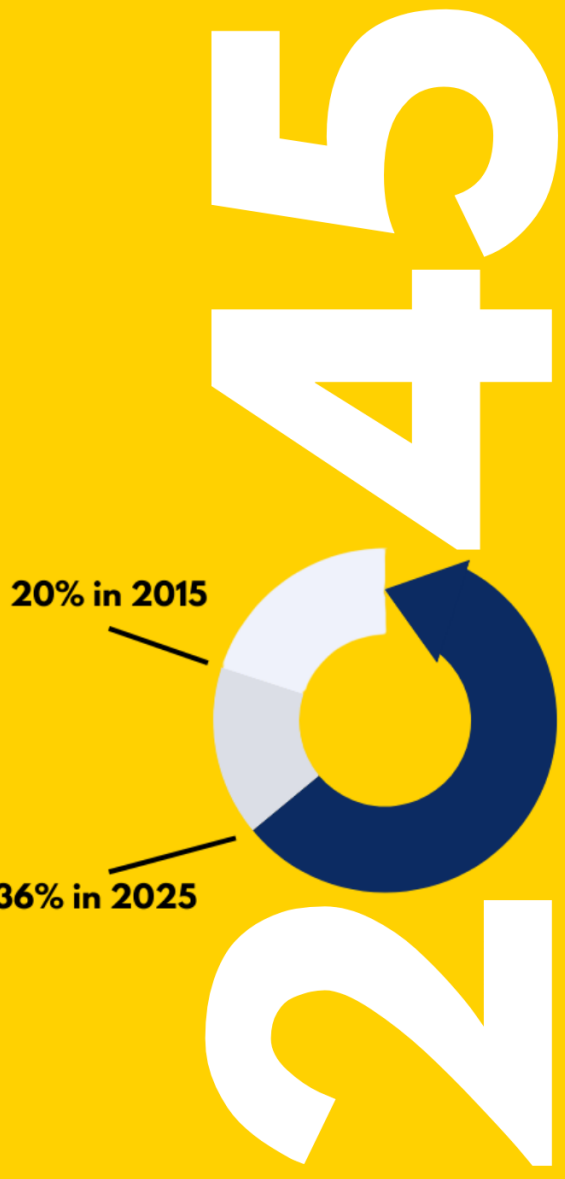
2025 Annual Report



HAWAIʻI
STATE
ENERGY
OFFICE

This report addresses reporting requirements for:

Act 100, SECTION 7 (SLH 1999) HRS 201-12.8(C)
Act 122 (SLH 2019) HRS Section 141-9
Act 216 (SLH 2022) HRS Section 201-104
HRS 196-41 (C)(3) SCR 82 SD1 (SLH 2023)

THIS ANNUAL REPORT REQUIRED BY EACH OF THESE STATUTES HAVE BEEN COMBINED INTO THIS SINGLE,COMPREHENSIVE REPORT.

energy.Hawaii.gov

A Message from the Governor

Hawai‘i stands at a defining moment in our energy future. The choices we make today will determine whether our islands remain resilient, affordable and sustainable for generations to come. Our administration’s energy policy is guided by clear priorities: lowering costs for families, reducing carbon emissions, strengthening grid reliability and accelerating our transition to 100% clean, renewable energy.

Hawai‘i has led the nation in renewable energy adoption, and we will continue that leadership with a focus on practical, achievable solutions. Solar, storage, wind, hydro, and geothermal will remain central to our progress. On the neighbor islands, we are on track to achieve fully renewable electricity generation by 2035, supported by my Executive Order 25-01, which accelerates the deployment of clean-energy projects while protecting Hawai‘i’s lands and communities.

On O‘ahu, where population density and land constraints make the transition more challenging, we are prioritizing grid modernization, more efficient generation, and major private-sector investment. Our goal is simple: build an energy system that is cleaner, more resilient and more affordable than the system we have today. That means upgrading aging infrastructure, improving efficiency and preparing the grid to support large-scale renewables and storage in the years ahead.

Reliable, modern energy infrastructure is a cornerstone of public safety, climate resilience and economic recovery. We are committed to rebuilding stronger — ensuring that communities have the power systems, planning and protections needed in an era of more extreme weather.

We can grow our economy and fight climate change at the same time. By partnering with local utilities, independent power producers and responsible investors, we will bring billions of dollars in new energy projects to Hawai‘i — projects that reduce emissions, create jobs and lower the cost of living.

Hawai‘i’s energy transformation is not just a policy goal; it is a promise to our people and our future. Together, we will continue to lead the world in building an island energy system that is clean, resilient and rooted in mālama ‘āina.

With aloha,

Josh Green M.D.

Contents

Introduction

When the Hawai‘i Clean Energy Initiative (HCEI) was codified into law in 2010 (HRS §196-10.5), it formalized ambitious yet achievable targets to transform the state’s energy landscape. These targets were agreed upon by a broad-based energy stakeholder alliance. When the Hawai‘i Legislature adopted HB 1464 in 2009, it established a renewable energy portfolio standard of 40 percent of the state’s electricity sales to come from renewable energy by 2030. HB 1464 also required the Hawai‘i Public Utilities Commission (PUC) to establish energy-efficiency portfolio standards (EEPS) to maximize cost-effective energy-efficiency programs and technologies to achieve 4,300 gigawatt hours of electricity use reductions statewide by 2030, with interim goals for electricity use reduction to be achieved by 2015, 2020, and 2025. Together, these goals were socialized with a catchy "70% clean energy by 2030" slogan that gained traction with the manifestation of investments in renewable energy and energy efficiency projects throughout the state.

Hawai‘i’s energy policy encourages full use of the state’s diverse, abundant indigenous natural resources, such as solar, wind, and geothermal, each of which have competed favorably with the oil-fired generation they are replacing. Distributed generation, especially rooftop solar installations, exceeded all expectations and had a profound impact on Hawai‘i’s economy. The rapid growth in rooftop solar propelled Hawai‘i to number one in installations per capita in the United States, a position we retain today.

With the passage of Act 97 in 2015, Hawai‘i became the first state in the nation to have a 100 percent RPS, heralding a turning point in the history of energy in Hawai’i, and reinforcing the state’s leadership in clean energy innovation. The early success of HCEI set the energy transition on a firm footing, as environmental advocates turned their attention to determining Hawai‘i’s role in reducing carbon as an existential global threat. With the passage of Hawai’i Revised Statutes §225P-5, first enacted in 2018 and refined in 2022, Hawai’i set a target “to sequester more atmospheric carbon and greenhouse gases than emitted within the State as quickly as practicable, but no later than 2045,” effectively establishing a net-negative emissions target.

The overall impact of Hawai‘i’s energy transition policies has been profound. In the past ten years, the state has progressed from a 21% statewide Renewable Portfolio Standard (RPS) in 2015 (measured as a percentage of electricity sales) to 36% RPS in 2025 (measured as a percentage of net generation),[1] employing a diverse portfolio of distributed and large-scale renewables, battery energy storage, and innovative leading-edge technologies. The Hawai‘i State Energy Office (HSEO) has supported the deployment of 100 renewable energy projects across the state that produced just under 4 million megawatt-hours of renewable energy in the electricity sector in 2024, enough to power roughly 650,000 typical households.

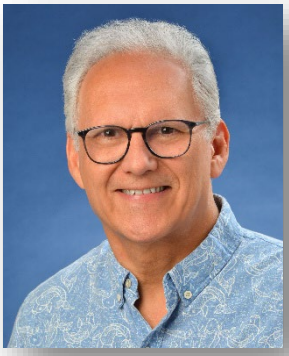
[1] *Note, RPS values reflect the applicable compliance framework in effect for the reporting year. RPS compliance through 2021 was calculated based on retail electricity sales. Effective 2022, RPS compliance is calculated based on electricity generation. This generation-based approach effectively lowered the reported percentage contributions by expanding the accounting basis, but more accurately reflects the generating assets physically connected to and operating on the system (e.g. rooftop solar), rather than solely what is sold to customers.*

Hawai‘i continues to push boundaries in state, national, and international energy transition policies. In January 2025, Governor Josh Green issued Executive Order 25-01, accelerating the timeline for renewable development for neighboring island communities to reach a 100% renewable portfolio by 2035, a decade earlier than statute, and setting a statewide target of 50,000 distributed renewable energy installations, such as rooftop solar and battery systems, by 2030. Post-Maui Wildfires, HSEO is ever mindful of the capital constraints on Hawai‘i’s largest utility and the growing need for investment in new renewable generation and thermal power plants. HSEO has issued two comprehensive studies providing guidance on how Hawai‘i can achieve its carbon reduction and RPS statutes in the post-Maui wildfires environment: *Pathways to Decarbonization* in December of 2023 and the *Alternative Fuels, Repowering, and Energy Transition* Study, published in January of 2025, which is covered in detail in this report.

In October 2025, the state signed a Strategic Partnering Agreement with JERA, Japan’s largest power producer, to modernize grid infrastructure, accelerate the retirement of aging assets, and enhance system reliability and resilience, contributing meaningfully to Hawai’i’s clean energy transition. HSEO considers the partnership as an exploration of what is commercially and economically possible in the rapid development of efficient power development strategies, permitting pathways, and creative financing strategies to strengthen grid reliability and reduce the harmful impacts of oil price volatility on Hawai‘i’s economy. Given the Japanese government’s 50% share of ownership in JERA, Hawai‘i may be able to leverage JERA’s access to low-cost capital and equity to make timely, essential investments. As the largest power generator in Japan, JERA also may have significantly quicker access to essential high-efficiency power generation and electrical grid technology for which Hawai‘i is in dire need.

Achieving Hawai’i’s decarbonization and clean energy goals requires an openness to all solutions that can reduce cost and carbon while adhering to Hawai‘i’s values. HSEO is taking a comprehensive, system-wide approach to explore and support the development of new energy transition infrastructure and low- and zero-carbon fuels, such as renewable natural gas, hydrogen, sustainable biofuels, and, where appropriate, natural gas, considering fuel logistics and distribution networks, modernization of legacy infrastructure, and the integration of renewable technologies at scale.

