



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

DEPT. COMM. NO. 138

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December 18, 2019

The Honorable Ronald D. Kouchi,
President and Members
of the Senate
Thirtieth State Legislature
State Capitol, Room 409
Honolulu, Hawaii 96813.

The Honorable Scott K. Saiki,
Speaker and Members of the
House of Representatives
Thirtieth State Legislature
State Capitol, Room 431
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

For your information and consideration, I am transmitting a copy of the Hawaii State Energy Office Annual Report, as required by Act 122 (SLH 2019). In accordance with Section 93-16, Hawaii Revised Statutes, I am also informing you that the report may be viewed electronically at: <http://dbedt.hawaii.gov/overview/annual-reports-reports-to-the-legislature/>.

With aloha,


Mike McCartney

Enclosure

c: Legislative Reference Bureau

2019 Hawaii State Energy Office Annual Report



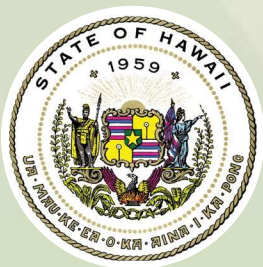
HAWAII STATE
Energy Office

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December 2019

Prepared by

Hawaii State Energy Office





*Special Message from
Governor David Y. Ige*

In Recognition of

**2019 Hawai'i State Energy Office
Annual Report**

December 1, 2019



Maintaining the forward momentum of Hawai'i's clean energy transformation is more important now than it has ever been. With a failure of leadership at the federal level, we must keep focused on efforts to end Hawai'i's dependence on fossil fuels in order to achieve energy and economic security, meet our climate goals, and improve the health and well-being of all our residents and visitors.

There are challenges and opportunities as Hawai'i endeavors to decarbonize its economy. Our transition to clean energy is pushing the boundaries of technology and innovation, incorporating an increasingly large percentage of intermittent renewable energy into Hawai'i's electrical grids. Hawai'i's evolution as a test bed is attracting talent and capital, fueling the growth of a clean energy innovation sector that could eventually become a significant driver of our economy.

Living in an archipelago with more than 750 miles of coastline, it is not surprising that the people of Hawai'i pay close attention to the effects of climate change, global warming and sea level rise. And that has resulted in Hawai'i being very aware that what happens to the planet in the energy space affects us here in Hawai'i much more than in other communities. I am proud that we were the first state to align with the Paris Accord, committing to reducing greenhouse gases, committing to capturing more carbon and being more thoughtful about the impact we make on our environment.

It takes an entire community to carry out Hawai'i's clean energy transformation, and the State of Hawai'i is honored to lead this effort. We know that leadership can start at home. Together, we will face the challenges ahead and secure our clean energy future.

With warmest regards,

DAVID Y. IGE
Governor, State of Hawai'i

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This report fulfills the reporting requirements for:

Act 122 (SLH 2019)

HRS 196-10.5(7)(c)

HRS 196-41(c)(3)

HRS 201-12.8(c)

HRS 235-110.31(l)

HRS 37-52.5(2)(b)

This annual report required by each of these statutes have been combined into this single, comprehensive report.

CHIEF ENERGY OFFICER'S STATEMENT



Hawaii has made considerable headway in the drive to reduce fossil fuel use in the electricity sector since the landmark Hawaii Clean Energy Initiative was launched more than a decade ago. The primary metrics for measuring this progress, the renewable portfolio standard and the energy efficiency portfolio standard, continue to meet interim targets for renewable energy production and energy conservation. As we move ahead, however, we must broaden our efforts to decarbonize Hawaii's economy, including doing more to reduce petroleum use in the transportation sector. This edition of the Hawaii State Energy Office Annual Report highlights the progress we have made in the past fiscal year toward achieving our clean energy goals and the challenges that lie ahead.

The Hawaii State Energy Office (HSEO) is well-positioned as the primary government entity leading this charge. Under the new authority granted by the Hawaii State Legislature in Act 122, the HSEO will carry out the activities and coordination necessary to achieve Hawaii's clean energy transformation. Among other things, Act 122 created the position of chief energy officer to head the HSEO and assume the responsibility for guiding the state to reach its clean energy goals and become a carbon neutral economy. I am excited about the opportunity to serve as Hawaii's first chief energy officer and I look forward to the hard work in front of us.

The statutory responsibilities laid out in Act 122 are wide-ranging. The Energy Office is charged with a host of duties to promote clean energy and decarbonization, including engaging communities and the diverse group of stakeholders whose support is essential to achieving such a fundamental shift in the way we power Hawaii. The HSEO plays a vital role in fostering this stakeholder alliance, which is the heart and soul of Hawaii's energy transformation. We also will continue our work to build partnerships locally, nationally, and internationally, such as through the U.S. Climate Alliance, of which Hawaii is a member.

Act 122 makes clear that the impact of climate change on Hawaii is a growing concern that must be addressed. The legislation references the findings of the Fourth National Climate Assessment, which estimates the value of all structures and land expected to be flooded by the year 2100 in Hawaii at more than \$19 billion. Other major concerns and challenges highlighted in the report include strained freshwater supplies, damaged and compromised coastal infrastructure, loss of coral reefs, and greater stresses on native biodiversity and species.

The Energy Office looks forward to rolling up our sleeves and getting to work alongside our colleagues at state, federal, and county agencies, collaborating with communities, businesses, and non-profits as we try to build a new carbon-free Hawaii. The challenge now is to maintain the momentum we have built and make our vision a reality.

Sincerely,

Scott J. Glenn

Chief Energy Officer, Hawaii State Energy Office

EXECUTIVE SUMMARY

Over the past year the Hawaii State Energy Office (HSEO) advanced policies and implemented programs to carry out its mission of promoting energy efficiency, renewable energy and clean transportation to help Hawaii achieve a resilient clean energy economy . Among the HSEO's notable accomplishments were: upgrading its suite of online self-help tools and roadmaps to assist renewable energy developers and attract international investment; working with stakeholders to adopt a new energy code for construction of homes and buildings; refining a visualization tool to help stakeholders better understand Hawaii's complex energy systems; and investing funds from the Volkswagen settlement in programs that will reduce diesel emissions in ground transportation. The HSEO also continued to build capacity in its critical role as lead state coordinating agency for energy and fuel assurance matters during shortage events.

Legislation passed last session will strengthen the HSEO's ability to support Hawaii's clean energy transformation. Act 122 (SLH 2019) gives the HSEO greater flexibility and accountability and creates the position of chief energy officer. The Act also takes into account the need for island resiliency; rapid increase and economic vitality of renewable and distributed energy resources; the digitization, democratization, and inter-connectivity of infrastructure; and the transition to clean transportation systems.

This report provides an update on the status of various HSEO-supported policies and programs to facilitate Hawaii's clean energy transformation. Much of these are activities the HSEO began prior to the passage of Act 122. This report covers fiscal year 2019 and, where the data or topic calls for it, activities in calendar year 2018 or following Act 122 taking effect. The report is structured around the major focuses of the HSEO, with each activity or program concluding with a citation to the relevant Hawaii Revised Statutes reporting requirements.

Energy Efficiency

The HSEO supports energy efficiency programs that are helping the state meet its energy efficiency portfolio standards (EEPS). The EEPS mandates a 4,300-gigawatt-hour reduction in electricity use by 2030 through efficiency and conservation measures. Hawaii exceeded its 2015 interim EEPS target and is on track to meet the 2020 interim goal, according to the [report to the 2019 Legislature on Hawaii's EEPS from the Hawaii Public Utilities Commission](#). Two areas where the HSEO had the biggest impact last year were in helping upgrade the energy code for construction of homes and buildings and promoting an innovative clean energy financing tool known as energy performance contracting. As a voting member and chair of on the State Building Code Council, the HSEO played a leadership role in drafting and implementing the new energy code, which will cut energy use by an estimated 30 percent in homes and buildings. For energy performance contracting, Hawaii led the nation for the eighth consecutive year in 2019 in the per-capita value of such contracts. The HSEO and its contractors provide technical assistance and other support to county and state agencies that enter into energy performance contracts.

Renewable Energy

The share of utility electricity sales from renewable sources, also known as the renewable portfolio standards (RPS), held steady at 27.6 percent at the end of 2018 as increases in electricity generation from renewable sources such as solar, wind, hydro, and biomass offset a decline in geothermal power caused

by the shutdown of the state’s only geothermal plant due to a lava flow. With a flurry of new solar photovoltaic projects in the pipeline, Hawaii is on track to reach its interim 2020 RPS target of 30 percent. Through its Developer & Investor Center and Self-Help Energy Suite, the HSEO assists stakeholders in the appropriate and informed development of renewable energy projects that will help the state achieve its renewable energy goals. A new addition to the Center is the “Brightfields” tool, which will allow developers to assess the potential of contaminated sites in Hawaii for renewable energy development.

Energy Planning

The HSEO continued to refine analytical tools last year to provide a holistic assessment of Hawaii’s energy ecosystem and the interrelationships of sectors and policies such as electricity production, electrification of ground transportation, energy efficiency, and use of distributed energy resources. Two notable projects are the Hawaii Advanced Visualization Environment Nexus (HAVEN) and the “engage” analytical model. HAVEN allows stakeholders to visualize the electric system and land use impacts of the HECO Companies’ Power Supply Improvement Plan from the present through 2045. Stakeholders can utilize engage to perform scenario analyses on Hawaii’s comprehensive energy eco-system as well as feed data visualizations for program and policy assessment. Both projects highlight the HSEO’s ability to leverage resources and expertise from the U.S. Department of Energy. The HSEO also completed a study requested by the Legislature analyzing the most appropriate ownership and regulatory structures for Hawaii’s electric utilities as the state makes the transition to a clean energy future.

Energy Assurance and Security

The HSEO leads the state government’s effort to ensure a secure and reliable energy infrastructure in the contemporary energy environment. As the designated agency for energy assurance, the HSEO works closely with many government and industry emergency management and security partners to lower vulnerabilities, deter threats, minimize the consequences of energy disruptions, and enhance recovery of Hawaii’s energy systems. Last year the HSEO developed an Operations Guide for State Emergency Support Function #12—Energy. The Guide provides guidance for staff to increase their readiness to respond to an energy supply disruption.

Policy and Regulatory Advancements

The HSEO continued to work with legislators and regulators last year to develop policies that support and encourage energy independence. The HSEO intervened, participated, provided comments, or observed several PUC dockets.

Clean Transportation

There is a growing recognition that a stronger push is needed to reduce the use of fossil fuel in the transportation sector, and the HSEO has taken a leadership role in that regard. The HSEO’s efforts to date include facilitation of the deployment of zero emissions vehicles and associated charging infrastructure which directly contribute to reducing petroleum use and emissions. Hawaii was allocated \$8.125 million to mitigate vehicle emissions through the replacement of medium and heavy-duty vehicles as part of a federal settlement with Volkswagen. A spending plan, developed last year by the HSEO under the Volkswagen Settlement Environmental Mitigation Trust, focuses on replacing heavy-duty diesel buses with electric vehicle (EV) alternatives and expanding light duty EV charging infrastructure. The HSEO so far has submitted two funding requests to the Trustee. The first funding request was for \$230,087 to replace two City and County of Honolulu diesel transit buses with two battery electric buses. The second

funding request was for \$316,494 to provide financial assistance to private and/or public fleet owners looking to replace older, diesel buses with electric buses. Hawaii was nationally recognized as one of two states earning an A+ rating from the U.S. Public Interest Research Group Education Fund in their *Volkswagen Settlement State Scorecard* report. Additional funding requests are in the pipeline.

Stakeholder Engagement and Outreach

The HSEO conducts public education and outreach through a variety of channels to build awareness of its core objectives and key platforms that play a critical role in helping the state meet its energy goals. The HSEO's education and outreach audience includes the community at large, local and international energy stakeholders, policymakers, regulators, and non-profits to help convey the importance and progress of Hawaii's clean energy goals and initiatives. The wide range of outreach channels employed by the HSEO include websites, news releases, newsletters, social media engagement, educational events, sponsorships of energy related events, presentations and appearances by the HSEO staff and strategic alliances with energy sector partners. A new product on the HSEO website is an online dashboard that features 26 charts providing Hawaii-specific energy data that will support sound decision-making as Hawaii moves forward with its clean energy transformation.

ENERGY EFFICIENCY

Introduction

Hawaii's state energy policy is focused on maximizing cost-effective investments and fostering high impact programs. Hawaii has set an overall energy efficiency goal to reduce electricity consumption through efficiency and conservation measures. HRS 269-96 mandated that the Hawaii Public Utilities Commission (PUC) establish an energy efficiency portfolio standards (EEPS) with a goal of a 4,300 gigawatt-hour (GWh) reduction in electricity use by 2030.

To help achieve this goal, the Hawaii State Energy Office (HSEO) works with the local community; federal, state, and county agencies; and energy stakeholders to encourage and facilitate energy efficiency and conservation. The program target audience and partners include businesses, government agencies, professional organizations, non-profit organizations, and emerging clean energy producers interested in implementing energy and resource efficiency, and key energy stakeholders and policymakers.

