

1. Diversifying our energy portfolio
2. Connecting and modernizing our grids
3. Balancing technical, economic, environmental and cultural considerations
4. Leveraging our position as an innovation test bed
5. Creating an efficient marketplace that benefits producers and consumers



HAWAII CLEAN ENERGY INITIATIVE 2.0

The Hawaii Clean Energy Initiative (HCEI) began as a groundbreaking partnership between the State of Hawaii, the U.S. Department of Energy, the military and the private sector. The next phase of HCEI 2.0 is stimulating innovation in Hawaii's emerging clean energy sector. In 2015, Hawaii passed HB623 which set a new renewable portfolio standard of 100 percent renewable energy by 2045, while also increasing Hawaii's interim 2020 target to 30 percent. These aggressive goals will drive investment in clean energy infrastructure and serve as a catalyst for economic growth, investments in innovation and entrepreneurship.

SECURING THE RENEWABLE ENERGY FUTURE

Hawaii is working towards 100 percent renewable energy in the electricity sector by improving interconnection and interoperability at the transmission and distribution level. Leveraging Hawaii's role as a test bed is also critical to achieve this vision. Innovative programs like the GEMS Financing Program and Community Solar Program are helping to remove barriers to clean energy.

SETTING THE COURSE TO GREATER EFFICIENCY

The state has already reduced electricity demand by more than 1,500 gigawatt-hours. A report prepared for the Hawaii Public Utilities Commission last year concluded that Hawaii has the potential to significantly exceed its 2030 target of 4,300 gigawatt-hours of savings.

The Energy Services Coalition has also recognized Hawaii for three consecutive years as the nation's leader in performance contracting on a per capita basis. HSEO has successfully completed its 2013 Commitment to Action under the Clinton Global Initiative by doubling the value of performance contracts in the state and extending its national

leadership in the Energy Services Coalition's *Race to the Top*.

CLEAN ENERGY FOR TRANSPORTATION

Hawaii is determined to harness cleaner, cheaper alternative fuels like natural gas to replace petroleum based fuels. These alternative fuels help drive down electricity rates. We're also working to support higher rates of renewable penetration with quick start, efficient generators and providing lower cost, cleaner options for marine and ground transportation.

POWERING THE ECONOMY

Hawaii is becoming a test bed for promising clean energy technologies. Our isolation, renewable resources and Asia-Pacific connections are proving to be an ideal environment for developing, testing and proving emerging clean energy technologies. Hawaii's clean energy transformation is laying the foundation for a new knowledge-based sector of the economy fueled by innovation and ideas. Creation of a clean energy innovation sector is also creating a supporting ecosystem featuring jobs in a host of complementary professions.

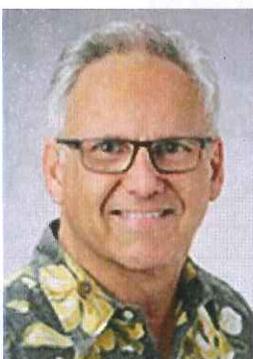


THE CURRENT
Hawaii State Energy Office Clean Energy Update



The Current serves Hawaii's businesses and policy makers in making informed decisions about clean energy investments and policy. Hawaii's clean energy sector is a significant driver for economic development to replace fossil fuel expenditures with home-grown industries that generate revenue and create high-paying jobs for local residents.

SHAPING HAWAII'S CLEAN ENERGY FUTURE
MARK GLICK, ENERGY ADMINISTRATOR



The summer is proving to be an active one for those involved in shaping Hawaii's clean energy future. This issue of The Current highlights two major developments in the effort to reduce our dependence on imported oil: Enactment of the nation's first 100 percent renewable portfolio standard for the electricity sector, and the release of an in-depth analysis commissioned by the HSEO that will help guide Hawaii's efforts to cut the consumption of petroleum-based fuels in the transportation sector.

Establishing the 100 percent RPS fulfills Governor Ige's policy objective to set the electricity sector on a fully renewable path, while keeping Hawaii on the forefront of clean energy innovation. Meanwhile, the analysis conducted by the International Council on Clean Transportation will provide the basis for the development of a transportation roadmap that will ensure that Hawaii's energy transformation is comprehensive, inclusive, and successful. The Hawaii State Energy Office is excited about working with an ever-widening group of stakeholders who are committed to moving us closer toward achieving our clean energy goals.