Consistent with the statutes that govern HSEO and its Chief Energy Office in HRS §196-71 and §196-72, HSEO is pleased to issue its 2025 Annual Report, including an updated Energy Strategy that summarizes concrete measures to be coordinated with the public and private sector to meet these challenges.



Mahalo,

Mark B. Glick, Chief Energy Officer

Clean Energy Vision

The Hawai‘i Clean Energy Initiative (HCEI) is a framework of statutes and regulations supported by a diverse group of stakeholders committed to Hawai‘i’s clean energy future. The initiative was launched in 2008 when the state of Hawai‘i and the U.S. Department of Energy signed a groundbreaking Memorandum of Understanding to collaborate on the reduction of Hawai‘i’s heavy dependence on imported fossil fuels. In 2008, the state estimated that 60 to 70 percent of future energy needs could be fulfilled by local, clean, renewable energy sources, including energy efficiency.

To turn this vision into reality, HCEI is transforming the financial, regulatory, legal, and institutional systems that govern energy planning and delivery within the state. The initiative has grown stronger over the course of three gubernatorial administrations. In 2023, Governor Josh Green renewed Hawai‘i’s commitment to achieve the nation’s first-ever 100 percent renewable portfolio standards (RPS) by the year 2045, issuing an Executive Order in January 2025 to accelerate the transition. In October 2025, the state signed a Strategic Partnering Agreement with JERA, Japan’s largest power producer, to modernize grid infrastructure, accelerate the retirement of aging assets, and enhance system reliability and resilience.

HRS § 196-10.5 Hawai‘i clean energy initiative program

Memorandum of Understanding between the State of Hawai‘i and the U.S. Department of Energy, 2008 (PDF)

Memorandum of Understanding Re-commitment, 2014 (PDF)

Executive Order 25-01 Accelerating the Transition

JERA Strategic Partnering Agreement

In the Post-Maui Wildfires environment, HSEO acknowledges that achieving Hawai’i’s decarbonization and clean energy goals requires an openness to all solutions that can reduce energy costs and carbon emissions while adhering to Hawai‘i’s values. HSEO is taking a comprehensive, system-wide approach that is focused on deploying renewable and highly efficient thermal generation, exploring and supporting the development of new energy transition infrastructure and low- and zero-carbon fuels, such as renewable natural gas, hydrogen, sustainable biofuels, and, where appropriate, natural gas; fuel logistics and distribution networks, modernization of legacy infrastructure, and the integration of renewable technologies at scale.

Executive Order 25-01: Accelerating the Transition

One of two prongs of Hawai'i's updated energy strategy, **Executive Order 25-01,** issued by Governor Josh Green in January 2025, accelerates the timeline for renewable development for neighboring island communities to reach a 100% renewable portfolio by 2035, a decade earlier than statute. The new policy also sets a statewide target of 50,000 distributed renewable energy installations by 2030.

Specifically, this Executive Order mandates the following policy actions:

- Accelerates the timeline for renewable development for neighboring island communities to reach a 100% renewable portfolio by 2035.
- Sets a statewide target of 50,000 distributed renewable energy installations, such as rooftop solar and battery systems, by 2030.
- Calls for faster, more efficient permitting of renewable energy system installations, such as establishing programs for same-day online permit issuance and self-certification permitting under certain circumstances.
- Encourages state departments to make renewable developments easier and faster to permit, which will cut energy costs and project development times. EO 25-01 requests the assistance of the Hawai'i Public Utilities Commission and Hawaiian Electric Company in streamlining energy permitting, prioritizing the reduction of energy costs, and ensuring energy stability for Hawai'i's residents.

Figure 1Rooftop Solar University of Hawai'i at Mānoa

The Alternative Fuels, Repowering and Energy Transition Study

Guiding Principles

In the aftermath of the Maui wildfires, Governor Josh Green tasked HSEO with developing a new energy strategy to reduce energy costs, increase generation reliability and resilience, and achieve carbon emission reductions in the electricity sector, while achieving two key objectives:

- Accelerating Hawai‘i’s energy transition to renewable and carbon-free energy.
- Evaluating options to replace residual fuel oil for power generation to ensure and enhance energy system reliability and resilience.

Published in January 2025, the **Alternative Fuel, Repowering, and Energy Transition Study** (Alt Fuels Study) builds on more than ten years of related studies as part of a broader energy transition strategy to support national security, safeguard energy infrastructure, increase energy affordability, and accelerate renewable energy adoption.

As a key element of the state’s updated energy strategy, the study identifies gaps in power generation and local renewable generation and the threats to continued reliance on oil-fired electrical generation through 2045. Since the establishment of the Hawai'i Clean Energy Initiative in 2008, for example, emphasis has largely centered on expanding renewable resources, while upgrades to existing generation assets have not been prioritized to the same degree. To address these gaps, the study analyzes high-efficiency thermal power generation and fuels that are commercially available and technically sound that are capable of attracting capital to be implemented in a way that reduces cost and carbon while increasing renewable energy, efficiency, and supporting demand growth from transportation electrification.

A preferred path is identified in the study that strikes a balance between ratepayer impacts and lifecycle carbon emissions reduction, considering infrastructure needs, RPS constraints, and permitting timelines. Electricity generation from fuels is needed in the near term to fulfill demand while intermittent resources (such as solar and wind) are developed. A hard constraint to the study was that no powerplant improvements and fuel switching strategies were acceptable that impeded compliance with Hawai‘i’s existing RPS and decarbonization laws.

Objectives of the Study

- Reduce Costs: Compared to the status quo, any acceptable strategy must stabilize costs and demonstrate measurable energy savings in the near and long term.
- Reduce Carbon Emissions: Acceptable strategies must demonstrate substantial lifecycle greenhouse gas emissions savings.
- Capital: Given the capital constraints of the incumbent utility, any acceptable strategy must be capable of attracting the private sector investment in capital expenditures required under the strategy.

Engage, an electric sector capacity expansion model, was utilized in the development of the study. Also

see Energy Planning.

A fundamental assumption of the study is the continued development of solar, wind, battery storage, and other renewable generating sources to meet RPS targets in tandem with any fuel transition, as well as to ensure Hawai'i has a diverse energy portfolio.

Evaluation Approach and Criteria

For the analysis, all alternative fuels were on the table. The fuels considered included methane/liquid natural gas (LNG), hydrogen, biomethane, biodiesel, e-methane, e-ammonia, e-diesel, and e-methanol. HSEO and third-party consultants developed an evaluation matrix that served as a decision-making framework to compare alternative fuels based on:

1. Technological maturity and commercial viability
    - Scalability
    - Technical Readiness Level
    - Fuel Availability
    - Transportation Logistics
2. Cost-effectiveness
3. Lifecycle carbon intensity

	COMMERCIAL VIABILITY					COST-EFFECTIVENESS	LIFECYCLE CARBON INTENSITY
Fuel	**Commercial Viability Score**	*Scalability (Production) 35%*	*Technology Readiness Level (TRL) 30%*	*Fuel Availability 20%*	*Transportation Logistics 15%*	**Avoided Cost of Carbon (LCOE$/MTCO2e)**	**Total Lifecycle Emissions (MTCO2e/MWh)**
Methane/LNG – Imported	5.00	5	5	5	5	$233 – $594	0.65
Hydrogen w/ Ammonia as a carrier – Imported	3.15	4	3	2	3	N/A	0.35
Biomethane/Renewable Natural Gas (RNG) – Local	3.15	2	5	1	5	$227 – $578	0.65
Biodiesel/Renewable Diesel (RD) – Imported	3.00	1	5	2	5	$91 – $274	0.42
Biomethane/RNG – Imported	2.90	2	5	2	2	$240 – $611	0.66
Biodiesel/RD – Local	2.85	2	4	1	5	$88 – $266	0.41
E-Methane/SNG – Imported	2.65	1	5	1	4	–	–
Hydrogen – Local	2.60	2	3	2	4	N/A	0.29
E-Methane/SNG – Local	2.55	1	4	2	4	–	–
E-Ammonia – Imported	2.05	1	4	2	4	–	–
E-Diesel – Imported	2.05	2	1	3	3	–	–
E-Methanol – Local	1.90	1	4	1	2	–	–
E-Diesel – Local	1.75	1	2	1	4	–	–
E-Methanol – Imported	1.60	1	2	1	3	–	–
E-Ammonia – Local	1.30	1	1	1	3	–	–

Fuels that were neither technologically mature nor cost-effective were excluded from detailed analysis.

(Zanfes, 2025) Figure 2 Evaluation matrix of reviewed fuels relative to Technical Maturity, Commercial Viability, Cost Effectiveness, and Lifecycle Carbon Intensity

Results and Findings

The results of HSEO's evaluation of fuels and power plant upgrades based on the criteria of technological maturity, commercial viability, cost-effectiveness, and lifecycle carbon intensity are summarized below:

- Land availability and other factors indicate that local energy supply is insufficient to meet both current and forecasted demand. Accordingly, some energy imports will persist for both the electric and transportation sectors after Hawai'i satisfies the 100% RPS.
- The current Hawaiian Electric grid and development plans have high carbon emissions due to substantial reliance on LSFO as well as powerplant inefficiency.
- Planned thermal capacity projects are critical to ensure grid reliability and will provide some improved powerplant efficiency; however, HSEO asserts that, as proposed, the Stage 3 thermal projects and likely the IGP RFP thermal projects, will result in one of two outcomes: either (1) higher electricity prices if biofuels are available and the PUC approves their costs, or (2) the continued reliance on liquid oil-based fossil fuels, such as Low Sulfur Fuel Oil (LSFO) or ultra-low sulfur diesel.
- Power plants can be converted, and a new power plant can be built to operate on natural gas supplied by a Floating Storage Regasification Unit (FSRU) and its associated gas infrastructure.
- LNG emerged as the near-term fuel with the potential to cost-effectively reduce the State's greenhouse gas emissions during the transition to economywide decarbonization in 2045, but more analysis is needed to quantify a range of potential benefits and to identify how those benefits can be maximized to residents at the appropriate level of infrastructure buildout.
- Policy guardrails will be necessary to ensure that lower carbon fuels, such as LNG, will enable economy-wide decarbonization by 2045, not distract from it. There is a narrow but beneficial path for the inclusion of LNG in the energy portfolio. Its build-out should not allow for backsliding on the RPS.