In FY19 the following the HSEO activities and programs supported the pursuit of Hawaii's EEPS and other clean energy-related goals.

Reducing Energy Use

Energy Efficiency Portfolio Standards

The HSEO staff members participated in PUC's EEPS Technical Working Group (TWG) and Technical Advisory Group (TAG) meetings. The HSEO also assisted the PUC with reviewing the draft EEPS report that was submitted to the Legislature at the end of 2018.

The HSEO staff members are currently participating in EEPS TWG and TAG meetings to assist the PUC with drafting the Energy Efficiency Potential Study that is scheduled to be completed at the end of 2019.

The HSEO works closely with Hawaii Energy (HE) in the energy efficiency arena. HE's programs continue to be a major contributor to the state's EEPS goals. HE encourages and rewards with rebates, smart energy decisions which will allow our state to reach 100 percent clean energy faster and more economically through energy efficiency and conservation. As the Public Benefits Fee Administrator, HE serves all the islands except for Kauai. From July 1, 2018 through March 31, 2019, the program invested over \$18 million to deliver more than 1.1 billion kilowatt hours (kWh) in estimated lifetime customer-level energy savings at a rough cost of one-cent per kWh. This is the equivalent to building a 56-megawatt solar farm or energy savings to power 173,000 homes for a year. In addition, this will reduce greenhouse gas emissions by nearly 1 million tons. The HSEO and HE also collaborate on energy efficient codes coordination and statewide energy code compliance and training, as well as co-sponsoring continuing education for architects, engineers, and facilities managers on getting to net zero energy, greening the hospitality sector, incentives for energy efficiency, and other topics. These are done in tandem along with the participation and co-sponsorship of other professional and non-profit organizations.

The Energy Efficiency Portfolio Standards addresses §269-96.

Hawaii Energy Building Code

The HSEO serves as a voting member and an active participant on the State Building Code Council (SBCC). The HSEO is also a voting member at the International Code Council's hearings on the development of the 2021 International Energy Conservation Code (IECC).

The HSEO chairs SBCC and the Council's Investigative Committee for the IECC and proposes Hawaii-unique amendments to the national IECC to achieve additional energy savings. Homes and buildings built to the 2015 code use 30 percent less energy than those built to the previous code. The Hawaii amendments contribute an additional 3 percent savings (approximately) and some of the amendments also help to reduce construction costs.

In addition to successfully advocating for adoption of the 2015 IECC Chapter 3-181.1 State Energy Conservation Code, the HSEO testified before the Kauai, Maui, and Honolulu county councils on the adoption of the 2015 IECC with the state amendments and additional amendments which strengthen the code. The HSEO has testified at national hearings in support of maximizing energy efficiency through eventual adoption of the 2021 IECC. The first hearing resulted in an estimated efficiency improvement of 10 percent for commercial buildings and 3 percent for residential buildings compared with the existing code. The HSEO representatives attended the second public comment hearing in October 2019 and advocated for amendments that will achieve additional savings, including the addition of an appendix on a code for net zero energy residential and a solar and storage ready appendix for commercial buildings.

The HSEO testified in support of Bill 25 county amendments to the 2015 IECC before the Honolulu City Council's Committee on Zoning, Planning and Housing, and before the full Council. In addition, the HSEO served in an advisory capacity as the Office of Climate Change, Sustainability and Resiliency formulated Bill 25, and continues to respond to inquiries from the Office regarding proposed amendments.

To facilitate understanding of the recent amendments, the HSEO provided a second statewide training for public sector code officials and private sector engineers, architects, builders, and vendors, and provided technical assistance by answering code-related questions. Due to an earlier study which measured the level of compliance with energy code provisions, the HSEO focused its statewide training for over 300 public and private sector attendees on areas of the code that needed improvement. The HSEO closely coordinated with the Energy Efficiency Codes Coordination committee on expanding outreach to the private sector, conducting a code compliance survey and supporting Hawaii's adoption of appliance efficiency standards. The HSEO provides a hotline for code-related queries and speaks to professional organizations on their interests in the code. The HSEO will soon commence state amendment proposals for and training on the 2018 IECC which includes appendices for solar-ready residences and commercial buildings.

As a result of the HSEO's efforts, the estimated net savings from the 2015 IECC with Hawaii amendments is 12,962 MWh in 2016; 1,083,590 MWh in 2026 (year 10); 1,991,059 MWh in 2030; and 4,702,738 MWh in 2036 (year 20). The estimated reduction in energy costs is \$1.4 billion over 20 years.

More information can be found at the [Hawaii Energy Building Code](#) web page.

The Hawaii Energy Building Code addresses §107-22(4), §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), §196-B(d)(1), §196-B(d)(3), §196-B(d)(6), §196-B(d)(7), §196-B(d)(11), §196-B(d)(15).

Self-Funding Energy Savings

Energy Performance Contracting

Section 196-30 of the Hawaii Revised Statutes (HRS) establishes guidelines for benchmarking, retro-commissioning, and energy savings performance contracts for public buildings.

Energy performance contracting (EPC) allows government agencies to pay for energy efficiency upgrades with the savings on their utility bills. The HSEO provides technical assistance to state and county agencies entering into energy performance contracts and projects that include a university, office buildings, hospitals, courthouses, prisons, community colleges, wastewater treatment plant, airports, harbors, highways, and Board of Water Supply. To support these efforts the HSEO developed an Energy Performance Contracting Guide for state and county agencies containing model templates and best practices.

The HSEO has provided technical assistance to state and county government facility decision-makers by way of:

1. Reviewing energy service company proposals;
2. Evaluating investment grade audits;
3. Reviewing contracts and financing packages;
4. Conducting educational/technical training sessions; and
5. Providing ongoing assistance and support services.

The HSEO's involvement in state agency EPC helped the Daniel K. Inouye International Airport (HNL) attain Airport Carbon Accreditation from the Airports Council International – North America for 2016 to 2019. Airport Carbon Accreditation recognizes efforts of airports to manage and reduce their CO₂ emissions. Inventories of greenhouse gas emissions of HNL's annual operations have shown that their energy performance contract has allowed the airport to both reduce greenhouse gas emissions and generate clean renewable energy through the installation of solar photovoltaic panels.

As a result of the HSEO's efforts to support EPC:

- Hawaii received its eighth consecutive *Race to the Top* award from the Energy Services Coalition in 2019 for being the all-time per capita investment leader in EPC at \$372.81.
- Hawaii surpassed the half-billion-dollar mark for investment in EPC in 2017, making it only one of nine states in the nation to achieve this milestone.
- The \$507.1 million of energy performance contracts put in place since 1996 will save the state an estimated \$1.2 billion in electricity costs over the life of the contracts.
- Since 1996 energy performance contracts signed by state and local government agencies include 295 buildings and facilities covering more than 112 million square feet.
- The estimated savings from the energy performance contracts are equivalent to powering 396,586 homes for one year.

STATE AND COUNTY ENERGY PERFORMANCE CONTRACTS

Agency	Year(s)	Contract Amount (\$)	Estimated Savings Over Life of Contract (\$)
UH-Hilo	1996-2012	\$6,402,695	\$14,630,066
County of Hawaii	1997-2026	\$2,215,546	\$8,157,880
County of Kauai	1998-2012	\$525,965	\$1,205,990
City and County of Honolulu	2001-2025	\$11,900,205	\$36,066,761
Hawaii Health Systems Corporation	2002-2022	\$21,936,997	\$55,766,364
Judiciary	2003-2012	\$1,474,406	\$9,785,036
Department of Accounting and General Services Phase I	2009-2029	\$36,873,266	\$72,580,767
Department of Public Safety	2010-2030	\$25,511,264	\$57,211,112
University of Hawaii Community Colleges	2012-2032	\$34,207,392	\$37,000,000
City and County of Honolulu, Kailua Wastewater Treatment Plant	2013-2033	\$6,054,178	\$13,693,910
Department of Accounting and General Services Phase II	2013-2033	\$17,400,000	\$28,000,000
Department of Transportation (Airports/Highways/Harbors)	2013-2034	\$309,506,592	\$795,560,746
City and County of Honolulu, Board of Water Supply	2016-2036	\$33,125,398	\$56,846,668
Total		\$507,133,904	\$1,186,505,300

Energy Performance Contracting addresses §196-30, §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(3).

Promoting Energy Efficiency

Hawaii Green Business Program

Hawaii’s businesses are contributing to the clean energy movement by improving their operations in an environmentally, culturally, and socially responsible manner. To help businesses implement energy and resource efficiency practices, the state set up the Hawaii Green Business Program as a partnership between the HSEO, the Department of Health, the Board of Water Supply and the Chamber of Commerce of Hawaii. Businesses and organizations that embrace green business practices not only enjoy utility cost savings they also contribute to Hawaii’s collective energy independence goals and, ultimately, a more sustainable environment.



From 2009-2018 over 125 business and government entities have benefited from the program, representing sectors such as hospitality, commercial office, retail, restaurant, food services, grocery, venue and green events. Their savings amount to:

- 23.5 million kWh of energy (equivalent to powering 3,620 homes for one year in Hawaii)
- 244.1 million gallons of water
- \$6.6 million in energy costs

For more information visit the [Hawaii Green Business Program](#) website.

The Hawaii Green Business Program addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(4).

Solar Water Heater Variance

The HSEO administers the solar water heater variance (SWHV) program. Effective on January 1, 2010, the HSEO has reviewed and processed SWHV requests, adopted rules pursuant to chapter 91 (Title 15, Chapter 37, Solar Water Heater Variance), and began collecting processing fees in September 2018 when the online SWHV application went online. The online application is available at [Solar Water Heater Variance Request](#).

The HSEO coordinates with county building and permitting departments and provides information and updates to private sector architects, engineers and homeowners, and posts information on its website at [Solar Water Heater Variance](#). Additionally, the HSEO continually updates the SWHV website, request form, and Life Cycle Cost Comparison worksheet—all of which are available online.

Number of Solar Water Heater Variances Processed in 2018 by County and Device

	Total Number per Island	#1 Impracticable or Cost Prohibitive	#2 PV System	#3 On-demand Gas	Denied or Cancelled	Percent of Total
Hawaii	723	0	13	692	18	56.8%
Kauai	107	0	4	99	4	8.4%
Maui	114	3	25	85	1	8.9%
Molokai	1	0	1	0	0	0.1%
Oahu	329	1	18	309	1	25.8%
Total:	1,274	4	61	1,185	24	100.0%
		0.3%	4.8%	93.0%	1.9%	100.0%

In 2018, 1,274 solar water heater variances were processed, including 1,185 for the gas-tankless instantaneous water heater, or 93 percent of the total SWHVs processed that year.

**Number of Solar Water Heater Variances Processed from January 2010–December 2018
by County and Device**

	Total Number per Island	#1 Impracticable or Cost Prohibitive	#2 PV System	#3 On-demand Gas	Denied or Cancelled	Percent of Total
Hawaii	4,291	1	131	4,141	18	63.5%
Kauai	837	7	24	802	4	12.4%
Maui	533	9	74	444	6	7.9%
Molokai	34	0	2	32	0	0.5%
Oahu	1,064	7	123	930	4	15.7%
Total:	6,759	24	354	6,349	31	100.0%
		0.4%	5.2%	93.9%	0.5%	100.0%

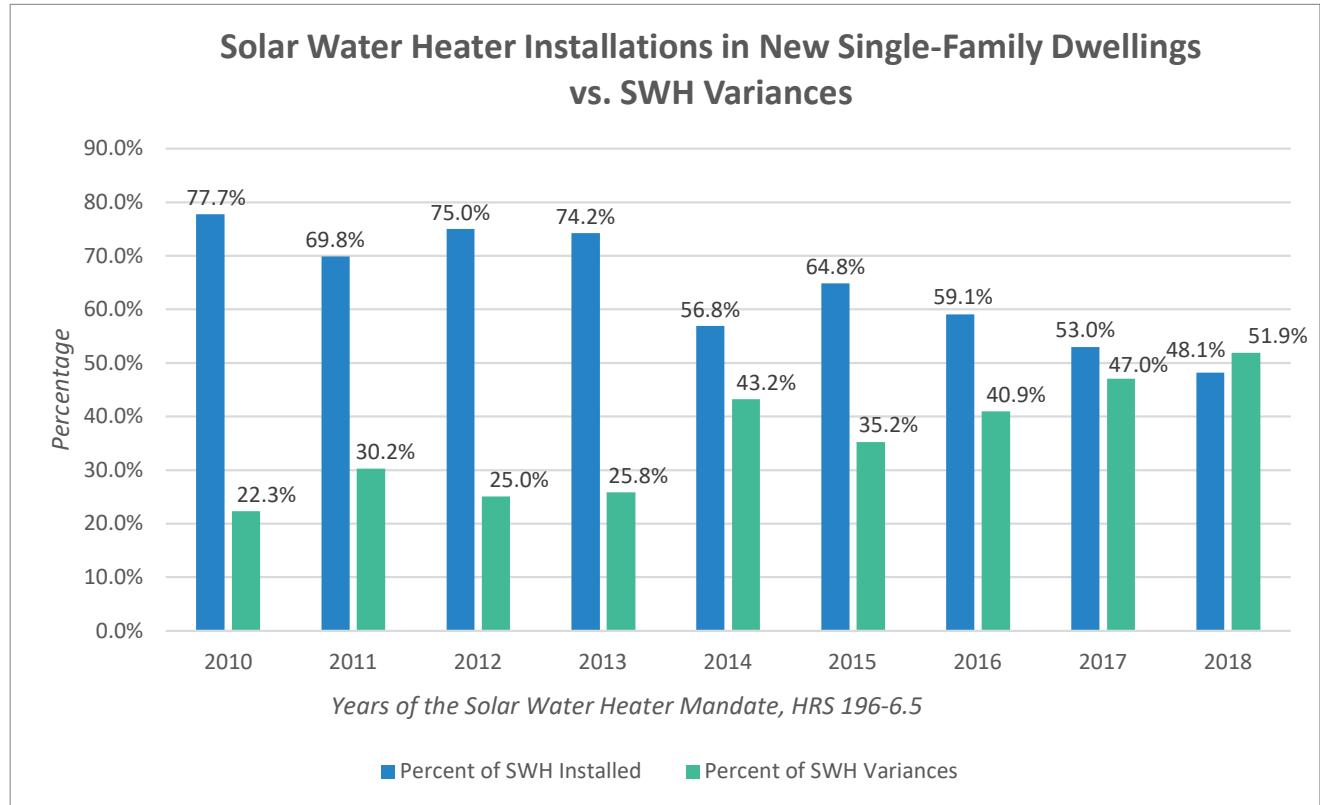
Since the initiation of the solar water heater mandate on January 1, 2010 through December 30, 2018, 6,759 SWHVs were processed, including 6,349 for the gas-tankless instantaneous water heater, or 93.9 percent of the total SWHVs processed.