OUR CLEAN ENERGY VISION

The Hawaii State Energy Office (HSEO) will transform Hawaii's economy by growing the clean energy sector. To this end, HSEO works to stimulate the deployment of clean energy infrastructure and serve as a catalyst for energy innovation and test bed investments. In doing so, HSEO will lead the charge in achieving 100 percent renewable energy by 2045, and exceeding the target of 4,300 gigawatt hours of savings by 2030.



Sign up for the Hawaii State Energy Office e-newsletter at energy.hawaii.gov/e-newsletter

LEADING THE CHARGE

100% Renewable Energy by 2045

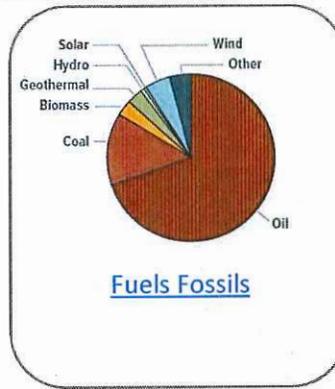
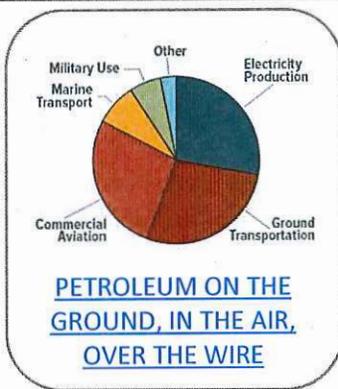
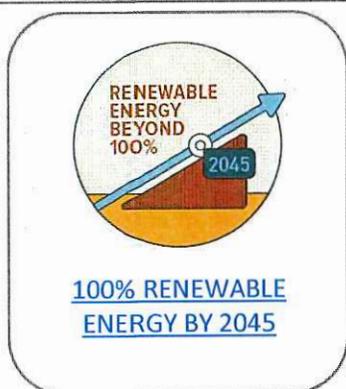
Hawaii continues to lead the way in renewable energy generation, having recently set historic legislation to achieve 100% renewable by 2045. Pursuing energy independence and transitioning off fossil fuels will stimulate economic growth and deliver cost-effective energy that is environmentally friendly.

Petroleum on the Ground, in the Air, Over the Wire

In contrast to the mainland, where most petroleum is used for ground transportation, Hawaii uses roughly equal amounts of petroleum for electricity production, ground transportation, and commercial aviation.

Fuel Fossils

Hawaii is the only state that depends so heavily on petroleum for our energy needs. Whereas the nation as a whole relied on oil for less than 1 percent of its electricity in 2013, Hawaii relied on oil for 70 percent of our electricity, with 14 percent coming from coal.



FEATURED STORY: LESS GUZZLING - FINDINGS FOR FOSSIL FUEL CUTS IN TRANSPORTATION

Hawaii's efforts thus far in reducing Hawaii's dependence on fossil fuels have focused largely on power generation. However, with transportation accounting for two-thirds of Hawaii's oil consumption, the Hawaii Clean Energy Initiative charrettes program has made transportation issues a top priority. In this effort, HSEO has enlisted input from key stakeholders and a world-class partner, the International Council on Clean Transportation (ICCT). ICCT was hired to carry out the analysis, convene stakeholders, and develop a new set of actionable tactics to reduce petroleum-based fuels in the transportation sector.

The HCEI draft Transportation Energy Analysis Report includes nearly two dozen tactics to be pursued now as well as enabling actions and further analysis to develop a larger pipeline of petroleum reducing tactics to be pursued in the long term. The next step will feature a reconvening of stakeholders to collaborate on development of a transportation roadmap that will most certainly be a major focus of HCEI for many years to come. Below are recommended tactics, which in total are projected to save tens of millions gallons of gasoline per year (MGY) by 2030.