Costs

Lifecycle cost estimates indicate LNG would result in cost savings for customers through 2045 under various alternative scenarios.

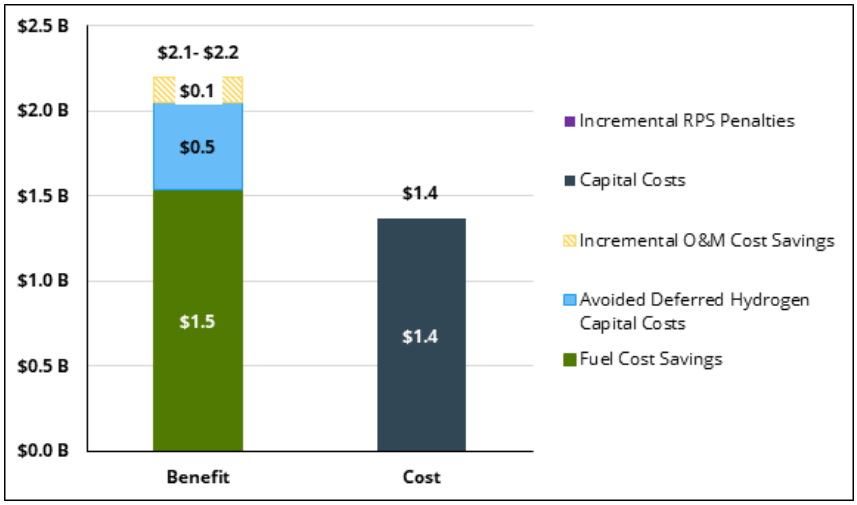


Figure 3 Net present value of LNG transition. Evaluation includes analysis of capital costs vs. benefits inclusive of fuel cost savings associated with displacing biodiesel and LSFO.

Lifecycle Greenhouse Gas Emissions

As an alternative to LSFO, imported LNG, when evaluated on a lifecycle basis and used in higher-efficiency power plants, could result in an estimated 38% to 44% reduction in carbon intensity under 20-year and 100-year global warming potential metrics, respectively. Natural gas can replace residual oil until it is phased out completely by 2045, as local biodiesel production accelerates and technology advances for importing green ammonia and hydrogen.

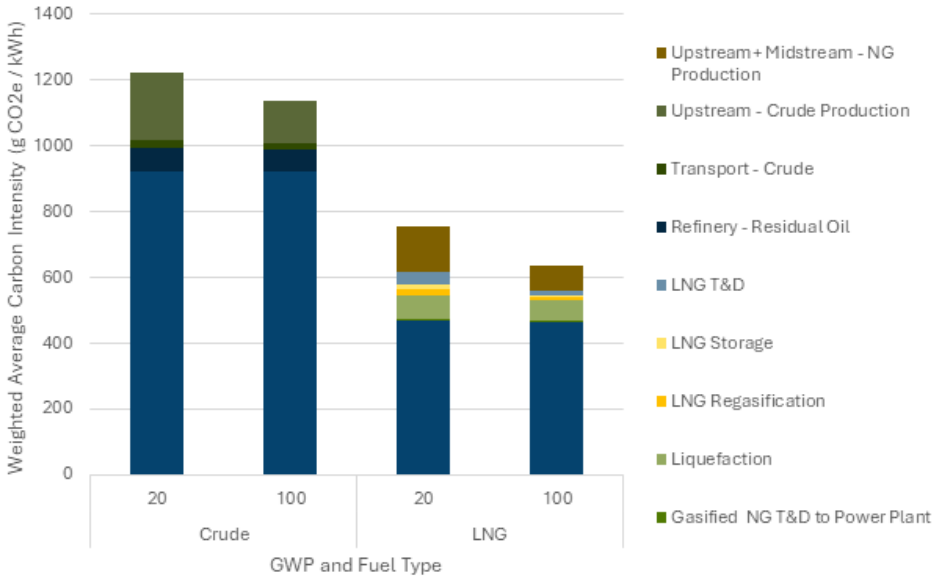


Figure 4 Lifecycle emissions estimates for crude (LSFO) and LNG, evaluated over 20-year and 100-year Global Warming Potentials.

Establishing A Viable Pathway

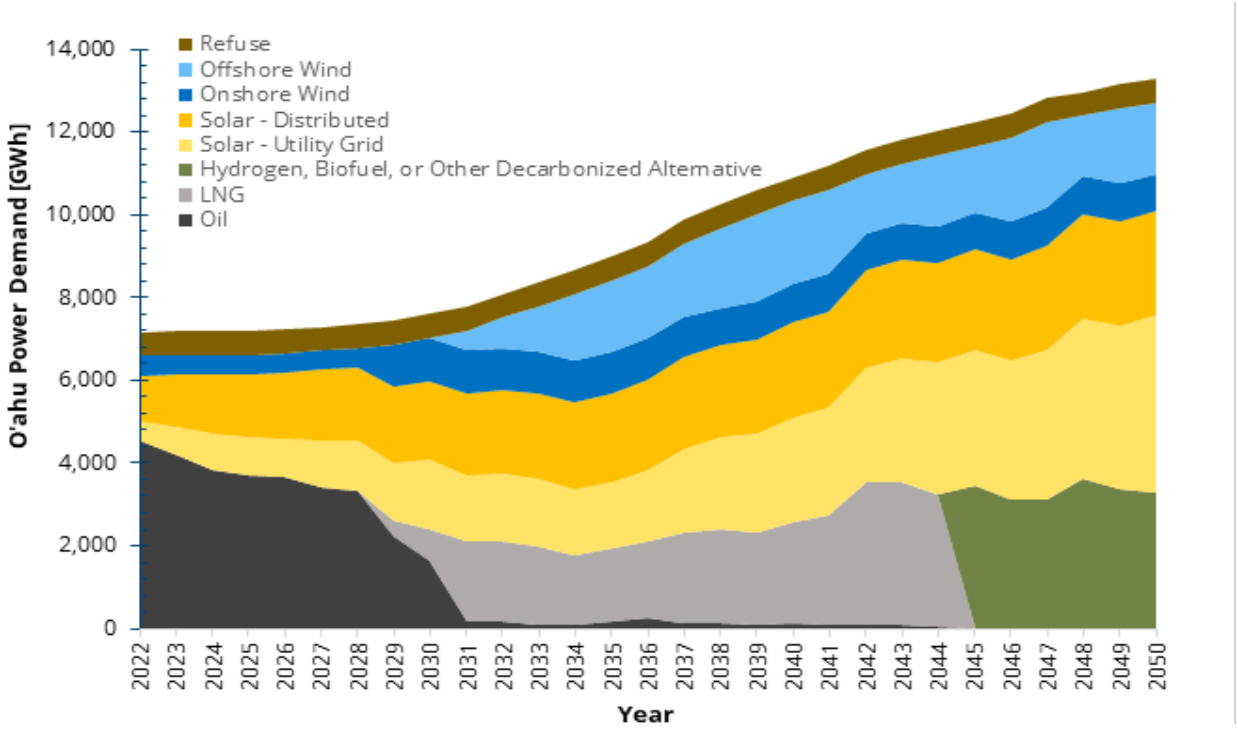


Figure 5 O'ahu future power demand by generation technology under a bridge fuel transition. The adoption of electric vehicles drives increased power demand.

The study establishes a viable pathway to replace fuel oil as the state's primary firm energy source, an action that must occur in tandem with renewable energy buildout. Increased energy demand in the forecasted portfolio assumes substantial electrification of transportation. While the study's findings suggest that using natural gas to replace low sulfur fuel oil in selected O'ahu power plants could lead to cost and carbon savings, HSEO cautions that the analysis depends on certain key assumptions and carries associated risks. These risks include:

1. Acceptance by Regulators
2. Acceptance by Utility
3. Environmental Review Completion
4. Completion of all Permits
5. Aggressive Project Timelines

By providing valuable data, background, and context as an overall feasible power generation and fuels strategy, the study sets out to guide, inform, and inspire action by the private sector on next steps towards deployment. HSEO acknowledges that next steps will require community consultation, further analysis and the involvement of the electric utility and other stakeholders, as well as appropriate regulatory approval. Public engagement will play a key role in any future project planning moving forward. *See Community Outreach*.

Reducing Electricity Costs as a Primary Driver

A crucial objective of the Alternative Fuels, Repowering and Energy Transition study was to identify how to lower energy costs when compared to the current Integrated Grid Plan (IGP), and to ensure that any changes do not increase bills for residents.

The $4 billion global settlement negotiated by Governor Josh Green and subsequent securitization legislation passed in 2025 returned a measure of stability to the state's largest utility, avoiding years of debilitating litigation and irrecoverable costs.

Hawaiian Electric's proposed plan utilizes biofuels as the primary firm energy source to meet the Renewable Portfolio Standard mandates. HSEO's primary concern with biofuels is their additional cost to ratepayers. Additionally, the uncertainty and variability associated with their lifecycle emissions are a particular concern for imported fuels and the first-generation biofuels most abundant on the market.

Initial projections identified that transitioning to natural gas, in the short term, could lead to potential cost savings by displacing low-sulfur fuel oil. Cost savings are more substantial when compared to the switch to biofuels. Potential cost savings in the marine transportation sector were not factored into this analysis.

Moving away from oil to natural gas can reduce household exposure to oil price volatility. Natural gas fuel contracts and the portfolio approach commonly used in the industry can stabilize prices and reduce short-term fluctuations. Further, LNG tends to be used in the power sector, versus the transportation sector, which is generally more predictable, resulting in less influence from short-term market changes, which the oil market is more sensitive to, thus resulting in price changes driven by demand fluctuations.

The full impact of fuel switching will be dependent upon any final contracts, regulatory approvals, and market conditions, including fluctuations in global LNG prices and transportation costs. Long-term cost implications must consider the infrastructure investments required for LNG facilities and the minimization of stranded assets as Hawai'i moves toward its renewable energy goals. With the assumptions included in the report, including the tight timeline, cost savings are projected, and a more detailed analysis is underway.