Number and Percentage of Solar Water Heaters Installed in New Single-Family Dwellings and Solar Water Heater Variances Processed

	SWH Installations in new single-family dwellings		SWH Variances	
	Number	Percent	Number	Percent
2010	1,457	77.7%	417	22.3%
2011	1,121	69.8%	484	30.2%
2012	1,380	75.0%	461	25.0%
2013	1,724	74.2%	600	25.8%
2014	1,189	56.8%	903	43.2%
2015	1,461	64.8%	780	35.2%
2016	1,186	59.1%	804	40.9%
2017	1,372	53.0%	1,124	47.0%
2018	1,183	48.1%	1,274	51.9%

The percentage of solar water heater installations in new single-family dwellings in the state has steadily decreased since the start of the solar water heater mandate, January 1, 2010. From 2010 to 2018, solar water heater installations in new single-family dwellings decreased 29.6 percent (77.7% - 48.1%). In 2018, for the first time, the number of solar water heater variances was higher than the number of solar water heater installations in new

single-family dwellings. This could have been caused by the loss of the solar water heater incentives, such as the rebate and 35 percent state income tax credit. The lower cost and compact size of the gas-tankless instantaneous water heater may have contributed to its large share of variances (93.9 percent from 2010 through 2018). Housing data compiled from the DBEDT “Data Book” Table 21.07 and estimates by DBEDT READ.



- Working Group.** DBEDT Director Mike McCartney initiated a working group to review the Hawaii Administrative Rules Title 15, Chapter 37 (Solar Water Heater Variance). The working group, comprised of the HSEO; State of Hawaii Office of Environmental Quality Control; Hawaii Solar Energy Association; Earthjustice; Hawaii Gas; and the City and County of Honolulu Office of Climate Change, Sustainability and Resiliency is reviewing the Administrative Rules’ conformance with the state solar water heater mandate (HRS 196-6.5) and the final judgment of Hawaii Circuit Court Judge Jeffrey Crabtree in Hawaii Solar Energy Association and Sierra Club v. DBEDT, Civil No. 18-1-1398-09 (JPC), April 29, 2019.
- Revised Administrative Rules.** An update to Hawaii Administrative Rules Title 15, Chapter 37 (Solar Water Heater Variance), is being reviewed by the working group initiated by DBEDT Director Mike McCartney.
- Updated Life Cycle Cost Comparison.** An update to the solar water heater variance Life Cycle Cost Comparison (LCCC) worksheet is being reviewed by the working group reviewing the solar water heater variance administrative rule, HAR 15-37. A 15-year LCCC is used for solar water heater variance requests using Option 1 as justification for a variance (“Installation of a solar water heater is impracticable due to poor solar resource; or installation of a solar water heater is cost-prohibitive

based upon a life cycle cost-benefit analysis that incorporates the average residential utility bill and the cost of the new solar water heater system with a life cycle that does not exceed 15 years.”). A 30-year LCCC worksheet is being considered for requests using Option 3 (gas-tankless instantaneous water heater) to comply with the final judgment of Hawaii Circuit Court Judge Jeffrey Crabtree in *Hawaii Solar Energy Association and Sierra Club v. DBEDT*, Civil No. 18-1-1398-09 (JPC), April 29, 2019, which stated, in part, “It is the intent of the legislature that the variances provided for in Act 204, Session Laws of Hawaii 2008 (Act 204) will be rarely, if ever, exercised or granted because the burden of proof will lie with the applicant to demonstrate that a solar water heater system, regardless of location or circumstance, is not cost effective in the context of a 30-year mortgage term.”

The Solar Water Heater Variance program addresses §196-6.5, §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), §196-B(d)(8), §196-B(d)(15).

Leadership in Energy and Environment Design (LEED)—Build + Buy Green and ReNew Rebuild Hawaii Events

The HSEO is a member of the U.S. Green Building Council (USGBC), the non-profit entity which administers the LEED program. As of May 2019, Hawaii had 206 LEED certified projects and 231 registered projects. This totals 437 total projects for a gross square footage of over 50.5 million gross square feet. Using less energy and water, LEED-certified spaces save money for families, businesses and taxpayers; reduce carbon emissions; and contribute to a healthier environment for residents, workers and the larger community. The certified buildings included numerous private developments, as well as federal, state, and county public buildings. There are 946 LEED Credentialed professionals based in Hawaii.



In 2018 Hawaii ranked seventh among the 50 states with LEED-certified space with 3.31 gross square feet per capita. In 2017 Hawaii ranked fourth with 3.32 gross square feet per capita of LEED-certified space.

Hawaii Build + Buy Green, in partnership with the USGBC Hawaii, the HSEO, AIA Honolulu and other organizations, is an annual conference with site visits featuring clean energy and green building sites in the State of Hawaii. This year the event was held on Kauai and highlighted the Kauai Island Utilities Cooperative and their 55 percent renewable energy portfolio, LEED platinum-certified affordable housing projects for seniors and workforce rental housing, and the National Tropical Botanical Gardens research center, and gardens in Limahuli. Over 60 architects, engineers, planners, landscape architects, higher education facilities representatives, and students, as well as interested professionals from across the state participated in the event.

The HSEO participates in ReNew Rebuild Hawaii, which conducts quarterly forums that address its new purpose of supporting educational initiatives that lower energy costs through investments in energy-and resource-efficient technologies, promote economic growth, build communities, and protect the environment. Planners, engineers, scholars, utility employees, city, state, federal and county specialists, entrepreneurs, contractors, equipment manufacturers, non-profit organizations, inventors, military energy planners and students participate in the events.

Leadership in Energy and Environmental Design addresses §196-9, §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), §196-B(d)(5).

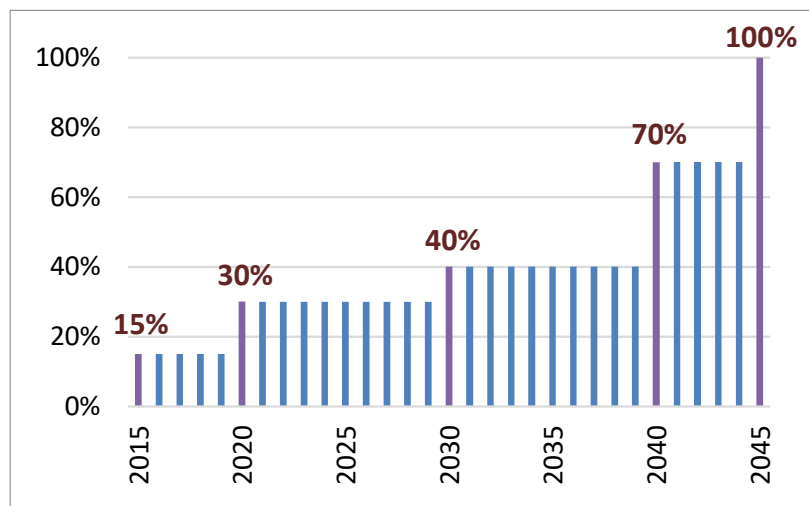
RENEWABLE ENERGY

Introduction

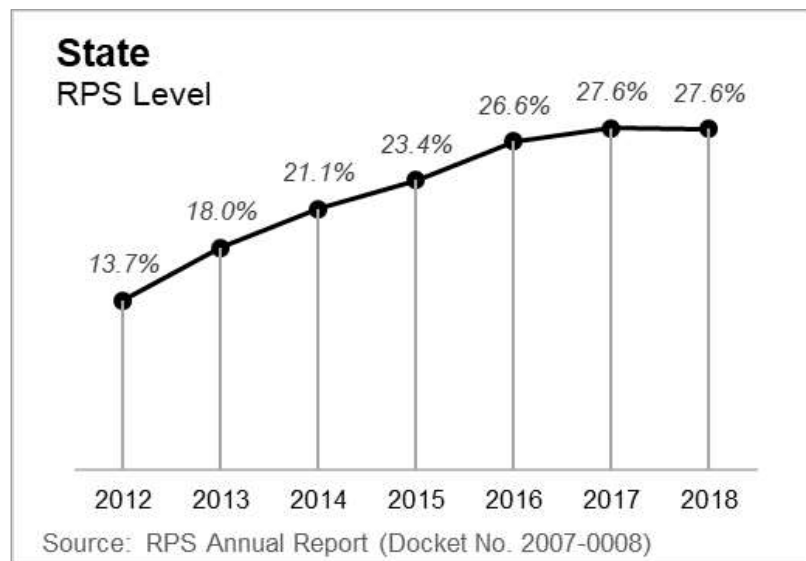
Hawaii was the first state in the nation to enact renewable portfolio standards (RPS) requiring the use of renewable sources to generate the equivalent of 100 percent of electricity sales by 2045, with interim requirements of 15 percent in 2015, 30 percent in 2020, 40 percent in 2030, and 70 percent in 2040.

In 2018 Hawaii’s statewide RPS was 27.6%. Both the Hawaiian Electric Companies and the Kauai Island Utility Cooperative met their interim 2015 RPS goals and are on track to reach the required 30 percent in 2020. The Hawaii State Energy Office (HSEO) actively supports the deployment of investments to meet Hawaii’s RPS targets as cost-effectively as possible through a variety of tools and initiatives.

Hawaii’s Renewable Portfolio Standards (RPS)

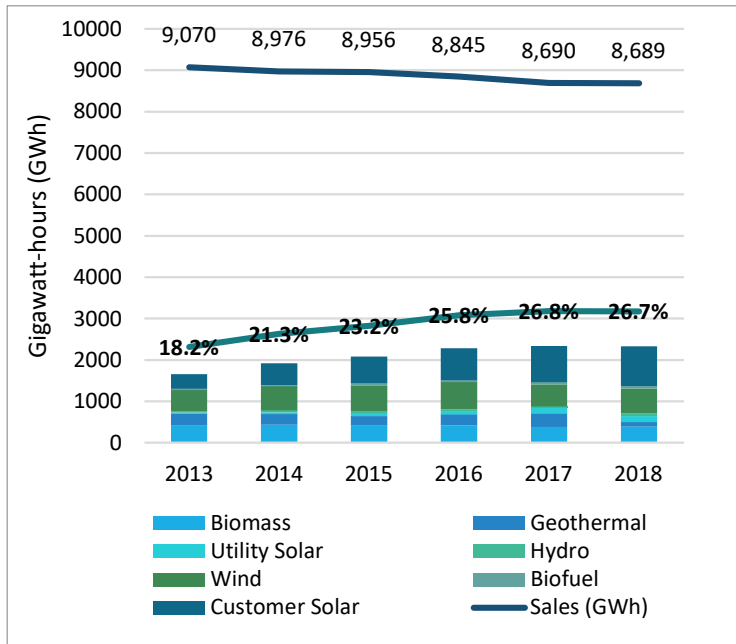


RPS percentage: The amount of electricity generated by renewable sources connected to the utility’s electrical grid, divided by the total amount of electricity sold by the utility in that year.