TACTICS FROM HCEI TRANSPORTATION ANALYSIS



Improve Vehicle Efficiency

- Procure EVs and efficient vehicles for public fleets
- Vehicle fuel economy standards
- Green freight
- Vehicle retirement incentives for low-income groups
- High efficiency taxis
- Rental car efficiency program



Reduce Vehicle-miles traveled

- Transit-oriented development
- Expand infrastructure for alternative transportation modes including bicycling, walking and public transit
- Car sharing for public fleets
- Dedicated parking for car sharing
- Commuter benefits legislation
- Support TDM by large employers
- Telecommuting by public employees
- Flexible scheduling for work and classes



Promote Electric-drive vehicles

- State rebates for electric-drive vehicles
- EV rental prioritization for state & county employees
- Extend time-of-use and EV charging rates to all EV customers



Streamline Aviation

- Financial support for winglet retrofits
- Airport infrastructure support



Modify Marine Transport

- Slow steaming
- Propeller polishing and hull cleaning

To bring these improvements to fruition, the report recommends interagency and private sector collaboration with the participation and coordination of renewable energy stakeholders.

[Learn more about the Transportation Charrette.](#)

FEATURED STORY: RENEWABLE ENERGY EFFORTS PUT HAWAII FIRST

Energy Legislation

Governor David Ige recently signed three landmark energy bills into law, fulfilling a major policy objective to put Hawaii at the forefront of renewable energy efforts nationwide.

“As the most oil dependent state in the nation, Hawaii spends roughly \$5 billion a year on foreign oil to meet its energy needs. Making the transition to renewable, indigenous resources for power generation will allow us to keep more of that money at home, thereby improving our economy, environment, and energy security,” Ige said.

Ige also thanked the Hawaii senate and house energy committee chairs for championing these bills.



FEATURED STORY: RENEWABLE ENERGY EFFORTS PUT HAWAII FIRST

Act 097 Relating to Renewable Standards: 100% renewables for the state by the end of 2045

- Makes Hawaii the first state in the nation to adopt a 100 percent renewable energy portfolio.
- Increases Hawaii's renewable energy goals to 30 percent renewable by the end of 2020, 40 percent by 2030, 70 percent by 2040 and 100 percent by 2045. Currently 21 percent of our power comes from renewable energy.
- Will save ratepayers hundreds of millions of dollars.

Act 099 Relating to Energy: 100% renewables for University of Hawaii by 2035

- Makes the University of Hawaii system the first university in the nation to set a goal of being 100 percent renewable by 2035.
- Will save the university on electricity costs, which will translate to tuition savings for students.

Act 100 Relating to Energy: Hawaii's first community renewable program

- Establishes the first statewide community renewables program in the country, so that any resident can invest in an off-site solar photovoltaic or other renewable project, like a large-scale solar farm, and get the same credit as residents with rooftop installations currently receive on their electric bills.
- Democratizes renewable energy by letting renters and condo owners buy into Hawaii's clean energy transformation.
- Complements the Green Energy Market Securitization (GEMS) Program to finance green infrastructure so it is accessible to a wider audience, particularly renters, non-profits, and homeowners who can't otherwise afford to invest in green energy. Consumers who borrow from GEMS will see savings on their electric bills immediately, with no money down.

FEATURED STORY: HAWAII-OKINAWA MEMORANDUM OF COOPERATION



Hawaii-Okinawa Memorandum of Cooperation

On July 10, in a ceremony and clean energy forum featuring experts and dignitaries from America and Japan, Governor Ige and Governor Takeshi Onaga of the Prefecture of Okinawa signed an extension of the Hawaii-Okinawa Memorandum of Cooperation for Clean and Efficient Energy Development and Deployment from July 2015 to June 2020.

Okinawa and Hawaii both share geographical and climate conditions and are isolated archipelagos in a tropical/subtropical climate with energy networks that are highly dependent on fossil fuels. Both have emerged as leaders in reducing fossil fuel dependence by actively deploying renewable energy and energy efficiency measures. The Memorandum of Cooperation aims to expand existing strong activities in technology research and development. Signatories are the U.S. Department of Energy; Japan Ministry of Economy, Trade, and Industry; the State of Hawaii; and the Prefecture of Okinawa.

DID YOU KNOW?