For additional cost analysis, see Facts Global Energy's 'Economics of Accelerating Hawaii's Energy Transition via LNG and other Alternative Fuels' (August 2024).

Why Can't All Hawai'i's Energy Needs Be Met with Rooftop Solar?

There is no question that rooftop solar is a critical component of the energy transition. Its installation, particularly for low- and moderate-income customers, as well as the businesses and households impacted by the public safety power shutoff program, is a priority made more challenging by the termination of the 30% federal residential tax credit on December 31, 2025. However, rooftop solar alone is not adequate to meet electricity demand and reliability requirements for several reasons, including:

- **Intermittent nature of solar and storage needs**
- **Limited roof space:** Estimates indicate that O'ahu has approximately 3,934 MW of rooftop capacity available for installable capacity. However, even if all available roof space is filled, the technical potential does not meet the need on O'ahu, which is projected to be about 4,500 to 6,500 MW in 2045 (estimated under aggressive energy efficiency and wind adoption assumptions in the 2024 HSEO Pathways to Decarbonization Report, Chapter 4).
- **Transmission and Distribution Limitations:** Rooftop solar systems are decentralized, which can present challenges for the grid in managing voltage fluctuations, ensuring adequate delivery from supply to demand, and maintaining grid stability. Technology is improving (e.g., smart inverters), and HSEO is working with national experts to push these technological boundaries.
- **Cost:** While rooftop solar can lower costs for individuals who can afford to install it, it is not as cost-effective as utility-scale developments.

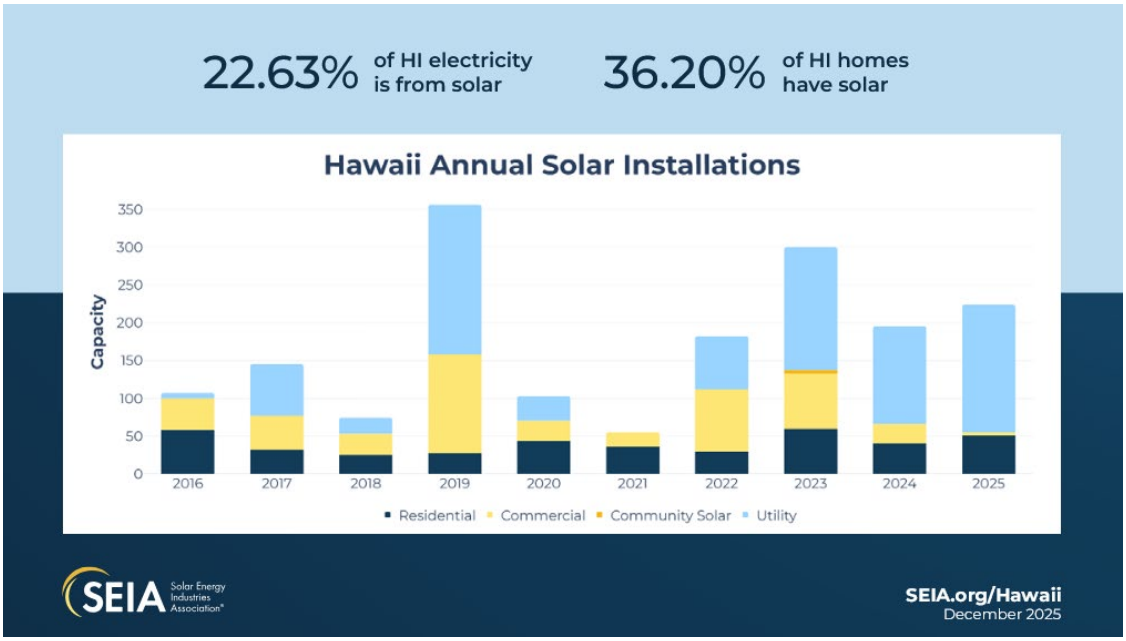


Figure 6 Solar Energy Industry Association December 2025

Hawai'i's Energy Ecosystem

Hawai'i has six independent power grids, one for each of the main populated islands. The Hawai'i Public Utilities Commission regulates four electric utility companies engaged in the production, purchase, transmission, distribution, and sale of electric energy in the state. Collectively, HECO, MECO and HELCO are known as the "HECO Companies" and serve about 95% of the State's population. Kaua'i Independent Utility Cooperative (KIUC) on the island of Kauai serves about 5%. The islands of Ni'ihau and Kaho'olawe do not have electric utility service. All six grids are working toward the state's mandated goal of 100% renewable energy by 2045. O'ahu, as previously established in this report, presents the greatest challenge.

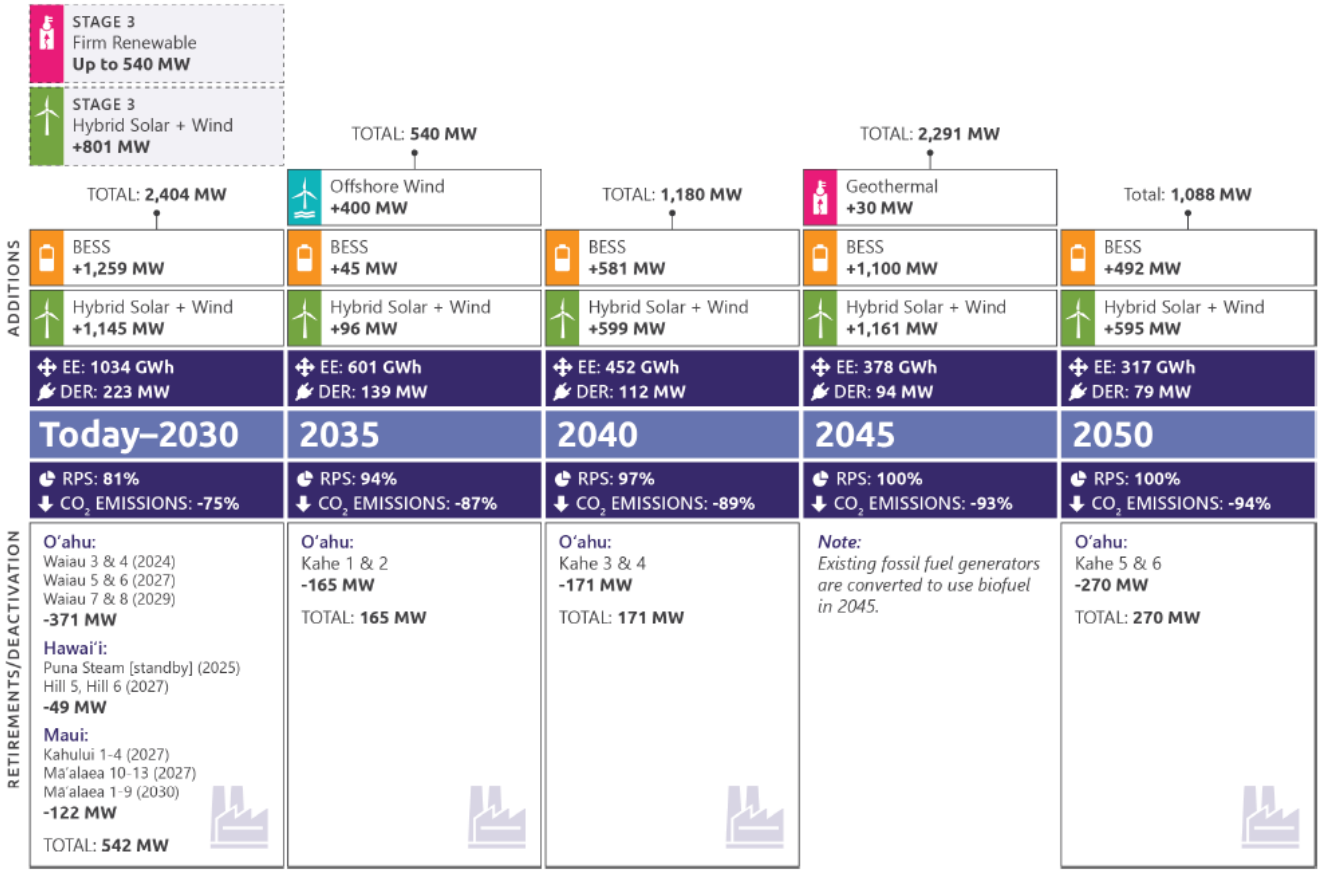
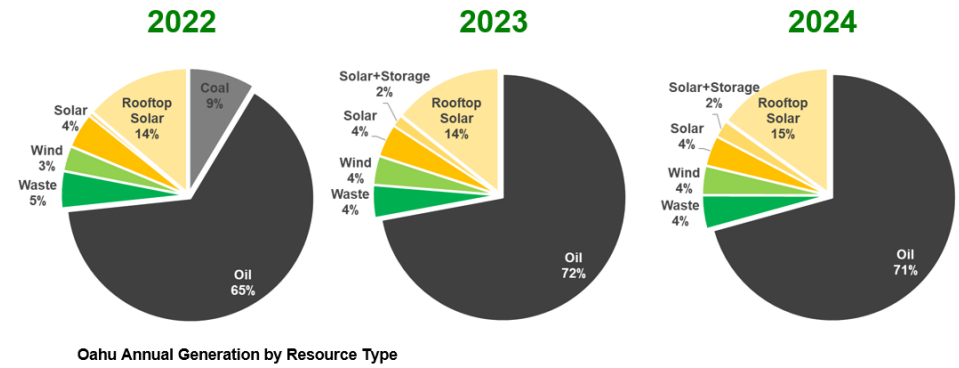


Figure 7 HECO Integrated Grid Plan (IGP)