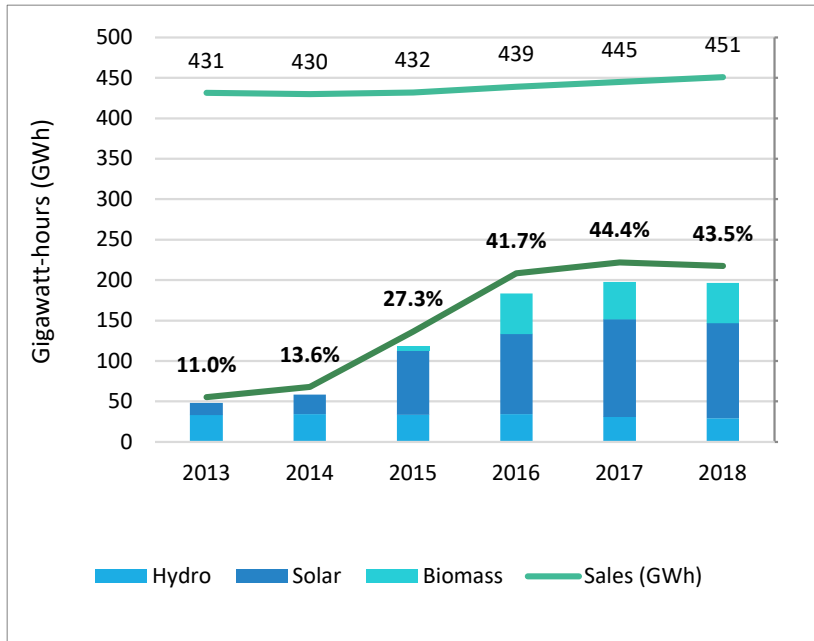
All four of Hawaii’s electric utilities (KIUC, HECO, MECO, HELCO) must file an annual RPS status report to the Hawaii Public Utilities Commission (Docket 2007-0008). Hawaii’s statewide RPS is determined by combining the four RPS reports.

RPS % met by the Hawaiian Electric Companies and Annual Electricity Sales



The Hawaiian Electric Companies (HECO, MECO, and HELCO) had a combined RPS of 26.7% in 2018. As shown in the graph, electricity sales declined between 2013 and 2018. Geothermal production was significantly less in 2018 due to lava flows on the Big Island.

RPS % met by the Kauai Island Utility Cooperative and Annual Electricity Sales



The Kauai Island Utility Cooperative (KIUC) had a combined RPS percentage of 43.5% in 2018. As shown in the graph, electricity sales increased between 2013 and 2018.

Throughout FY19 the HSEO worked with state and county agencies, energy stakeholders, and local communities to encourage and facilitate appropriate renewable energy development and conservation.

The program target audience also included emerging renewable energy producers, businesses and organizations interested in renewable energy, key energy stakeholders, and policy makers.

Renewable Energy Tools and Online Information Resources

Hawaii Renewable Energy Projects Directory

(Available at the HSEO's Developer & Investor Center Self-Help Suite)

The Renewable Energy Projects Directory is the only interactive online map managed by the State of Hawaii that identifies all large-scale renewable energy projects and innovative energy projects in Hawaii distinguished by development status: existing/operational or proposed/under development. The Directory provides value by (1) demonstrating Hawaii's progress towards 100 percent renewable energy, (2) attracting more renewable energy investments in Hawaii by showcasing successful projects and innovations, (3) informing regulatory agencies, permitting, and policy decisions, and (4) informing interested communities and stakeholders of proposed and existing projects. The Directory, searchable by island, technology type (solar, wind, hydropower, biomass, etc.), project name, and location, includes a downloadable list with project size, status, tax map key, and Hawaii Public Utilities Commission (PUC) Docket Number. The Directory was launched in 2012 and is updated periodically by the HSEO as new project information becomes publicly available. As of November 2019, the Directory featured 116 projects with 77 existing/operational projects and 39 projects proposed or under development and recorded 18,190 pageviews from July 1, 2018 to June 30, 2019.



Screenshot of the Energy Projects Directory in Map mode.

Visit the [Hawaii Renewable Energy Projects Directory](#).

The Hawaii Renewable Energy Projects Directory addresses §196-A(b)(1) and §196-B(d)(2).

Renewable EnerGIS

(Available at the HSEO's Developer & Investor Center Self-Help Suite)

Renewable EnerGIS provides geographic information system (GIS) data related to the renewable energy resource potential and siting of renewable energy projects at specific sites selected by the user.

Developed in partnership with the Hawaii Office of Planning's Statewide GIS Program, EnerGIS supports efficient and low-cost initial project due diligence, which enables more appropriate renewable energy

project siting and informed project planning and permitting; thereby decreasing project development timelines, costs, and impacts. By identifying site-specific attributes, EnerGIS informs regulatory agencies and other stakeholders of potential project impacts and permits. Originally built in 2012, the HSEO released an upgraded version of EnerGIS in January 2018 including new features, data, and graphics, and is currently in the process of adding new data layers (transmission infrastructure, sea level rise, zoning, site contamination) and features. EnerGIS recorded 6,513 pageviews from July 1, 2018 to June 30, 2019.



Sample screenshot of EnerGIS input screen, with map graphic and parcel information.

Visit [Renewable EnerGIS](#).

Renewable EnerGIS addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(3), and §196-B(d)(15).

Renewable Energy Permitting Wizard (Available at the HSEO's Developer & Investor Center Self-Help Suite)

Identifying the federal, state, and county permits required for large projects in Hawaii can be complex and time-consuming. The Renewable Energy Permitting Wizard helps stakeholders (developers, regulatory agencies, landowners, communities, etc.) understand the county, state, and federal permits that may be required for individual renewable energy projects in Hawaii, including procedures and prerequisites that dictate the sequence of approvals. The Wizard outputs a downloadable Permit List and Project Schedule of permits for a specific project based on inputs provided by the user. By identifying approximately 180 permits, the Wizard supports informed project planning, which reduces project development timelines, costs, and impacts. The Wizard supports community engagement by identifying opportunities for public participation as required by individual permit processes. The Wizard launched in 2011 and is available in an open source software environment so it can be replicated by other jurisdictions. The Wizard is currently in the process of being updated by the HSEO. From July 1, 2018 to June 30, 2019 the Wizard recorded 2,913 pageviews.

Visit the [Renewable Energy Permitting Wizard](#).

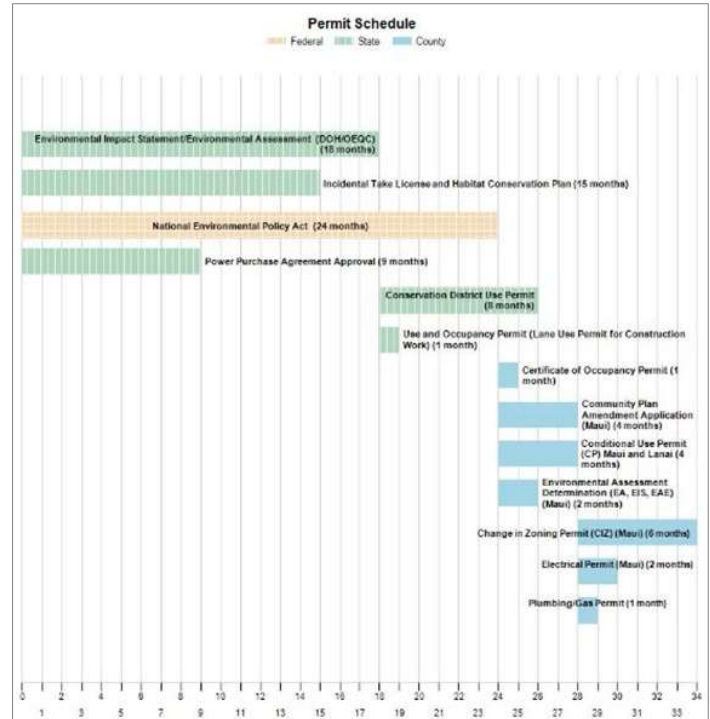
The Renewable Energy Permitting Wizard addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(3), and §196-B(d)(15).

Hawaii State Energy Office Permitting Resources (Permit Guide, Permit Briefs)

The HSEO's Guide to Renewable Energy Facility Permits in the State of Hawaii (2015) and individual Permit Briefs provide easily-accessible information on the siting, permitting, and development of potential renewable energy sites in Hawaii. These resources can be used by project proponents, regulatory agencies, interested communities, and other stakeholders to develop an initial understanding of sensitivities in certain areas and the additional requirements (and costs) that may be incurred (or avoided) based on selecting more appropriate sites. These resources support informed project siting and design, which can lessen project impacts to the environment and surrounding communities while leading to more efficient project development. Smartly planned and sited projects can reduce project permitting and development soft costs and translate into lower electricity costs to the ratepayer.

View the [Guide to Renewable Energy Facility Permits in the State of Hawaii \(PDF\)](#).

Visit the [Permit Briefs web page](#).



Screenshot of a sample permit schedule, color-coded for federal, state, and county permits.

The Hawaii State Energy Office Permitting Resources address §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(3), and §196-B(d)(15).

Support for Public Agency Online Permitting Tools

The Hawaii Department of Health’s Environmental Health Administration (EHA) e-Permitting Portal provides online access to environmental permits administered by EHA including land, air, and water permits required for renewable energy and other projects. e-Permitting provides access to environmental permit applications, related instructions and information, and allows for online application compilation and submission, online application fee payment and online submission tracking. The HSEO provided early funding support for e-Permitting, which was launched in early 2013 and is currently managed by EHA, which has continued to improve this valuable tool.

The Division of Forestry and Wildlife (DOFAW) within the Hawaii Department of Land and Natural Resources provides online permitting for certain DOFAW permits and approvals that may be required for renewable energy and other types of projects. DOFAW serves to responsibly manage and protect watersheds, native ecosystems, and cultural resources and provide outdoor recreation and sustainable forest products opportunities, while facilitating community involvement, partnerships, and education. The HSEO provided early funding support for DOFAW’s online permitting platform.

Visit the [e-Permitting Portal](#).

Visit the [NARS, Rare Plant, and Native Invertebrate Permitting](#) site.

Support of public agency online permitting tools addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(3), and §196-B(d)(15).

Hawaii Brightfields Initiative

In 2018 the HSEO partnered with the Hawaii Department of Health’s Hazard Evaluation and Emergency Response Office (HEER), the U.S. Environmental Protection Agency (EPA), and the National Renewable Energy Laboratory (NREL) to create a searchable database of previously developed or disturbed land parcels in Hawaii, combined with site-specific information relevant to renewable energy

development (solar resource, estimated output, slope, acreage, proximity to transmission, zoning, presence of sensitive environments, contamination/cleanup status, required monitoring/site controls, and tax map key (TMK) identifiers, to provide landowners, potential project developers, and others with a convenient compilation of data to inform site use decisions.

In June 2018 NREL delivered the master database and methodology. In July 2018 the HSEO conducted a workshop with key agencies familiar with data, mapping, and project siting.

When published online in late 2019, the resulting Brightfields map and database, combining five databases and over 10,000 records, will provide a publicly-accessible source of preliminary site-specific due diligence information on potential issues, contamination, remediation, compliance, management needs, and capacity for energy output.



The Hawaii Brightfields Initiative addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(3), §196-B(d)(4), and §196-B(d)(15).

Hawaii Clean Energy Initiative Programmatic Environmental Impact Statement

The Hawaii Clean Energy Programmatic Environmental Impact Statement (PEIS) provides analysis, at a programmatic level, of the potential environmental impacts of clean energy activities and technologies in the following clean energy categories: (1) Energy Efficiency, (2) Distributed Renewables, (3) Utility-Scale Renewables, (4) Alternative Transportation Fuels and Modes, and (5) Electrical Transmission and Distribution. The Federal cooperating agencies for the PEIS were the U.S. Environmental Protection Agency, Bureau of Ocean Energy Management, National Park Service, Natural Resources Conservation Service, U.S. Marine Corps, U.S. Navy, and Federal Aviation Administration. The project was a result of a long-term partnership between the U.S. Department of Energy (USDOE) and the State of Hawaii and remains available to inform and support Hawaii in meeting its clean energy goals.

Visit the [Hawaii Clean Energy Initiative Programmatic Environmental Impact Statement web page](#).

The Programmatic Environmental Impact Statement addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(3), §196-B(d)(4), and §196-B(d)(15).

Renewable Energy Assistance and Facilitation

Assist Public Agencies to Deploy Renewable Energy

The HSEO assists other public agencies to review, evaluate, and complete financial analysis for renewable energy projects. For example, in a collaboration with the Department of Transportation-Harbors Division, Foreign Trade Zone (FTZ) and HECO, the HSEO assisted with the evaluation by completing an initial estimate of PV siting on FTZ's available roof top and parking lot. While completed prior to this reporting period, the HSEO also assisted FTZ in the evaluation of its existing 300-kilowatt PV system at its Pier 2 facility; at the time considered the largest PV system in Honolulu's business district. In another project, the renewable energy team supported the energy efficiency team in a review by the Department of Transportation-Airports Division of a request for proposals to enable Kahului Airport to be powered by 100 percent renewable energy.

Assistance to public agencies to deploy renewable energy addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), and §196-B(d)(6).