Hawaii is back among the top ten clean tech states according to the 2015 U.S. Clean Tech Leadership Index. Key to our state's hurdle forward from #19 in 2010, is HB623 (Act 97), which sets the nation's first statewide 100% renewables target (by 2045). 2015 U.S. Clean Tech Leadership Index, June 2015 (Clean Edge)

ENLIGHTENING NEWS AND ARTICLES



[Hydro as energy storage has huge potential in Hawaii, expert says](#)

(Pacific Business News, 7/27/15)

[Businesses recognized for being green](#)

(KITV, 7/17/15)

[Hawaii launches financing program for PV systems](#)

(KITV, 7/2/15)

[Hawaii wrestles with vagaries of solar power](#)

(Wall Street Journal, 6/28/15)

[Ige opposes NextEra deal](#)

(Honolulu Star-Advertiser, 6/20/15)

[Electric car incentive program considered](#)

(Honolulu Star-Advertiser, 6/20/15)

[Governor Ige signs bill setting 100 percent renewable energy goal for state](#)

(Hawaii News Now, 6/8/15)

[New study ranks Hawaii among top 10 states for renewable energy](#)

(Pacific Business News, 6/2/15)

[Renewable-energy plan for Hawaii's public schools takes big step](#)

(Pacific Business News, 5/22/15)

UPCOMING EVENTS

[7th Annual Asia Pacific Resilience Innovation Summit & Expo, August 24-26, 2015, Hawaii Convention Center](#)

HSEO is proud to be a Partner and Supporting Organization of the 2015 Asia Pacific Resilience Innovation Summit and Expo. The 7th annual summit will convene business, technology, and policy leadership across the global resilience pillars of energy, agriculture, water and security. These joint events collaboratively seek out new solutions for the vanguard communities facing the impact of climate change. HSEO program panels include:

- [Transportation Energy Solutions & Grid Modernization](#)
- [Community Renewables](#)

As a member of HSEO's network, register with the promotional code 15HSEO10 to receive a 10% discount on the conference fee.

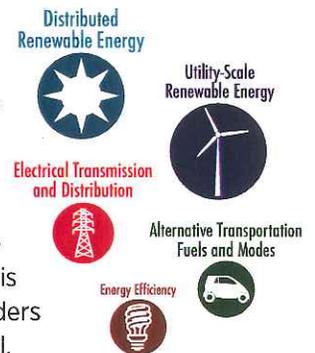
Benefits and Applications of the **HAWAII** CLEAN ENERGY PEIS

What is the Hawai'i Clean Energy PEIS?

The U.S. Department of Energy (DOE), in cooperation with the State of Hawai'i, prepared a Programmatic Environmental Impact Statement (PEIS) that supports the State of Hawai'i in achieving its goal of meeting 100 percent of the State's energy needs with clean, renewable energy by 2045. The intent of the PEIS is not to analyze potential environmental impacts of a particular project, but rather to provide guidance to policymakers, developers, regulators, and the public to better determine the renewable energy activities and technologies that would best meet their specific future energy needs. For instance, a developer may be interested in installing a specific renewable energy technology in a particular location. The developer could refer to the PEIS for typical impacts associated with that specific technology and potentially sensitive resources associated with the particular location. To this end, the PEIS defined "representative projects" for each activity and technology that could be implemented in Hawai'i by 2045 based on realistic capacity factors and feasibility. The representative projects are hypothetical and not intended to represent any real or proposed project and are provided for analytical purposes only.

Why use the Hawai'i Clean Energy PEIS?

Most clean energy projects have the potential to cause environmental impacts, especially if not implemented properly. There are many challenges when working with established and emerging technologies, which could cause project delays, inefficient processes, and added costs. The PEIS is a comprehensive source of the typical federal, state, and county laws, regulations, and permitting requirements of renewable energy projects. While most of the material can be found online, the PEIS has sorted through the vast amounts of information, conducted technical reviews, and organized the PEIS to align with the 31 clean energy technologies and activities that could be used to meet the State's clean energy goal. The PEIS also includes website references of information that is routinely updated to ensure readers get the most up-to-date material.



Who can benefit from the Hawai'i Clean Energy PEIS?