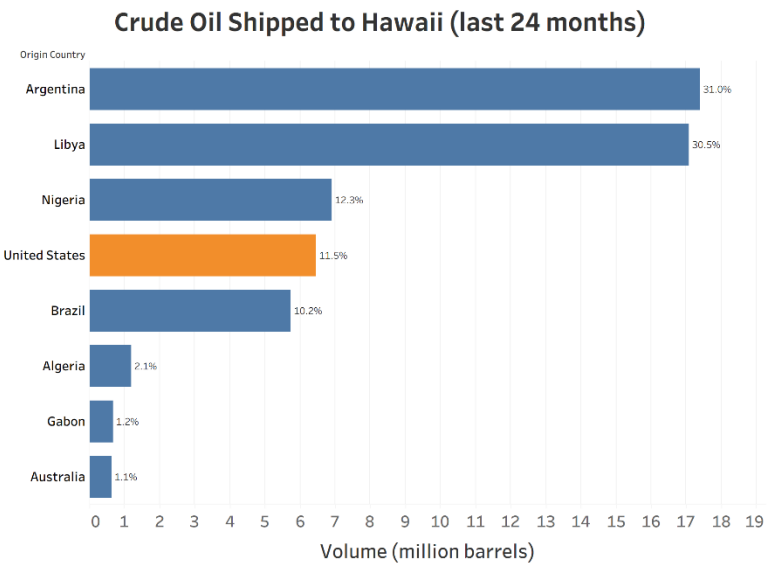


(Rocheleau, 2025)Figure 8 Hawai'i Natural Energy Institute, "Repowering and Resilience" Panel, 2025 Hawai'i Energy Conference

Fuel Imports

Since August 1, 2023, Argentina and Libya have provided Hawai'i with the largest proportions of crude oil (31% and 30.5% of total Hawaii crude imports, respectively)—Nigeria (12.3%), Alaska (11.5%), and Brazil (10.2%) have made up most of the remaining crude imports, with trace amounts from other countries (4.4%).

Of the primary crude oil grades that Hawaii imports from Argentina, Libya, and Alaska, crude is extracted from inland production sites, processed to be pipeline-ready, travels to a coastal port via pipeline, and is then loaded onto a tanker vessel to voyage to Hawai'i. This supply chain accounts for 73% of Hawai'i crude imports.



The primary crude oil grade that Hawai'i imports from Nigeria is extracted at offshore production sites, processed on conventional offshore floating production platforms, travels to an FSO vessel (Floating Storage and Offloading) via subsea flowlines, and is loaded onto a tanker vessel to voyage to Hawai'i. The primary crude oil grade that Hawai'i imports from Brazil is extracted, processed, and stored all on a single FPSO vessel (Floating Production, Storage, and Offloading), then loaded onto a tanker vessel to voyage to Hawaii.

Figure 9 Crude Oil Shipments to Hawai'i (last 24 Months) Source: Vortexa

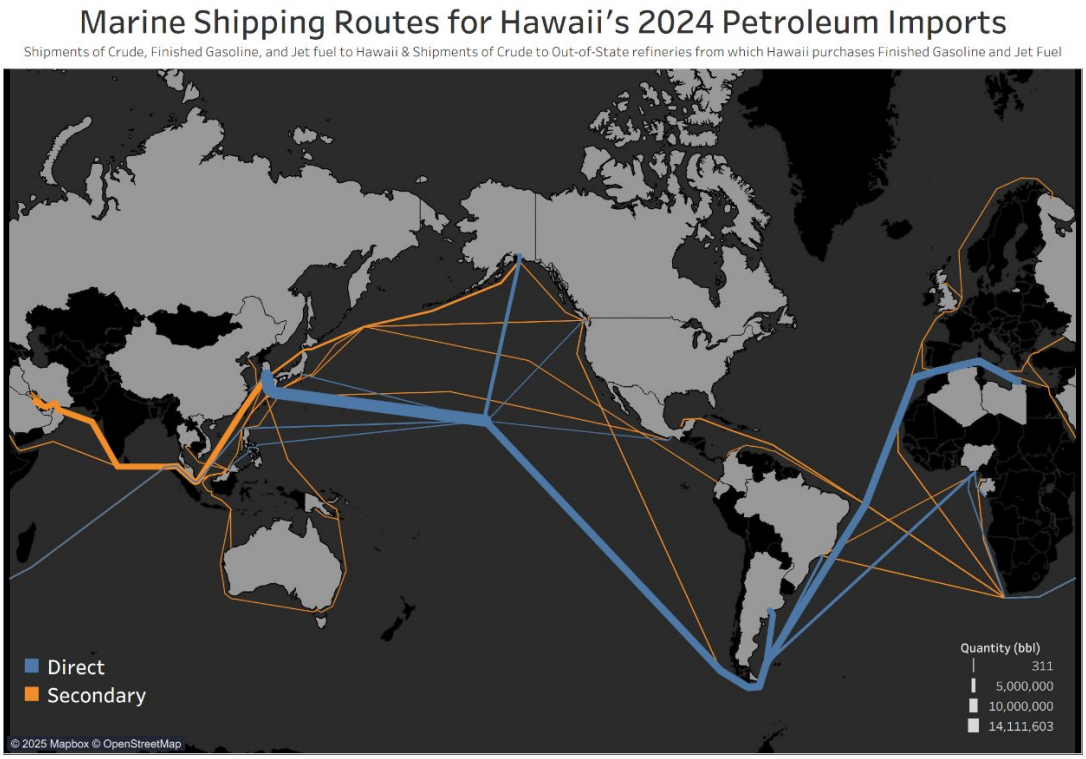


Figure 10 Crude, finished gasoline and jet fuel shipping routes to Hawai'i in 2024. Source: Vortexa

Figure 11 Open flares at the Masla crude oil production facility (where Mesla grade crude oil is processed in the field prior to it traveling by pipeline to Marsa el Hariga in the port city of Tobruk. Photo: MapQuest.

Current Status of Renewables

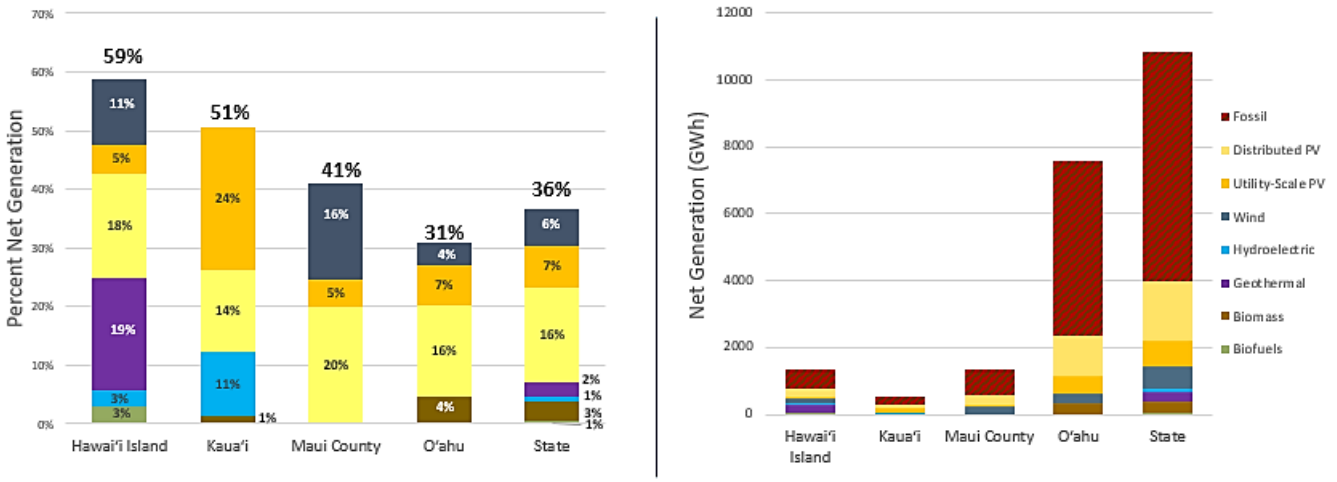


Figure 12 County specific energy generation by source (GWh) for 2024. Data compiled by the Hawai'i State Energy Office (HSEO), Source Public Utilities Commission (PUC) Docket 2007-0008. 2024 Renewable Portfolio Standards (RPS) Annual Status Reports.

Hawai'i has made significant strides toward 100% renewable energy by 2045, achieving about 36% renewable electricity in 2025 through a combination of solar (rooftop & utility), wind, biomass, and hydro, exceeding earlier goals, with Maui, Kaua'i, and Hawai'i Island expected to achieve a 100% RPS by 2035, a decade earlier than planned. However, reliance on imported oil (around 90%) remains a major challenge, even as the state leads in clean energy policy, but needing firm power sources for grid reliability and energy security. O'ahu, with its high population and energy demand, faces the biggest challenge to achieving 100% by 2045; reporting a 31% RPS in 2024.

Kaua'i and Hawai'i Island have the highest renewable energy Island have the highest renewable penetration. Kaua'i has maintained comparatively stable and lower electricity prices, demonstrating the long-term cost benefits of transitioning away from fossil fuel-dependent generation. In 2024, Hawai'i Island reached its highest level of renewable generation, achieving a 59% RPS with geothermal electricity generation accounting for 19.1%. Reducing fuel use through increased power plant efficiency, electrification of transportation, and renewable energy deployment will remain the key mechanisms for reducing ratepayer costs.

Key Progress & Statistics (as of 2024-2025):

- **Overall Generation:** Around 36% of Hawaii's electricity came from renewables in 2025, up from 31% in 2023.
- **Island-Specific Goals:** Kaua'i, Maui, and Hawai'i Island are targeting 100% renewable electricity by 2035.
- **New Projects**: Two new utility-scale projects were connected to the grid in 2025, including Ho'ohana Solar, a 52 MW solar project with 208 MWh battery storage, starting commercial

operations on O‘ahu in July 2025. On Hawai‘i Island, Hale Kuawehi Solar, a 30 MW solar project with 120 MWh battery storage, began commercial operations in March 2025.

- **Projects Signed:** A total of eight solar projects and one wind project, representing 440 MW of renewable capacity and 1406 MWh of storage are planned for development with commercial operations dating from 2027 to 2030.
- **Leading Sources:** Solar (customer-sited and utility-scale) is a major contributor, alongside wind, biomass, and hydropower.