Renewable Fuels Production Tax Credit

The Renewable Fuels Production Tax Credit (RFPTC) is a tax credit afforded to qualifying taxpayers who produce and sell a minimum quantity of 2.5 billion British thermal units of renewable fuels over a calendar year. By statute, DBEDT/HSEO is responsible for developing forms for, collecting, acknowledging, and issuing certificates based on independent third-party certified statements providing the data required by Section 235-110.31 of the Hawaii Revised Statutes. By statute, DBEDT/HSEO is also required to create the Notice of Intent/Notice to Start Production (NOI/NTSP) forms, administer the \$3 million per year aggregate cap limit, collect annual data related to the RFPTC, and submit a written report to the Governor and Legislature regarding the production and sale of renewable fuels.

In FY19 the HSEO created and published the NOI/NTSP forms and received and processed RFPTC Certificates. In compliance with HRS 235-110.31(l) reporting requirements, the HSEO is reporting the following:

1. The number of renewable fuels production facilities in the state and outside the state that have claimed the RFPTC for calendar year 2018: Two (2) facilities.
2. The location of renewable fuels production facilities in the state and outside the state that have claimed the RFPTC for calendar year 2018:

Facility 1: 16-240 Mikahala Street, Keaau, HI 96749

Facility 2: 91-390 Kauhi, Kapolei, HI 96707

3. The total number of British thermal units (BTUs) of renewable fuels, broken down by the type of fuel, produced and sold in 2018:

Facility 1: Biodiesel renewable fuel produced: 612,914,200,200 BTUs

Biodiesel renewable fuel sold: 520,556,668,879 BTUs

Facility 2: Hydrogen renewable fuel produced: 44,025,420,000 BTUs

Hydrogen renewable fuel sold: 44,025,420,000 BTUs

4. The projected number of BTUs of renewable fuels production for calendar year 2019:

Facility 1: 750,000,000,000 BTUs

Facility 2: 44,000,000,000 BTUs

The Renewable Fuels Production Tax Credit program addresses §235-110-31(l), §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), §196-B(d)(7), and §196-B(d)(8).

ENERGY PLANNING

Introduction

Energy planning by the Hawaii State Energy Office (HSEO) takes a holistic perspective to achieve the statutory direction of the Hawaii Clean Energy Initiative (HRS 196-10.5) of managing the state's transition to a clean energy economy. Energy planning requires addressing the interdependencies across energy sectors such as electricity and transportation, and supply channels for renewable and fossil fuels. Energy sector interdependencies also need to be assessed through the lenses of affordability, environmental sustainability, energy assurance, security, and resiliency. Planning the transition to a clean energy economy includes activities that are both direct, related to the energy systems such as the grid and fuels infrastructure, and indirect, relating to supporting innovation and the business community. To achieve the transition to a clean energy economy the HSEO works with the local community; federal, state and county agencies; and energy stakeholders to encourage and facilitate clean energy economy. The program target audience also includes emerging clean energy technology companies, businesses and organizations and key energy stakeholders and policy makers.

Planning and Modeling

Hawaii Advanced Visualization Environment Nexus (HAVEN)

HAVEN is focused on the visualization and analysis of energy system data. HAVEN is supported by a \$225,076 grant from the U.S. Department of Energy (USDOE), in partnership with the University of Hawaii Laboratory for Advanced Visualization and Applications and the Hawaiian Electric Companies (HECO). HAVEN will develop advanced visualization capabilities which will allow for the HSEO to analyze and communicate information contained within complex energy data sets highlighting energy and related sector interdependencies and scenarios. HAVEN allows the HSEO to enhance its assessment of utility power supply plans and related issues such as the electrification of ground transportation and land use. The first visualization was completed at the end of 2017, the second visualization was completed in Q2 of 2019. In the fourth quarter of 2018 the HSEO finalized a twelve month no-cost extension for the HAVEN project, thereby extending the period of performance through December 31, 2019. The extension will allow the HSEO and its partners to continue their work on demonstrating visualization as an effective tool for analyzing and communicating the tradeoffs and interdependencies of clean energy deployment. With a new iteration of planning the utilities' buildout to 100 percent renewables, the extra time will allow the project to directly inform and influence this new planning cycle. As HAVEN's technology has matured there has been increasing demands for stakeholder engagements covering a broad range of venues. It has been featured at a USDOE and National Association of State Energy Officials conference in Washington D.C., the USDOE Headquarters, the Hawaii Energy Conference, Strengthening Ko'olaupoko: A Resilience Building Initiative, the Ellison Onizuka Day of Exploration event, and the Hawaii Survey and Mapping Conference.

engage

The HSEO's ongoing interaction with the USDOE has led to the creation of engage, an analytical model that will perform scenario analysis on Hawaii's comprehensive energy eco-system as well as feed data visualizations for program and policy assessment. Through USDOE's National Renewable Energy Laboratory (NREL) an estimated 3,000 NREL staff hours (equivalent of one and a half full time employees) have supported this initiative to date. The engage model will allow for the development of the HSEO's

quantitative and qualitative capacity and assist to recommend, develop proposals for, and assess the effectiveness of policy and regulatory decisions, and conduct energy emergency planning. A beta version of the model was completed in the fourth quarter of 2017. The HSEO continues to work closely with NREL on developing the model for a production release in October 2019.

The HAVEN and engage projects address §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(1), §196-B(d)(3), §196-B(d)(4), §196-B(d)(5), §196-B(d)(6), §196-B(d)(9), §196-B(d)(12), §196-B(d)(13), §196-B(d)(15).

Evaluation of Utility Ownership and Regulatory Models for Hawaii Report

The HSEO has completed a study analyzing alternative models for utility ownership and regulation in Hawaii.

The study was produced in response to Act 124 (SLH 2016), which provided funding to the HSEO “for a study evaluate alternative utility and regulatory models including, but not limited to, cooperative, municipal and independent distribution system operators; and evaluate the ability of each model to: achieve state energy goals; maximize consumer cost savings; enable a competitive distribution system in which independent agents can trade and combine evolving services to meet customer needs; and eliminate or reduce conflicts of interest in energy resource planning, delivery and regulation; and to include a long-term cost-benefit analysis of each model and the steps required to carry out each scenario for each county.” The study examined the costs and benefits, as well as the viability of, various electric utility ownership and regulatory models to help Hawaii in achieving its energy goals. The full report can be viewed at the [Utility Model Study page](#) on the HSEO website.

Through a competitive procurement process a contract to undertake the study was awarded to Boston-based London Economics International LLC (LEI), a global economic, financial and strategic advisory professional services firm specializing in energy, water and infrastructure. The study was informed by a robust outreach effort that included three rounds of stakeholder meetings and workshops on all islands as well as numerous one-on-one meetings over the past 18 months. A public briefing on the final report was held on June 5, 2019 at the Hawaii Convention Center, Emalani Theater.

The study, the most extensive analysis of its kind ever conducted in Hawaii, examined existing ownership and regulatory models in each county and evaluated them in comparison to alternative models. Ownership models evaluated included: investor owned utility (IOU), IOU with a new parent company, cooperative utility, municipal utility, single buyer, hybrid ownership with majority government owned, integrated distribution energy resources systems operator, and grid defection. Regulatory models reviewed included: status quo, status quo with Hawaii Electricity Reliability Administrator, independent grid operator, distribution system platform provider, performance-based regulation (PBR), lighter PUC regulation and combinations thereof.

Each model was assessed for its ability to achieve state energy goals, maximize customer cost savings, enable a competitive distribution system, eliminate or reduce conflict of interest and align stakeholder interests. As part of that assessment the report took into consideration costs required to change from the existing model to a new model, legal and regulatory approvals needed for the change, impact on revenue requirements and rates, and effects on distributed energy resources, such as rooftop solar, batteries and smart appliances.

The Utility Ownership and Regulatory Models for Hawaii Report addresses §196-A(b)(1), §196-B(d)(16).

Hawaii Performance Based Regulation Policy Whitepaper

The Hawaii Performance-Based Regulation Policy whitepaper identifies policy strategies for consideration as the Hawaii Public Utilities Commission (PUC) evaluates approaches to Performance Based Regulation (PBR). The white paper offers concepts, frameworks, and elements of approaches that could be considered by the PUC, interested parties, and other state and local officials as they develop a new PBR paradigm. Appendix A of the white paper includes a brief and generic history of traditional cost of service regulation (COSR) to provide background and historical context as the PUC and stakeholders moves forward in this challenging arena. The whitepaper can be viewed at [Hawaii Performance-Based Regulation Policy \(PDF\)](#).

The Performance-Based Regulation Whitepaper addresses §196-A(b)(1), §196-B(d)(16).

Fossil Fuel Use by Sector Analysis

Electricity production and motor gasoline are just part of Hawaii's fossil fuel usage. Large quantities of jet fuel are also used in the state. In Hawaii the air transportation sector accounts for the highest percentage of petroleum use, followed by ground transportation and electricity production, with the remainder used for marine transportation, commercial, industrial and residential uses. The HSEO compiled data reported by the U.S. Energy Information Administration (EIA) to summarize 2017 petroleum use by sector in the state.

The fossil fuel analysis addresses §196-A(b)(1), §196-B(d)(2), §196-B(d)(12).

Monthly Energy Trends

Each month the Research & Economic Analysis Division of DBEDT published a Monthly Energy Trends report which contains data on West Texas Intermediate crude oil prices on the New York Mercantile Exchange, average monthly gasoline and diesel prices, barrels of oil imported from foreign countries, fuel consumption, vehicle registration, electricity generation, consumption, prices, and data on renewable energy used in electricity generation. Data are presented by island with state totals. Reports are available on the [Monthly Energy Trends webpage](#).

Monthly Energy Trends addresses §196-A(b)(1), §196-B(d)(12).

ENERGY ASSURANCE AND SECURITY

State Emergency Support Function #12 (SESF #12) (Energy): Development of Operations Guide Supporting State Energy Response, Security & Resiliency Goals

The HSEO serves as the lead state agency under the Hawaii Emergency Management Agency (HIEMA) to coordinate and respond to all significant energy disruptions impacting Hawaii. To support this mission the HSEO formed an internal planning team to develop a SESF #12 Operations Guide to improve its ability to perform the necessary action required to support the state and HIEMA response in an energy emergency. The Operations Guide provides practical guidance for staff to increase their readiness to respond to high-impact, low-frequency events that could result in an energy supply disruption. The HSEO designed the Guide with the understanding that staff supporting a disaster may not have deep expertise in either emergency management or the state energy assurance functions in particular during long duration events where recovery extends for weeks or months such as what happened in Puerto Rico with Hurricane Maria. The Guide incorporates the principles of the National Incident Management System (NIMS) to be flexible and scalable to support response efforts for any type of incident.

Emergency Management Technical Training for Hawaii State Energy Office Staff

With completion of the Operations Guide the HSEO has developed training resources and delivered course curriculum to staff supporting the SESF #12 mission on the use of the Guide. The HSEO is validating these processes and procedures through training, a progressive exercise program, and real-world response actions.

Collaboration with USDOE on Emergency Support Function #12 Training

The HSEO collaborated with the USDOE to participate in federal-sponsored Emergency Support Function #12 Initial Training to learn best practices from recent major disasters on how to successfully respond as an ESF #12 team member. Staff learned ways to build energy sector situational awareness, remove barriers for private sector restoration processes, help in the restoration of critical energy infrastructure, and leverage USDOE expertise, capabilities, and resources for state disasters.

WebEOC Training and SERT Orientation Training (via HIEMA) for Hawaii State Energy Office Staff

The Governor's Administrative Directive 15-01 requires state agency participation in emergency management trainings and exercises. All the HSEO staff are completing training being offered by HIEMA that helps improve readiness to execute emergency and essential functions during a disaster. This training included State Emergency Response Team (SERT) Orientation training and WebEOC training. WebEOC is the online information sharing system the state uses to provide situational awareness and to request resources during an incident. WebEOC is a fundamental tool in the HSEO fulfilling its role as the primary and coordinating agency for SESF #12.

The State Emergency Support Function #12 (Energy) Operations Guide Plan and Training addresses §127A, §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), §196-B(d)(1), §196-B(d)(3), §196-B(d)(4).

POLICY AND REGULATORY ADVANCEMENT

A vision for a clean energy future is not enough to make it happen – it must be paired with a resolute push for policies and regulations that counteract inertia, encourage progress and eliminate obstacles. It is the state’s steady, determined efforts to work with the utilities and regulatory bodies to reshape energy policy that will turn vision into reality.