GENERAL PUBLIC, ACTIVE PARTICIPANTS, AND COMMUNITY ORGANIZATIONS

WHAT ARE THE CHALLENGES?

- Information overload. Individuals can become overwhelmed with the amount of information available about the potential environmental impacts from clean energy technologies.
- Reliable information. Disorganized or unreliable sources of information tend to reduce participation from the general public in energy planning matters and/or cause the dissemination of inaccurate information.

PEIS SOLUTIONS

- A valuable collection of information in a single location, condensed from hundreds of sources and reviewed/vetted by DOE experts in clean energy.
- Written with a level of detail sufficient to provide the average reader with a basic understanding of 31 activities and technologies.
- Provides a general perspective of the types and magnitudes of potential environmental impacts that could be expected from each of the activities and technologies.
- References to additional, reliable resources for more in-depth research.
- The opportunity to become better informed about decisions related to energy, which helps the regulatory oversight process.
- A reliable resource for introducing students to the relationship between clean energy and the environment, including the development of appropriate workforce training and scholastic curriculum.

ENERGY DEVELOPERS

WHAT ARE THE CHALLENGES?

- Incomplete analyses. Certain environmental impacts may be overlooked and/or understated during project planning and development, leading to issues and complications that can jeopardize the continued development or operation of a project.
- Unnecessary paperwork. Identifying and addressing the correct environmental impacts early in the planning stage will streamline work processes.

PEIS SOLUTIONS

- Identification and discussion of sensitive environmental resources at different geographical locations before investing in those areas. This could result in variations in design or complete avoidance of the area to minimize potential impacts and increased costs.
- Comparative analyses of potential impacts between and among technology alternatives (e.g., solar vs. wind vs. biomass vs. marine hydrokinetic).
- Scalable impact estimates for each technology (e.g., impacts provided for a 50 MW facility and how those impacts change in relation to the size of the project).
- A correlation between design elements and potential impacts for various environmental resources. This information can be used by project designers to minimize impacts while optimizing energy production.
- A discussion of the general permitting and regulatory requirements for renewable energy projects and applicable requirements for specific technologies. This knowledge could streamline future permitting processes or allow communications about permitting to begin earlier in the schedule.

REGULATORY AGENCIES AND BODIES

WHAT ARE THE CHALLENGES?

- Agency co-dependencies. There is often a need for information on the interdependencies among federal, state, and county entities related to permitting so that regulators can better understand the overall regulatory/jurisdictional framework for each project or technology.
- Conflicting information. Agencies and governing bodies reviewing projects may not always be aware of all the potential environmental impacts associated with a given clean energy project or technology, or may have conflicting information on the impacts. In many instances, this awareness does not come into focus until after specific projects are proposed.

PEIS SOLUTIONS

- Future NEPA documents prepared by federal agencies (or their contractors) can tier from the PEIS to allow streamlining of the project- and site-specific environmental review.
- State and county agencies can use the PEIS as a guide when reviewing various permits, approvals, and EISs/EAs prepared under the Hawaii Environmental Policy Act.
- Government proponents of future clean energy projects can use the PEIS as a roadmap for the evaluation of their project or those proposed by others.
- A source for zoning decisions based on the potential environmental impacts. It could include the consideration of multiple projects or cumulative impacts.

POLICYMAKERS

WHAT ARE THE CHALLENGES?

- Conflicting information. Policymakers considering new laws and programs related to clean energy may not always be aware of all the potential environmental impacts associated with a given clean energy project or technology, or may have conflicting information on the impacts, which can result in poor policies and programs in need of correction and/or ultimate repeal.

PEIS SOLUTIONS

- Information for policymakers on the potential environmental impacts of decisions across the range of clean energy technologies and areas throughout the state.
- By identifying the governmental entities involved in project regulation, policymakers can better understand the administrative and enforcement needs to sufficiently oversee a clean energy industry.

More Information

PEIS Website:

<http://www.hawaiicleanenergyPEIS.com>

Hawai'i State Energy Office

<http://www.energy.hawaii.gov>

DOE Office of Energy Efficiency and Renewable Energy

<http://www.energy.gov/eere/office-energy-efficiency-renewable-energy>