Major Drivers & Technologies:

- **Rooftop Solar:** Widespread adoption of residential solar panels is a huge factor in the state's success. Over 1 gigawatt (GW) of customer-sited solar and battery storage has been connected to Hawaiian Electric’s grids.
- **Utility-Scale Projects:** More than a dozen large-scale solar and solar-plus-storage facilities are in various stages of development across the islands. See Proposed Energy Projects.
- **Diverse Mix:** The state utilizes solar, wind, biomass (waste, biofuels), geothermal (contributing 19.1% to the Hawai‘i Island grid in 2025), and hydro.
- **Geothermal Potential:** Geothermal energy has the potential to provide stable, 24/7 "firm" power for the state. Resource characterization will confirm its potential, and community acceptance will be key to its long-term adoption.

Challenges:

- **Fossil Fuel Reliance:** Despite progress, petroleum still accounts for about 90% of Hawaii's total energy consumption. The proposed use of biofuels in utility grid plans is more costly than the oil it will replace, putting upward pressure on electricity rates, inconsistent with the state’s affordability priorities.
- **Supply Chain Risk:** On O‘ahu, two-thirds of our electricity is generated from residual fuel oil, which since Russia’s invasion of Ukraine has been the product of crude oil shipped from ports in Libya, Nigeria, and Argentina.
- **Energy Consumption:** Hawai‘i uses significantly more energy (mostly imported oil) than it produces, creating a huge gap to fill when considering electricity, ground, air, and marine transportation.
- **Aging infrastructure:** Aging thermal power plants are inefficient, present increasing reliability risk, and limit the continued integration of renewable resources.
- **Grid Stability:** Integrating high levels of variable renewables like solar and wind requires additional storage and firm power solutions.

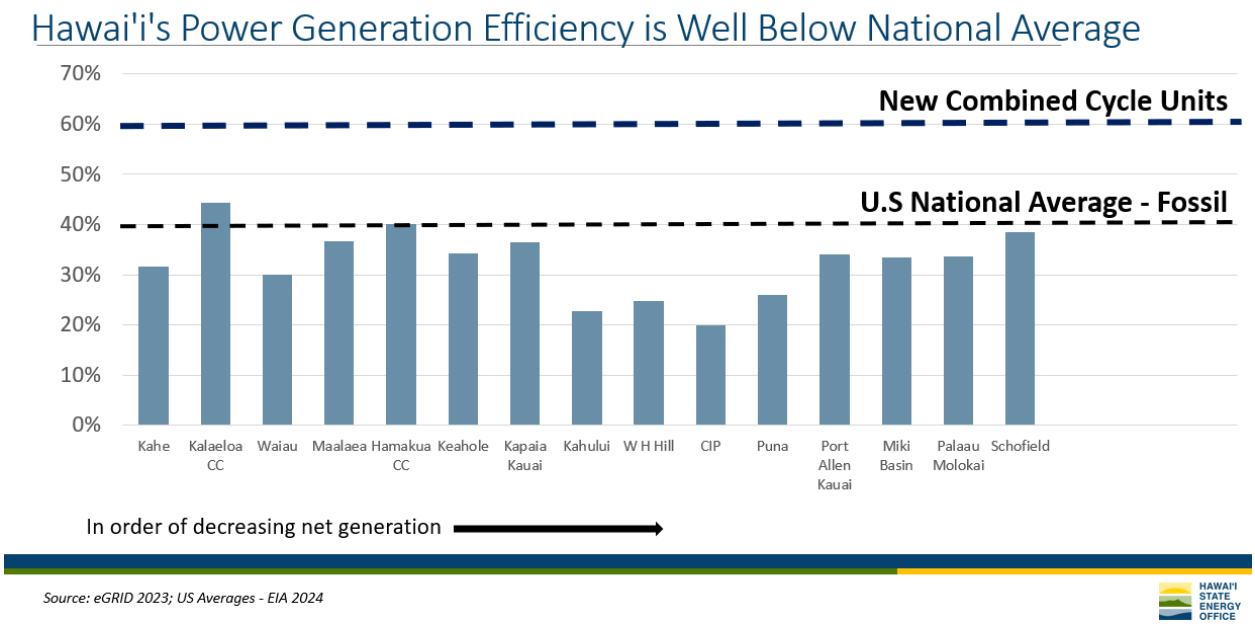


Figure 13 Hawai'i's Power Generation Efficiency is Well Below the National Average. Source: eGRID 2023; US Averages - EIA 2024

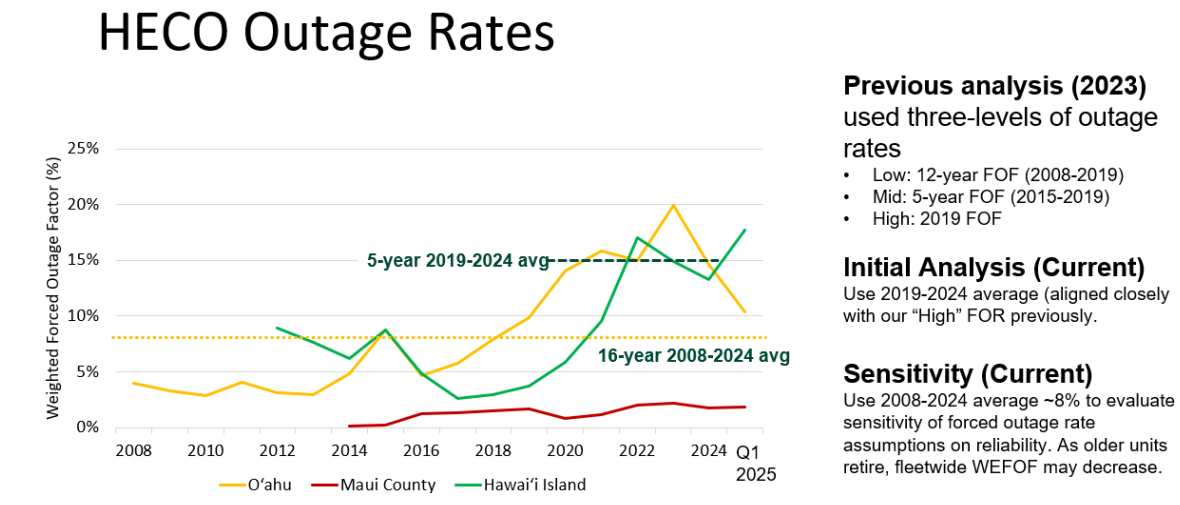


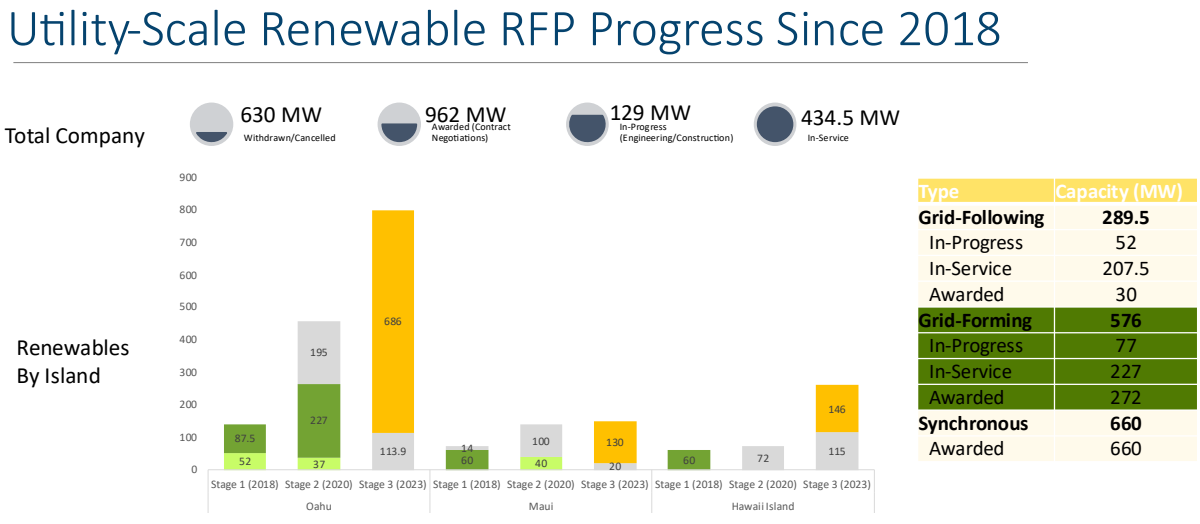
Figure 14 Figure 15 Increased Maintenance and Higher Forced Outage Rates are Causing Reliability Challenges. Source: Hawai'i Natural Energy Institute

Outlook:

Technological innovation is driving progress to make the grid reliable to accommodate the growing capacity of intermittent power. Since 2018, utility-scale renewables have added 227 megawatts of low-cost, "grid-forming" capacity, helping to keep Hawai'i's energy ecosystem in smooth operation. Another 207 megawatts of conventional utility-scale projects have added additional capacity, but more is needed.

Hawaiian Electric's proposed Stage 3 renewable projects and KIUC's two proposed solar and battery projects can provide some of this capacity. For this reason, HSEO convened the Committing to Reliable Energy and Decarbonization Innovations on Time (CREDIT) Task Force, authorized under Executive Order 25-10 (EO 25-10) in November 2025. The intention of EO 25-10 is to do everything possible to get renewable projects reviewed and approved in time to be built before federal tax credits expire under the "One Big Beautiful Bill Act" passed by Congress in July 2025. The CREDIT Task Force also seeks to coordinate the review of several large new combustion power plants on O'ahu, Maui, and Hawai'i Island, intended to help replace the planned retirement of baseload oil-powered power plants on these islands. The CREDIT Task Force will work with state and county agencies, utilities, developers, and public interest organizations to enable efficient permitting of renewable energy and energy resiliency projects while the state pursues replacement and retirement of old, inflexible fuel generation.

Kaua'i and Hawai'i Island have the highest renewable penetration. Kaua'i has maintained comparatively stable and lower electricity prices, demonstrating the long-term cost benefits of transitioning away from fossil fuel-dependent generation. In 2025, Hawai'i Island reached its highest level of renewable generation, achieving a 59% RPS with geothermal electricity generation accounting for 19.1%. Reducing fuel use through increased power plant efficiency, electrification of transportation, and renewable energy deployment will remain the key mechanisms for reducing ratepayer costs.