Hawaii Public Utilities Commission—Dockets and Working Groups, and Council

In FY19 the HSEO intervened, participated, provided comments, or observed several PUC dockets, including:

Docket No.—Title	Docket material	Status
2018-0165 —Instituting a Proceeding to Investigate Integrated Grid Planning.	523 pages in 41 documents through 6/30/19.	On IGP council.
2018-0088 —Instituting a Proceeding to Investigate Performance-Based Regulation.	4,150 pages in 153 documents through 6/30/19.	Filed white paper on 12/21/18.
2017-0352 —In the Matter of the Requests of Hawaiian Electric Company, Inc., Hawai’i Electric Light Company, Inc., and Maui Electric Company, Limited to institute a Proceeding Relating to a Competitive Bidding Process to Acquire Dispatchable and Renewable Generation.	6,619 pages in 105 documents.	Opened 10/6/17. Repository docket. No parties.
2016-0168 —In the Matter of the Transmittal of Hawaiian Electric Company, Inc., Hawai’i Electric Light Company, Inc., and Maui Electric Company, Limited For Approval to Extend Schedule EV-F, Commercial Public Electric Vehicle Charging Facility Service Pilot, and Schedule EV-U, Commercial Public Electric Vehicle Charging Service Pilot.	1,160 pages in 47 documents.	Opened 6/27/16. Closed 7/31/19.
2015-0412 —Application of Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., Maui Electric Company, Limited For Approval of Demand Response Program Portfolio Tariff Structure, Reporting Schedule, and Cost Recovery of Program Costs through the Demand-Side Management Surcharge.	2,773 pages in 95 documents through 6/30/19.	Opened 12/30/15. Closed 9/3/19.
2015-0389 —Application of Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., Maui Electric Company, Limited For Approval to Establish a Rule to Implement a Community-Based Renewable Energy Program, and Other Related Matters.	5,217 pages in 149 documents through 6/30/19.	Opened 10/1/15. Intervenor.
2014-0192 —Instituting a Proceeding to Investigate Distributed Energy Resource Policies.	17,110 pages in 550 documents.	Opened 8/21/14. Closed 8/19/19.

Integrated Grid Planning, Docket No. 2018-0165

The Chief Energy Officer of the HSEO is a member of the Integrated Grid Planning Council.

Performance Based Regulation, Docket No. 2018-0088

The HSEO prepared and submitted a white paper, “Hawaii Performance-Based Regulation Policy,” as a public comment in the docket.

Participation in Public Utilities Commission Dockets, Working Groups, and Council addresses §196-A(b)(1), and §196-B(d)(13).

Community-Based Renewable Energy, Docket No. 2015-0389

Act 100 (SLH 2015), codified as HRS 269-27.4, established a CBRE program to make the benefits of renewable energy generation more accessible to a greater number of Hawaii residents. Pursuant to Act 100 (SLH 2015), Hawaii's electric utilities should collaborate with DBEDT and other stakeholders from the renewable energy industry and environment advocacy community on the development of a community-based renewable energy (CBRE) program in Hawaii. The HSEO participated in the PUC regulatory proceedings for CBRE and provided relevant analysis and comments, helping to ensure that the state's energy directives and interest are appropriately considered in the PUC's decision-making process towards CBRE program implementation. The Hawaiian Electric Companies launched the first phase of their CBRE program and received 15 applications with a total capacity of 9.98 MW. In September 2019, Hawaiian Electric Company announced the first CBRE project—a 270-kilowatt photovoltaic installation near the Mililani Tech Park on Oahu. Likewise, the Kauai Island Utility Cooperative issued its CBRE Project Solicitation in July 2018, and project development is ongoing.

Throughout this regulatory process, the HSEO participation included nine filings to the PUC, seven CBRE hearings and technical conferences, and 23 meetings to facilitate collaboration with key stakeholders and other related meetings associated with the HSEO.

Participation in the Community-Based Renewable Energy Public Utilities Commission Docket addresses §196-A(b)(2), and §196-B(d)(13).

Distributed Energy Resources, Docket No. 2014-0192

As a member of the Distributed Energy Resources (DER) Working Group established in 2014, the HSEO has provided input on topics such as distributed energy resources hosting capacity, advanced inverter adoption, interconnection tariffs (e.g., Rule 14H), evolving the original Net Energy Metering (NEM) tariff to new programs/tariffs more aligned with the state's technical and economic needs (e.g., Customer Grid Supply, Customer Self Supply, Smart Export). The HSEO was also a member of the Advanced Inverter Working Group.

Participation in the Distributed Energy Resources Working Group addresses §196-A(b)(4), and §196-B(d)(14).

Legislation to Update Hawaii Energy Assurance Statutory Guidance

With increasing amounts of renewable energy being generated and stored on and off the grid, new fast evolving threats and risks to the state's aging energy infrastructure from cybersecurity issues, climate change, natural disasters, market vulnerabilities, and maritime/transportation bottlenecks, there is a critical need for the state to have better situational awareness of the status of all interdependent energy systems. Antiquated statutory authority and legislative guidance are not ideally supportive of the responsibilities and duties of the chief energy officer, including addressing actual or potential energy shortages or disruptions which can impact the state's and the governor's overall energy objectives, as well as the safety and security of the population. Reports have highlighted states' needs to analyze system status and the transitional issues and trends impacting the energy ecosystem. Proposed updates go to support development of the detailed modern functional requirements needed to gain and maintain a more complete understanding of the state's energy ecosystem. With passage of this legislative guidance the state can develop a posture of overall energy resilience and security before, during, and after an event.

Legislation to update Hawaii Energy Assurance Statutory Guidance addresses §125C.

CLEAN TRANSPORTATION

Introduction

Pursuant to HRS 226-18(a)(2), planning for the state's facility systems regarding energy shall be directed toward the achievement of the following objectives, giving due consideration to increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawaii's dependence on imported fuels for electrical generation and ground transportation.

The Hawaii State Energy Office (HSEO) has taken a leadership role in advancing the adoption of clean transportation across Hawaii, including facilitation of the deployment of zero emission vehicles and associated charging infrastructure which directly contribute to reduced petroleum consumption and emissions in the transportation sector. To achieve the transition to a decarbonized transportation sector, the HSEO works with the local community; federal, state, and county agencies; energy stakeholders; and clean transportation stakeholders to encourage and facilitate adoption of clean transportation.

Accelerating Clean Transportation

State Energy Program (SEP) Formula Grant State Fleet Electrification Feasibility Study

The HSEO further developed the SEP formula grant scope of work and identified partners to develop a State of Hawaii fleet electrification feasibility study and implementation plan. This plan directly aligns with U.S. Department of Energy's SEP Program priorities, addressing the need to develop/implement best practice clean fleet implementation plans and analysis. The project will evaluate and recommend steps to transition the state government's vehicle fleet to EVs. The project will include a review of the Hawaii Revised Statutes §103D-412 light-duty motor vehicle requirements and associated Hawaii Government Vehicle Purchase Guidelines to identify amendments needed to advance the transition to fleet electrification. The HSEO will work in partnership with the Hawaii Department of Transportation (HDOT) to conduct an analytical evaluation of the HDOT's fleet to develop a charging infrastructure implementation strategy in support the fleet's transition to EVs. The assessment will review fleet vehicles' function and utilization and will identify state fleet parking facilities suitability and incremental infrastructure for installing charging infrastructure to support the electrification of identified vehicles. The project's deliverable will serve as a case study to inform state agencies as the state continues its fleet electrification transition.

The Fleet Electrification Feasibility Study addresses §103D-412, §196-A(b)(4), §196-B(d)(5), §226-18(a)(2).

Volkswagen Settlement

Approval of Hawaii's Beneficiary Mitigation Plan

Per the Volkswagen Settlement Environmental Mitigation Trust, each beneficiary is required to submit a Beneficiary Mitigation Plan to the Volkswagen Trustee, Wilmington Trust. The Beneficiary Mitigation Plan provides a high-level vision of how the State of Hawaii plans to utilize its VW Trust allocation based on the Eligible Mitigation Actions identified in the Volkswagen Settlement. The HSEO submitted and received approval of Hawaii's Beneficiary Mitigation Plan in March 2019 and was one of only two states to receive an A+ rating from U.S. Public Interest Research Group (PIRG) Education Fund.

Submission of First D-4 Funding for Diesel Emission Reduction Act (DERA) City and County Transit Bus Electrification

The HSEO submitted Hawaii's first D-4 Funding Request to Wilmington Trust for Environmental Mitigation Action #10 – DERA option. The request was for funds to support a City and County of Honolulu transit bus electrification project in partnership with the Hawaii State Department of Health Clean Air Branch, which administers Hawaii's DERA program, and the City and County of Honolulu Department of Transportation Services. Volkswagen Trust Funds and U.S. Environmental Protection Agency (EPA) DERA funds will be used to replace two diesel transit buses with zero emission battery electric transit buses. By utilizing Volkswagen Trust Funds to match the DERA base allocation Hawaii received an incremental incentive match of \$113,088 from the EPA.

The Volkswagen Settlement project addresses §196-A(b)(1), §196-A(b)(2), §196-B(d)(1).

The Diesel Emission Reduction Act addresses §196-A(b)(3), §196-B(d)(3).

EVs on the Move

EV Stations Hawaii App

The HSEO manages public-facing web resources including the EV Stations Hawaii app and the HSEO's EV webpage (electricvehicle.hawaii.gov). These tools provide electric vehicle industry updates, information, and laws and regulations, respectively. The HSEO manages the free EV Stations Hawaii app, providing users with EV charging station locations and mapping directions for all four counties. The app serves as a tool to track trends and economic development within Hawaii's EV charging station industry and helps to inform the development of clean transportation policies and programs. EV Stations Hawaii is the only Hawaii specific EV charging station app, and between July 1, 2018 and June 30, 2019 there were 6,361 sessions and 1,511 users utilizing the app. The app and information can be found at the [EV Stations Hawaii Mobile App webpage](#).

The EV Stations Hawaii App addresses §196-A(b)(1), §196-B(d)(9).

Drive Electric Hawaii

The HSEO is a member of Drive Electric Hawaii, a coalition of public and private entities dedicated to eliminating fossil fuel in ground transportation by supporting the electrification of ground transportation. Other state partners include the Division of Consumer Advocacy, Department of Transportation and the counties of Hawaii, Maui, Kauai and Honolulu. Private sector partners include the Hawaiian Electric Companies, Kauai Island Utility Cooperation, Ulupono Initiative, and Blue Planet Foundation. The Drive Electric Hawaii partners meet monthly in addition to subcommittee meetings to coordinate activities.

The Drive Electric Hawaii addresses public awareness and education efforts pursuant to HRS 196-4(7).

Support of City & County of Honolulu Building Code, Bill 25 – EV Readiness

The HSEO submitted testimony in support of City and County of Honolulu Bill No. 25, Relating to the Adoption of the State Energy Conservation Code - the 2015 International Energy Conservation Code (IECC). The HSEO participated in stakeholder meetings, hosted by the Office of Climate Change, Sustainability and Resiliency, to discuss Bill No. 25 proposed amendments relating to EV infrastructure and EV capability.

Support of EVs into the City & County of Honolulu Building Code addresses §196-A(b)(1), §196-B(d)(11).

STAKEHOLDER ENGAGEMENT AND OUTREACH

Introduction

The Hawaii State Energy Office (HSEO) conducts a myriad of collaborative public education and outreach activities to promote and promulgate the state's clean energy goals. The HSEO's education and outreach audience includes the community, local and international energy stakeholders, policy makers, regulators, and non-profits to help educate on the importance and progress of Hawaii's clean energy goals and initiatives.

For the HSEO to be effective in its mission it must maintain robust lines of communication with its audiences. The HSEO carries this out through its outreach and communications arm which builds broad, positive awareness about the office's key programs as well as the Hawaii Clean Energy Initiative (HCEI).

Outreach channels used by the HSEO include websites, news releases, newsletters, social media engagement, sponsorships and partnerships of energy-related events, presentations and appearances by office staff, and strategic alliances with energy sector partners.

The HSEO continues to stay connected and collaborate with energy stakeholders. As a leader in clean energy innovation, Hawaii enjoys many fruitful collaborations with local, national, and international organizations aligned with the state's goals to reduce fossil fuels' grip on the planet.

In addition, the military remains a vital collaborator in Hawaii's clean energy transformation. The military shares Hawaii's commitment to preserve the values of Hawaii while providing a secure, clean energy industry for future generations.

Underlying each program and project, the HSEO envisions a strong commitment to initiating stakeholder engagement to help inform a more diverse perspective on Hawaii's energy matters.

Hawaii Clean Energy Initiative

Hawaii Revised Statutes §196-10.5 establishes within the Department of Business, Economic Development, and Tourism a Hawaii Clean Energy Initiative (HCEI) program intended to manage the state's transition to a clean energy economy.

HCEI Update

In 2019 the state and U.S. Department of Energy, signatories to the Memorandum of Understanding, took a step back to reevaluate the most appropriate direction for the initiative. The management team initiated a process to open nominations to an Advisory Group that will represent community groups, government, utility, economic development, academia, and the private sector who will be expected to provide sector perspective as we strive for a balanced and equitable statewide energy portfolio. The Advisory Group will strive to provide fair and accurate input to the executive management team regarding the issues and challenges relevant to Hawaii's clean energy goals and refining those goals as appropriate.

The Hawaii Clean Energy Initiative addresses §196-10.5, 196A(b)(4).