Type	Capacity (MW)
Grid-Following	**289.5**
In-Progress	52
In-Service	207.5
Awarded	30
Grid-Forming	**576**
In-Progress	77
In-Service	227
Awarded	272
Synchronous	**660**
Awarded	660

Figure 15 Source: Hawaiian Electric

Advancing Grid Stability and Resilience on Kaua‘i: A Case Study

Kaua‘i is taking a major step toward operating one of the nation’s most resilient island grids. Through two complementary Grid Resilience Innovation Partnerships (GRIP) projects—the Synchronous Condenser Conversion Technology (SCCT) project and the Utility Solar Grid Forming Technology (USGFT) project—the island is modernizing legacy infrastructure and deploying cutting-edge inverter and storage technologies to safely integrate more intermittent, locally-sourced utility-scale power while strengthening grid stability, reliability, and fault response.

Synchronous Condenser Conversion Technology (SCCT)

The SCCT project demonstrates an innovative approach to leveraging existing thermal plant assets to support a high-renewables grid. By converting what is essentially a standby steam turbine generator at the Port Allen Generation Station into a synchronous condenser, the project introduces a clean, fuel-free source of grid inertia, voltage support, and short-circuit current.

Once in service, the synchronous condenser will help regulate system voltage, stabilize frequency, and maintain adequate fault current to keep protection systems operating correctly—capabilities that become increasingly critical as traditional generation facilities are phased out for locally-sourced energy, which can create challenging dispatch conditions. The project showcases a replicable pathway for transforming traditional generating units into resources enhancing grid stability while delivering regional and community resilience benefits.

Utility Solar Grid Forming Technology (USGFT)

The USGFT project upgrades two existing solar facilities with battery energy storage systems (BESS) and grid-forming inverters, creating flexible hybrid plants capable of supplying essential reliability services traditionally provided by conventional generators. These upgrades strengthen grid performance in several ways:

- · Mitigating frequency instability by rapidly balancing variable intermittent output
- Providing synthetic inertia and fast reactive power, improving voltage control
- Supplying significantly higher fault-current capability than legacy solar inverters
- Preventing voltage collapse and alleviating limitations tied to low short-circuit levels
- Offering dynamic, continuous voltage support rather than on/off reactive devices

Modern grid-forming inverters paired with BESS can exceed the 150% output capability typical of legacy inverters during fault events, helping keep the grid operational in the crucial split-second before protection systems activate. This technology directly addresses one of Kaua‘i’s central barriers to operating without fossil units: maintaining sufficient voltage stability, inertia, and fault tolerance as more affordable, yet intermittent energy increases on the grid.

A Replicable Model for a Fully Renewable, Resilient Grid

Together, the SCCT and USGFT projects provide a powerful, complementary technology stack for high-renewable island grids. The synchronous condenser adds physical inertia and fault strength, while grid-forming solar-plus-storage sites contribute fast, flexible, digitally controlled support. Combined, these capabilities will allow Kaua‘i to operate reliably with minimal or no conventional generation, unlocking greater local power contribution and accelerating progress toward a future free from foreign fossil fuels.

These investments, which leverage nearly $18M in federal funds, not only enhance grid resilience for Kaua‘i residents and critical services—they also offer a replicable model for other islanded and isolated grids seeking to switch to local energy sources while maintaining world-class reliability.

Figure 16 Port Allen Power Plant , Kaua‘i

Modernizing the Grid

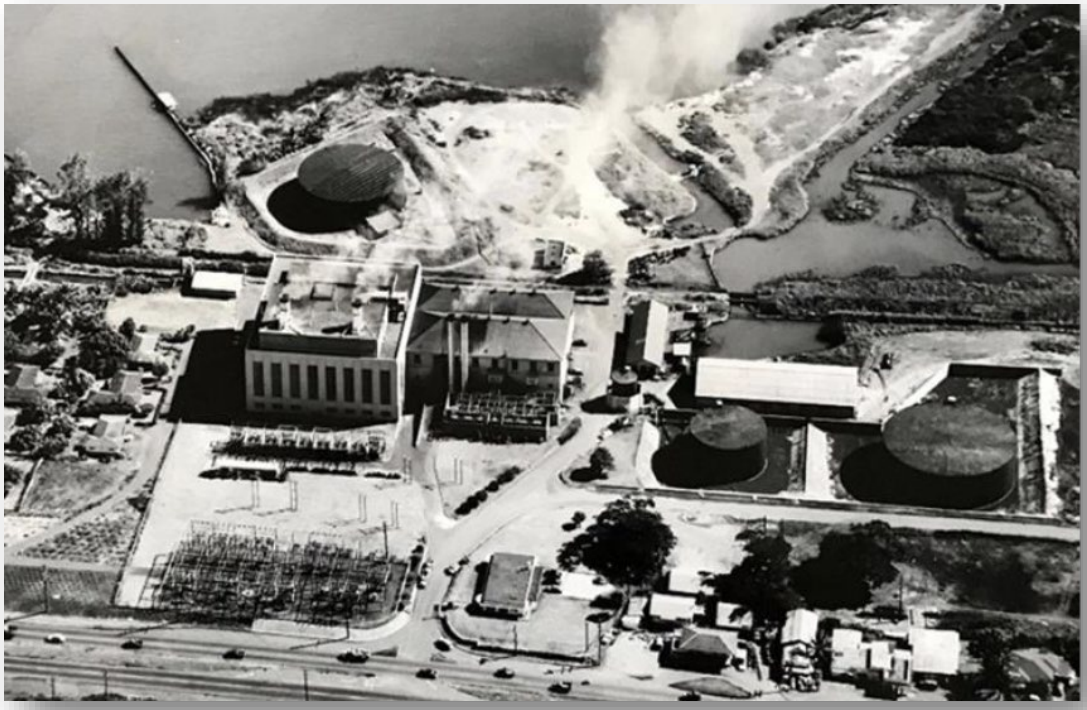


Figure 17 Figure 18 Waiau Power Plant circa 1950. Photo credit: Hawaiian Electric

Hawai‘i's energy grid requires substantial modernization to fully support renewable energy and build a resilient, future-ready system. Projections indicate that modernizing the existing power grid will cost as much as $2B USD.

In October 2025, the state signed a Strategic Partnering Agreement (SPA) with JERA, Japan’s largest power producer, to modernize grid infrastructure, accelerate the retirement of aging assets, and enhance system reliability and resilience, contributing meaningfully to Hawai’i’s clean energy transition. The development of energy transition infrastructure may include initiatives related to low- and zero-carbon fuels, fuel logistics and distribution networks, the modernization of legacy infrastructure, and integration of renewable technologies at scale.

The SPA between JERA and the state of Hawai‘i represents a significant step forward in the state's strategy to diversify its energy portfolio, drawing on JERA's pivotal role in powering Japan and shaping its 2050 decarbonization strategy. The SPA supports collaboration on Hawai‘i power generation projects that aim to modernize grid infrastructure, accelerate the retirement of aging assets, and enhance system reliability and resilience, contributing meaningfully to Hawai’i’s clean energy transition.

As the state develops efficient power development strategies and permitting pathways, creative financing and grants will be instrumental to success. A key part of this may include leveraging JERA’s access to lower-cost capital and coordinating plans to procure long-lead equipment in the most cost-efficient manner.

Updated Energy Strategy

All sectors of Hawai‘i’s economy and well-being are dependent on a secure, reliable, affordable, and environmentally sound energy ecosystem. In the electricity sector, replacing aging infrastructure with high-efficiency fuel-flexible power plants and grid upgrades, accompanied by a rapid transition from imported oil and petroleum products to inexpensive renewable and low-carbon solutions, is the primary focus of the State’s energy strategy.

Under the status quo, plans to upgrade a substantial portion of the thermal capacity on O‘ahu will help address reliability issues. However, the proposed use of biofuels in these new and refurbished plants is expected to significantly increase costs for ratepayers, a status quo deemed unacceptable by the state. Furthermore, Hawaiian Electric has opted to retain the option of using low-sulfur fuel oil at these plants, primarily sourced from Argentina, Libya, and Nigeria, a practice deemed unacceptable by the state. *See Fuel Imports.*

The objective of the energy strategy is to implement a viable pathway that addresses multiple policy priorities: oil price volatility, low carbon, cost containment, and a more resilient grid, requiring multiple iterations of analysis to ensure both policy objectives (i.e., RPS law) and impact on ratepayers are balanced.

One of two prongs of Hawai‘i’s updated energy strategy, Executive Order 25-01 (EO 25-01), accelerates the timeline for renewable development for neighboring island communities to reach a 100% renewable portfolio by 2035, a decade earlier than statute, and sets a statewide target of 50,000 distributed renewable energy installations, such as rooftop solar and battery systems, by 2030.

While Hawai‘i’s 100% Renewable Portfolio Standards (RPS) and decarbonization policies remain central to Hawai’i’s clean energy initiative, the post-Maui Wildfire environment demands that EO 25-01 and the second prong of Hawai‘i’s energy strategy, the Alternative Fuels, Repowering and Energy Transition Study, published in January 2025, set the stage for measures to achieve affordable energy, attract capital, and build a resilient, decarbonized energy system.

Together, EO 25-01 and the Alternative Fuels, Repowering and Energy Transition Study, set the stage for measures to achieve affordable energy, attract capital, and build a resilient, decarbonized energy system.

Areas of critical interest include improving geothermal policies to improve development likelihood, slim-hole drilling and geothermal resource characterization; assisting in the deployment of utility-scale renewable energy projects; tools for proper scoping, siting, understanding, and planning for permitting requirements; and other measures to increase the probabilities of renewable energy project acceptability, timeliness, and success.

The updated state energy strategy is based on scientific data and proven technologies that best achieve policy objectives to reduce carbon and costs while accelerating Hawai'i's energy transition. It is indicative of the Green Administration's intention to go beyond the status quo to take tangible, substantive actions to create a more resilient and increasingly decarbonized economy.