Memoranda of Understanding and Other Formal Agreements

Hawaii-Okinawa Partnership on Clean and Efficient Energy Development

The Hawaii-Okinawa Memorandum of Cooperation for Clean and Efficient Energy Development and Deployment, effective June 2015 to June 2020, is a partnership between island areas, with a committee consisting of the HSEO, Okinawa Government, Okinawa Enetech, University of Hawaii's Hawaii Natural Energy Institute (HNEI), and the Pacific International Center for High Technology Research (PICHTR) focused on promoting renewable energy and clean energy technology by removing barriers to entry and examining how clean energy can be supported and developed on islands. The committee also supports the state's economic development by matching clean energy start-up companies in Hawaii and Okinawa to promote innovation in the clean energy economy.

The Hawaii-Okinawa Partnership addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), and §196-B(d)(4).

INDO-PACOM/USDOE/USDHS/HOHS/HSEO Interdependencies of Critical Energy Infrastructure MOU

With the signing of the “Interdependencies of Critical Energy Infrastructure” (ICEI) MOU the parties have established a framework for cooperation and partnership to strengthen the coordination of national and state infrastructure security efforts, which may include security and vulnerability analysis, and development of risk mitigation strategies. The MOU covers electricity, oil, natural gas and other interdependent infrastructure systems. Objectives for the state include establishing a baseline for critical situational awareness of energy infrastructure vulnerabilities which could support future information collection, gap analyses, future plans to existing systems, and developing a collective, shared understanding and approach to closing gaps. A consortium approach to stakeholder and community engagement will foster innovative partnerships and promoting a cooperative energy resilience planning.

The Interdependencies of Critical Infrastructure MOU addresses §196-A(b)(1), §196-A(b)(2), §196-B(d)(4).

Department of the Navy—Hawaii Memorandum of Understanding for Mutual Energy Matters

The Department of the Navy, through Assistant Secretary to the Navy (ASN), and the State of Hawaii, through DBEDT/HSEO, have agreed to work on energy related issues of mutual benefit to coordinate goals and to build partnerships whenever possible. This Memorandum of Understanding (MOU) terminates on December 31, 2020. The Executive Committee (EXCOM) sets the priorities for the respective working groups. Setting of agendas and issues to be resolved will be consensus driven between the SOH/HSEO, ASN (EI&E), Navy Region Hawaii, Naval Facilities Engineering Command Hawaii (NAVFAC), and Marine Corps Base Hawaii (MCBH), as appropriate. There are three working groups under this MOU:

1. Alternative Fuels Ground Transportation (led by Navy): Deployment of EV charging stations, opportunities for financing, incorporation of renewable energy resources into charging stations, and fossil fuel reduction strategies.
2. Renewable Energy (led by the HSEO): Consider the viability of renewable energy options for solar and beyond (wave, geothermal, offshore wind, land usage, biofuels, landfill gas).
3. Resiliency/Reliability (led by Marine Corps): Focus on the integration of renewables into the grid and increasing grid resiliency to include testing and validation of technology.

The Department of the Navy-Hawaii MOU addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(4).

National Association of State Energy Offices (NASEO) Collaborations

NARUC-NASEO Task Force on Comprehensive Electricity Planning

Hawaii was named one of 16 states to represent the National Association of Regulatory Utility Commissioners (NARUC) and the National Association of State Energy Officials (NASEO) on the Comprehensive Electricity Planning joint task force. The two-year collaborative initiative of NARUC and NASEO, announced November 2018, is a forum for participating states to develop new approaches to better align distribution system and resource planning processes. The selected states will pioneer new tools and roadmaps for aligning planning to meet states' needs while applying insights from the task force to initiate action in their own states. At the conclusion of the task force, NARUC and NASEO will publish templates that all members can adapt and use for their states. Engagement on the task force will help Hawaii stay ahead of rapidly accelerating technological advancements and extract the most value from them.

The NARUC-NASEO Task Force addresses §196-A(b)(1), §196-B(d)(4).

NASEO Energy Policy Outlook Conference

The NASEO 2019 Energy Policy Outlook Conference examines the key policies and initiatives needed to drive modernization and resilience across our energy infrastructure—grid, pipelines, buildings, transportation. The 56 state and territory energy offices as well as top state and federal energy policymakers and private sector leaders from around the country met on February 5-8, 2019 in Washington, D.C. for discussions of the critical investments needed for strong, reliable, and affordable grid, transportation, and buildings systems, as well as the latest news from the 116th Congress and the Administration. The HSEO demonstrated the HAVEN visualization throughout the week and presented jointly with NREL to the Fuels and Grid Integration Committee: Electric System Planning; Modeling; and Carbon Capture, Sequestration and Utilization session.

The NASEO Energy Policy Outlook Conference addresses §196-A(b)(1), §196-B(d)(4).

NASEO/NEMA/USDOE Western States Petroleum Shortage Responses Workshop

The HSEO staff participated in the “Western States Petroleum Shortage Response Workshop” supported by the National Association of State Energy Officials (NASEO), the National Emergency Management Association (NEMA), and USDOE. The Workshop focused on best practices in energy emergency planning for multi-state coordination to address fuel shortage challenges. Staff learned critical and up-to-date information on state/federal petroleum emergency responsibilities, validated operational practices when responding to a severe regional petroleum shortage, and explored how states might bolster their overall energy system resilience.

The NASEO/NEMA/USDOE Western States Petroleum Shortage Responses Workshop addresses §125C, §196-A(b)(1), §196-A(b)(3), §196-A(b)(4), §196-B(d)(9).

Stakeholder Engagement

The HSEO advances Hawaii's clean energy agenda by creating the foundation for sharing and advancing knowledge, resources, and capacity needed to make the clean energy vision a reality. The HSEO maintains strong communication and outreach to industry stakeholders and the public. The HSEO reaches policymakers, government agencies, the private sector, and the public by reporting and engaging stakeholders on Hawaii's clean energy goals and initiatives.

Department of Health—Hawaii Greenhouse Gas Inventory

Act 234 (2007)/HRS 342B established the foundation for the Hawaii greenhouse gas (GHG) Program and declared a policy to reduce GHG emissions statewide to 1990 levels by 2020. HAR 11-60.1-204(k) requires the Hawaii Department of Health (DOH) to provide reports with updated GHG emissions inventories showing progress towards achieving the statewide GHG emission limit of equal to or below 1990 GHG levels by 2020. The HSEO has provided review and input of the DOH's GHG Inventory products. In addition, in 2019 DBEDT provided testimony in support of Senate Bill 1241 (Act 92), which permits DBEDT to share data provided by the energy sector with the DOH for the purposes of regulating greenhouse gas emissions.

Support for DOH's Hawaii GHG Inventory addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-B(d)(4), and §196-B(d)(13).

Hawaii Climate Change Mitigation and Adaptation Initiative

Chapter 225P, the Hawaii Climate Change Mitigation and Adaptation Initiative: (1) established the Hawaii Climate Change Mitigation and Adaptation Commission, jointly led by the Department of Land and Natural Resources and the Office of Planning; (2) established the Greenhouse Gas Sequestration Task Force, led by the Office of Planning; (3) set a zero emission clean economy target by 2045; and (4) assigned the Office of Planning to investigate and establish a Carbon Offset Program.

The DBEDT Director is a member of the Climate Commission which provides direction, facilitation, coordination and planning among state and county agencies, federal agencies, and other partners on climate change mitigation strategies (reduction of greenhouse gases) and climate change resiliency strategies, including, but not limited to, sea level rise adaptation, water and agricultural security, and natural resource conservation.

The HSEO participates on the:

- Permitted Interaction Group on Ground Transportation Emissions Reduction providing technical support, including State of Hawaii light duty vehicle analysis and insight regarding fleet electrification transition strategies, to inform the Commission's work on ground transportation emission reduction.
- Equity and Transportation Permitted Interaction Groups (PIGs), two of three PIGs created by the Commission to explore areas of need.

The Hawaii Climate Change Mitigation and Adaptation Initiative PIG member status addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), and §196-B(d)(4), §196-B(d)(13).

Center for Homeland Defense and Security’s Pacific Executive Leader’s Program, “Power Restoration Seminar”

The HSEO participated in the Center for Homeland Defense and Security’s Pacific Executive Leader’s Program “Power Restoration Seminar” for energy emergency planning. Participants discussed energy emergency topics, including how the electric industry mutual aid programs work, emergency communications considerations and strategies, prioritization, collaboration and governance challenges, and power-related common challenges from recent disasters.

The Center for Homeland Defense and Security’s Pacific Executive Leader’s Program addresses §196-A(b)(1), §196-A(b)(3), §196-A(b)(4), §196-B(d)(9).

Aloha+ Challenge Dashboard Working Group

The HSEO is a member of the Aloha + Challenge Dashboard Measures Working Group organized by Hawaii Green Growth. Hawaii Green Growth oversees this dashboard which is driven by the input of a network of stakeholders. State clean energy goals are the first metrics displayed on the Dashboard.

The Hawaii Green Growth Aloha+ Dashboard Working Group member status addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), and §196-B(d)(5).

Hawaii Humpback Whale Sanctuary Advisory Committee

The HSEO participates on the National Oceanic and Atmospheric Administration (NOAA) Sanctuary Advisory Council (SAC), which is a community-based advisory group established in 1996 to provide advice to the sanctuary manager. The Council has a broad representation consisting of 52 members. The Council links the sanctuary with state and federal agencies, and its various user groups such as: researchers, educators, county residents, policy makers, and cultural practitioners.

The Hawaii Humpback Whale Sanctuary Advisory Committee member status addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), and §196-B(d)(4).

Hawaii Ocean Resources Management Plan Working Group

The HSEO participates on the Hawaii Office of Planning's Ocean Resources Management Plan (ORMP) Working Group currently undertaking the 5-year review of the ORMP, which is a statewide plan that sets forth the State’s ocean and coastal resource management priorities. The ORMP supports effective management, beneficial use, protection, and development of the state’s coastal zone, which includes all lands of the state and the area extending seaward from the shoreline to the limit of the state’s police power and management authority, including the U.S. territorial sea.

The Hawaii Ocean Resources Management Plan Working Group member status addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), and §196-B(d)(4).

Bureau of Ocean Energy Management-Hawaii Intergovernmental Renewable Energy Task Force

The U.S. Bureau of Ocean Energy Management's (BOEM) BOEM/Hawaii Intergovernmental Renewable Energy Task Force, established in 2012, promotes planning and coordination and facilitates effective and efficient review of requests for commercial and research leases and right-of-way grants for power cables on the federal outer continental shelf (OCS), which begins 3 nautical miles offshore Hawaii. Members of the Task Force include representatives of federal, state and local government agencies, and offices who regularly engage with local community groups. The HSEO participates on the task force.

The BOEM-Hawaii Intergovernmental Renewable Energy Task Force member status addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), and §196-B(d)(4).

Energy Efficiency Symposium

On November 14, 2018 the HSEO hosted the *Symposium on Exploring Programs and Policies for Deep Energy Efficiency Opportunities*.

The symposium featured presentations and discussions exploring a wide range of new and innovative ideas aimed at keeping Hawaii on track to meet or exceed its statutorily mandated energy efficiency portfolio standard (EEPS). The EEPS, passed in to law in 2009, requires a 4,300-gigawatt-hour reduction in electricity use by 2030 through efficiency and conservation measures.

The day-long symposium attracted a diverse group of about 45 energy sector stakeholders, including representatives from gas and electric utilities, energy service companies, engineering firms, government, and the non-profit sector.

View Symposium material at [Symposium on Exploring Programs and Policies for Deep Energy Efficiency Opportunities](#).

The Energy Efficiency Symposium addresses §196-B(d)(1), §196-B(d)(7).

Energy Efficiency Education

The HSEO performs education and outreach to homeowners, building designers, builders, realtors, and bankers on the benefits of energy efficient homes. Outreach activities include development of an energy efficiency checklist for realtors in collaboration with the Northeast Energy Efficiency Partnerships, presentation of the checklist to realtor green workshops, presentations at Honolulu Board of Realtors regional meetings and individual realty companies, and at bank construction and renovation seminars.

The Energy Efficiency Outreach program addresses §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), §196-A(b)(4), and §196-B(d)(5).

Hawaii State Energy Office Outreach Efforts

The HSEO raises awareness and communicates clean energy progress via multiple communication channels. These channels, when combined, reinforces the HSEO's messaging and provides additional impressions to reach more mass audiences.

Website: Hawaii State Energy Office energy.hawaii.gov

A conduit of public outreach and education is the HSEO's dedicated website that educates visitors on Hawaii's growing clean energy economy and the HSEO's vision, role, and programs. The HSEO website provides information on the initiatives, activities, and programs of the energy office. Visitors can find information on energy planning, renewable energy, energy efficiency, and EVs. FY19 updates included:

- Utility Model Study notification of community meetings and final analyses.
- Volkswagen Settlement Beneficiary Mitigation Plan and Funding Requests subpage with access to the Beneficiary Mitigation Plan and funding requests documents.
- Hawaii Energy Building Code pages with new training material, presentations, and resources.

- Numerous teasers on the homepage spotlighting the HSEO events, publications, reports, and program updates.

In FY19 there were 174,316 page views to energy.hawaii.gov. The top five countries that visited the HSEO site were United States, Canada, Japan, India, and South Korea. The top five visited pages were the homepage, Developer & Investor Center, EVs Charging Networks, Hawaii Energy Building Code, and Solar Water Heater Variance.

Website: Hawaii Clean Energy Initiative

hawaiicleanenergyinitiative.org

The HSEO maintains the dedicated website for HCEI that educates visitors on the history of HCEI, goals and objectives, organizational structure, project teams, and legislative updates. The HCEI website informs about the program that launched in 2008 as a partnership between the State of Hawaii and the U.S. Department of Energy.

The HSEO continues to make enhancements that include graphics and infographics, as well as simplifying pages and content. In FY19 the Progress Through Policy page was utilized during the legislative session to share highlights of key energy legislative proposals that were relevant to the HCEI stakeholders. At the end of the session the Policy page was updated referencing key Acts of 2019 relating to energy efficiency, renewable energy, energy planning, and clean transportation. A timeline graphic was also updated to reflect 2019 Acts.

In FY19 there were 15,936 page views to hawaiicleanenergyinitiative.org. The top five pages visited were the homepage, About page, Progress Through Policy, Goals and Objectives, and the Resources page. The top five countries that visited the HCEI site were United States, Canada, South Korea, Japan, and Germany.

Website: Hawaii Green Business Program

greenbusiness.hawaii.gov

The Hawaii Green Business Program (HGBP) is a state program that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. HGBP has its own dedicated website managed and maintained by the HSEO. The HGBP site provides information on the program description, how to apply, and past and current awardees. The HGBP site was updated with the 2019 Green Hotel Forum page. The Hotel Forum page spotlights the annual event with presentations of various Hawaii hotels sharing their green initiatives.

In FY19 there were 6,687 page views to greenbusiness.hawaii.gov. The top five countries that visited the HGBP site were United States, France, South Korea, Germany, and Denmark. The top five visited pages were the homepage, Awardees page, Program Description, Apply page, and Resources page.

Hawaii Energy Dashboard

In FY19 the HSEO and DBEDT's Research and Economic Analysis Division worked together to develop a new Energy Dashboard as a necessary part of envisioning, reviewing, and evaluating effective clean energy policies and programs. The Dashboard, which will continue to be developed in FY20, was launched in July 2019. At the time of its launch, the Energy Dashboard offered twenty-six charts of data on Electricity, Transportation, Economy/Environment, and Efficiency.

Visit the [Hawaii Energy Dashboard](#).

The Hawaii Energy Dashboard addresses §196-A(b)(1), §196-A(b)(2), §196-A(b)(3), §196-A(b)(4), §196-B(d)(5), §196-B(d)(9), and §196-B(d)(12).

HSEO News Releases

The HSEO issues news releases on newsworthy information and events that were sent to over 60 local and mainland media organizations as well as Hawaii policymakers. The HSEO news releases consisted of public interest topics including the HSEO staff appointed to the Task Force on Comprehensive Electricity Planning, release of final analyses of utility model study, and Honolulu selected by EV charging stations by Electrify America. The HSEO press releases garnered local and national media coverage as well as numerous social media hits.

Educational and Outreach Events

In FY19 the HSEO participated in numerous educational and outreach events. The manner of participation varied from sponsorships to plenary speakers to exhibitors/demonstrations. Event topics and themes includes energy building code, performance contracting, environmental/climate change, renewable energy, energy awareness fairs, EV/clean transportation, and energy-focused community meetings.

The HSEO participated in 50 educational and outreach events reaching nearly 3,000 stakeholders.

HSEO Publications and Digital Marketing

The HSEO develops and distributes publications and collateral material to raise awareness and communicate progress of clean energy efforts of the HSEO and HCEI. To educate and update stakeholders on Hawaii's constantly changing energy landscape, the HSEO distributes a quarterly e-newsletter, an annual report on Hawaii's energy data, and various collateral pieces.

In FY19 e-newsletters and e-blasts communications were sent to nearly 16,000 subscribers. The HSEO's e-newsletters stories focused on current, newsworthy subjects such as VW settlement updates, the Hawaii Advanced Visualization Environment Nexus project, and performance contracting achievements. E-blast communications were used to notify the public of energy symposiums and community meetings.

The HSEO's annual energy data update, Hawaii Energy Facts & Figures 2019, was sent to over 1,800 policymakers and local and international energy stakeholders. The energy report is a comprehensive collection of data on Hawaii's energy landscape and is often referenced in media and reports. It was also the top downloaded document of the entire website.

View the report at [Hawaii Energy Facts & Figures 2019 \(PDF\)](#).

The HSEO maintains a branded social media presence on Facebook, Twitter, and LinkedIn. The HSEO posts daily messages on the office's activities to its 1,800+ followers. These social networking platforms reach a large mass audience with real time news and engages interaction in a people-focused manner.

ENERGY PROGRAM FUNDING

The Energy Security Special Fund (ESSF), established under Section 201-12.8, HRS, continued to be the predominant source of funding for the Hawaii Clean Energy Initiative (HCEI). The ESSF consists of:

- (1) The portion of the Environmental Response, Energy, and Food Security Tax specified under section 243-3.5;
- (2) Moneys appropriated to the fund by the legislature;
- (3) All interest attributable to investment of money deposited in the fund; and
- (4) Moneys allotted to the fund from other sources, including under section 196-6.5.

In the fiscal year ended June 30, 2019 (FY19), ESSF revenues were \$4,117,177, up 5.8 percent from the preceding fiscal year. Although the HSEO's allocation of the Environmental Response, Energy, and Food Security Tax ("Barrel Tax") to the ESSF remain unchanged at \$0.15 of the tax on each barrel, revenue from the tax was the highest since the tax was enacted. Fees collected for Solar Water Heater Variances and other miscellaneous income also contributed to ESSF revenues. The ESSF is critical for supporting the HCEI given Hawaii's aggressive goal to achieve 100 percent renewable energy in the electricity sector by 2045. In FY19 personal services for the Hawaii State Energy Office were funded by the ESSF in the amount of \$3,616,664.

General funds of \$150,000 were appropriated in FY19 for a geo-thermal feasibility study. The HSEO entered into an agreement with the Natural Energy Laboratory of Hawaii Authority to conduct an analysis to determine the feasibility and benefits of modifying the current energy system at the Hawaii Ocean Science and Technology Park to enable it to operate as a microgrid. The study is to be completed in 2021.

Federal funding from the U.S. Department of Energy (USDOE) and other federal agencies supplements the HSEO's state funding for programs. USDOE's State Energy Program provides an annual formula allocation of approximately \$280,000 for increasing market transformation of energy efficiency and renewable energy technologies through policies, strategies, and public-private partnerships that facilitate their adoption and implementation. The HSEO also actively pursues competitive federal funding opportunities that align with its objectives.

DBEDT, through the HSEO, is the lead agency for administering Hawaii's allocation from the Volkswagen Diesel Emissions Environmental Mitigation Trust in 2018. The HSEO plans to begin deploying Hawaii's \$8.125 million allocation from the trust beginning in FY20.

The following tables are provided:

1. Expenditures from the Energy Security Special Fund, pursuant to Section 201-12.8, HRS;
2. Hawaii Clean Energy Initiative Program – Fiscal Year 2020 Spending Plan, pursuant to Section 196-10.5, HRS; and
3. Administratively Established Accounts as of June 30, 2019, pursuant to Section 37-52.5, HRS.

Reporting on the spending plan of the Energy Security Special Fund addresses §201-12.8(c)

Reporting on the spending plan of the Hawaii Clean Energy Initiative addresses §196-10.5

Reporting on new accounts or funds addresses §37-52.5

Table 1

Expenditures from the Energy Security Special Fund		
ENERGY SECURITY SPECIAL FUND	Actual FY2019	Projected FY2020
BEGINNING FUND BALANCE	2,166,677	2,278,932
REVENUES		
Environmental Response, Energy and Food Security Tax	4,015,775	1,300,000
Investment Pool Interest	15,541	8,000
Solar Water Heater Variance Fees	10,434	5,000
Disaster Relief Reimbursement	5,614	0
Other	69,814	0
TOTAL REVENUES	4,117,177	1,313,000
EXPENDITURES		
Hawaii State Energy Office Operations	3,906,289	22,799
Programs:		
Renewable Portfolio Standards Program Support	51,876	604,130
Energy Efficiency Portfolio Standards Program Support	7,853	0
Education and Outreach	38,903	130,000
TOTAL EXPENDITURES	4,004,922	756,929
ENERGY SECURITY SPECIAL FUND BALANCE	2,278,932	2,835,003

Pursuant to Section 201-12.8, HRS

Table 2

Hawaii Clean Energy Initiative Program Fiscal Year 2020 Spending Plan			
ANNUAL SPENDING PLAN	State Funds	Other Funds	Total
Hawaii State Energy Office Operations	2,819,077	90,000	2,909,077
Programs and Projects	756,929	3,295,270	4,052,199
	3,576,006	3,385,270	6,961,276
Spending plan is based on anticipated spending levels for FY20			
FUNDING SOURCES:			
State Funds			
General Funds	2,819,077	0	2,819,077
Energy Security Special Fund	3,591,932	0	3,591,932
Federal Funds			
DOE - State Energy Program (SEP)	0	729,484	729,484
DOE - SEP Competitive 2016 - HAVEN	0	20,455	20,455
DOE - Energy Efficiency & Conservation Block Grant*	0	500,000	500,000
DOE - SEP American Recovery & Reinvestment Act*	0	280,000	280,000
Trust Funds			
VW Settlement Trust Funds	0	1,855,331	1,855,331
	6,411,009	3,385,270	9,796,279
*Repurposed ARRA Funds			

Pursuant to Section 196-10.5, HRS

Table 3

Administratively Established Accounts					
As of June 30, 2019					
APPROPRIATION ACCOUNT/TITLE	M O F	REVENUE	EXPENDITURES	ENCUMBRANCES	UNENCUMBERED BALANCE
S-17-216 STATE ENERGY PROGRAM-ARRA REPURPOSE	N	1,458,260	181,846	199,075	1,077,339
S-17-516 HI ADV VISUALIZATION ENVIRONMENT NEXUS	P	96,647	95,844	108,777	(107,974)
S-17-518 EECBG - ARRA REPURPOSE	P	2,644,229	41,632	189,277	2,413,319
S-18-255 STATE ENERGY PROGRAM	N	3,606	2,859	747	0

MOF = Means of Financing

N = Federal funds

P = Other federal funds

Pursuant to Section 37-52.5, HRS

LOOKING FORWARD

The Hawaii State Energy Office is undergoing various changes as part of its transition from a division of DBEDT to an attached agency of the department with a specific statutory mission set forth in Act 122, which took effect on July 1, 2019. One of the Energy Office's responsibilities is the submission of this annual report, which provides an update of the HSEO's accomplishments for fiscal year 2019 and highlights some of the activities being undertaken in fiscal year 2020. These fiscal year 2020 activities include:

Study of Carbon Pricing (FY20)

Act 122 (SLH 2019) directs the HSEO to conduct a study of carbon pricing, inclusive of "whether and how a carbon pricing policy shall be implemented in Hawaii." To date, the HSEO has contacted the University of Hawaii Economic Research Organization to complete this future study and is negotiating the terms of the study's scope of work.

Energy Systems and Technology Training (FY20)

Act 145 (SLH 2019) calls for the University of Hawaii Community Colleges (UHCC) to establish a program to provide training to county officers and employees for permitting, inspection, licensing, and approving energy systems and related distributed electricity technologies, including energy storage. UHCC is to create a committee of stakeholders; establish and deliver the courses; and submit a progress report to the legislature. The HSEO has contacted UHCC regarding the funding and is drafting an agreement for the project.

Electric Vehicle Charging System Rebate Program (FY20)

Act 142 (SLH 2019) calls for the Hawaii Public Utilities Commission (PUC), in consultation with electric vehicle stakeholders and the HSEO, to administer a rebate program that incentivizes the installation or upgrade of an electric vehicle charging system. The HSEO will deposit \$150,000 into the PUC special fund from its Energy Security Special Fund for this purpose.

In the future, the HSEO will expand this annual report to include a statement of goals and action plans for initiatives to be implemented in one, two and five years. These goals and action plans will reflect the guidance provided to the HSEO under Act 122 to serve as the state's primary government entity supporting Hawaii's clean energy transformation. The HSEO's overarching mission is to promote energy efficiency, renewable energy, and clean transportation to help achieve a resilient clean energy economy. Specific actions will include providing analysis and planning to inform policymaking, leading efforts to reduce costs and achieve clean energy goals across all public facilities and providing project deployment facilitation to assist private sector project completion when aligned with state energy goals.

In addition to broadening the HSEO's portfolio of responsibilities and activities, Act 122 made several administrative changes to the office as part of its shift from a division of DBEDT to an attached agency. Among the changes:

- The newly created position of chief energy officer reports directly to the governor. Previously, the HSEO administrator reported to the DBEDT director.
- The duties and responsibilities of the energy resources coordinator are transferred to the chief energy officer. Previously these duties were assigned to the DBEDT director.

- The allocation of the Barrel Tax to the Energy Security Special Fund is reduced. The HSEO operations are now general funded.