Consistent with Hawaii's obligations under HRS §269-6, HSEO advises that it must be a policy objective of the state to use the lowest greenhouse gas-emitting energy source reliably available at the lowest cost.

Federal Funding Cuts and Situational Impacts

The impact of the federal government's actions on Hawai'i, including program-specific energy cuts and the longest government shutdown in U.S history, is projected to cost Hawai'i approximately $3 billion over the next six-year extended budget cycle. Global tariffs and instability in energy markets—including geopolitical conflicts that have disrupted oil and gas supply chains—continue to drive volatility in oil prices, contributing to inflationary pressure and elevated electricity costs statewide.

Economic recovery on Maui remains constrained following the August 8, 2023, wildfires, with continued economic stress on households, businesses, and tourism-based revenue. Impacts imposed on Hawaiian Electric include extensive restoration and grid modernization expenditures, increased wildfire risk management obligations, and greater dependence on federal loans and grants to meet a fundamental level of capital investment obligations.

The retirement of the Kahului and Mā'alaea power generators put additional stress on already diminished generation capacity and reserve adequacy. The needed generation and grid reconstruction and modernization efforts are expected to exert upward pressure on utility rates for Maui residents, and grid reliability will be compromised if replacements are not built on time.

An Executive Order from the Trump Administration on July 6 terminated commercial clean energy production and investment tax credits for projects not yet operational by the end of 2027. Projects that begin construction after June 30, 2026, will not be eligible for any federal tax credits, potentially impacting 11 proposed projects capable of generating close to a gigawatt of power on Maui, O'ahu, and Hawai'i Island.

HSEO is currently appealing an October 2025 termination notice for a $1 million award from the U.S. Department of Energy to support resilience strategies for zero-emission vehicle (ZEV) infrastructure. Negotiations have stalled on another $25 million in congressionally allocated funds awarded under the Inflation Reduction Act for Zero Energy Code Adoption and Building Performance Standards, potentially delaying progress on emissions and efficiency targets. Extensions have been filed in both cases, and appeals may follow.

Policy and Regulatory Advancements

Executive Order 25-10 (EO 25-10), issued in November, established the **Committing to Reliable Energy and Decarbonization Innovations on Time (CREDIT) Task Force.** Chaired by the Chief Energy Officer and comprised of elected officials, state and county agencies, utility representatives, independent power producers, and energy-related public interest groups, the CREDIT Task Force recognizes that recent policy changes enacted by the United States Congress through H.R.1 have significantly shortened the period during which renewable energy projects can claim federal tax credits. As such, the Task Force will focus on those projects that can begin construction by July 2026 and come online by 2030, or four years after the declared start of construction.

Executive Order 25-10 also recognizes that additions to generation capacity are necessary in the next five years to avoid reliability concerns and reduce the state's continued reliance on imported oil. The utility interconnection of a new renewable energy project can take up to nine years, and the Governor is confident that all parties working together can shorten this duration.

Act 258 established the "Catastrophic Wildfire Securitization Act" allowing utilities to issue bonds to finance future wildfire costs, including disaster relief, mitigation, and litigation, to be repaid by fixed charges on customer bills that cannot be bypassed. This legislation, subject to the oversight of the Public Utilities Commission, essentially shields the utility's credit rating from future catastrophic wildfire losses, ensuring financial stability in the electricity sector.

The passage of Act 258 followed a global settlement of approximately $4 billion, reached to compensate victims of the August 2023 Lahaina wildfires, involving defendants including Hawaiian Electric, Kamehameha Schools, and the state of Hawaii. The settlement cleared the way for payouts to thousands of affected individuals and businesses through individual attorney claims or a class action, despite challenges from insurers.

Act 266, passed by the Hawai'i State Legislature in 2025, requires the Public Utilities Commission (PUC) to establish goals and tariffs for customer-sited distributed energy resources, like solar and energy storage, to support the state's renewable energy goals.
Key provisions include mandating fair compensation for grid services, microgrids, and exported solar energy. Act 266 clarifies that microgrid operators are not public utilities and authorizes the "wheeling" of renewable power. The goal is to improve grid stability, increase energy independence, and reduce reliance on imported fossil fuels.

Working Groups

Biofuels

House Resolution 193, House Draft 2 (HR193 HD2), and Senate Resolution 82, Senate Draft 1 (SR82 SD1), adopted during the 2024 Legislative Session, requested HSEO to convene a Renewable Liquid Fuels Working Group to study local production, development, and incentives for renewable liquid fuels. In line with these objectives, the HSEO convened a Biofuels Working Group (BWG) to bring together cross-sector perspectives to develop viable pathways and policy options that accelerate the sustainable development of renewable liquid fuels. The BWG met to work toward the following objectives from the resolutions:

1) Facilitate the local production of renewable liquid fuels, including renewable diesel, naphtha, and sustainable aviation fuels;

2) Identify potential feedstock and production technologies suitable for production and use within the state;

3) Evaluate existing and potential new tax incentives for the development and utilization of renewable liquid fuels in Hawai‘i; and

4) Evaluate the adoption of a clean fuel standard to incentivize the use of renewable liquid fuels. HSEO will submit the final report to the legislature before the 2026 session.

The report found that achieving Hawai‘i’s statutory net-negative emissions targets by 2045 will require robust energy diversification away from petroleum-based and high-carbon-intensity fuel sources. However, both affordability and reliability, alongside carbon reduction and environmental stewardship, must be transitioned.[2] [3] The availability of local feedstocks for biofuels production in Hawai‘i is considerably constrained by the state’s finite land resources and competing uses for that land. Since Hawai‘i has limited land availability, meeting anticipated future demand for biofuels will require imported feedstocks and/or fuel. While there is clear substantial demand for liquid biofuels to meet the state’s zero-emission goals, key limitations and caveats tied to their deployment must be thoroughly assessed, especially if state dollars are used to incentivize deployment, to ensure any state incentives deliver real and durable benefits to the state.

Geothermal

House Concurrent Resolution (H.C.R.) 58 House Draft (H.D.) 1 was passed by the Thirty-third Hawai‘i State Legislature during the 2025 Regular Session, requesting that HSEO convene a Geothermal Energy Working Group to evaluate the regulatory and policy landscape surrounding geothermal energy in Hawai‘i. The working group is to be made up of designated representatives from relevant State and local government offices, representatives from relevant industry stakeholders, and other invited members. In addition, the H.C.R. requests that HSEO submit a report of its findings and recommendations, including

[2] Hawai‘i State Energy Office (2023), Hawai‘i Pathways to Decarbonization, https://energy.hawaii.gov/wp-content/uploads/2022/10/Act-238_HSEO_Decarbonization_FinalReport_2023.pdf

[3] Hawai‘i State Energy Office (2025), Alternative Fuel, Repowering, and Energy Transition Study, https://energy.hawaii.gov/wp-content/uploads/2025/01/HSEO-Alternative-Fuels-Study-Final-Report.pdf

any proposed legislation, to the Legislature no later than 20 days before the convening of the 2027 Regular Session.

H.C.R 58 H.D. 1 states that the working group will be convened with the overarching premise of having a community-inclusive process to evaluate the role of geothermal development in Hawai‘i. This group is tasked with identifying a clear development pathway that aligns with state policy, environmental stewardship, and cultural sensitivity.

The working group will identify any regulatory, permitting, and policy challenges affecting the state; review best practices from other jurisdictions, such as New Zealand; assess geothermal energy's potential expansion and its role in supporting energy resilience and affordability; and provide recommendations to the legislature on policy and regulatory reforms necessary to establish a clear and efficient pathway for geothermal energy in Hawai‘i.

Battery

HSEO and the Hawai‘i Department of Health (DOH) are actively convening the Electric Vehicle (EV) Battery Recycling and Reuse Working Group pursuant to Act 209 (SLH 2025). This working group was created in response to the need for a coordinated, statewide approach to managing end-of-life EV batteries—a challenge that has become more pressing with the rapid growth of the electric vehicle market.

The working group will develop a plan for best management practices for recycling, reuse, repurposing, and, when necessary, disposal of electric vehicle batteries. Membership includes representatives from various sectors throughout the EV battery industry, including researchers, policymakers, manufacturers, shippers, and end-of-life recycling facilities. Act 209 received broad support from industry to address the complex risks associated with EV batteries, including fire hazards from lithium-ion batteries, which occur when batteries are improperly handled or damaged.

HSEO supports electrification of transportation as a critical component of the state's clean transportation and decarbonization goals. Just as important, HSEO is working to make sure that the batteries powering these vehicles are managed responsibly at the end of their life. Safe reuse, recycling, and disposal of batteries are critical to protecting our communities, public health and safety, as well as the environment. Accordingly, developing end-of-life management strategies and best practices ensures stewardship to prevent unintended consequences at the end of each battery's useful life. A final report will be submitted to the legislature before the 2027 legislative session.

Nuclear

In 2025, HSEO convened a nuclear energy working group, as requested by SCR 136 (SLH 2025), to study the feasibility of using advanced nuclear power technologies. The working group was requested to 1) Study the feasibility of using advanced nuclear power technologies in the State; 2) Evaluate the benefits, risks, and barriers to developing and using advanced nuclear power technologies in the State, including regulatory, statutory, financial, social, and environmental factors; and 3) Identify potential short-term and long-term nuclear energy goals for the State.

SCR 136 requested HSEO to study the feasibility of using *advanced nuclear power technologies* in the state. Advanced nuclear power technologies are defined by the Energy Act of 2020 as "a fission reactor with significant improvements compared to reactors operating on the date of enactment [2020] or a reactor using nuclear fusion." Significant improvements listed in the Energy Act include, but are not limited: additional inherent safety features; lower waste yields; improved fuel and material performance; greater reliability; increased resistance to nuclear weapons proliferation; increased thermal efficiency; reduced consumption of cooling water; ability to integrate electricity generation; operational flexibility to change output to match demand and complement intermittent renewable energy output or energy storage; and modular sizes to match electricity demands and other energy requirements.

The Nuclear Working Group largely concurred that Hawai'i should not serve as a test case for any advanced nuclear demonstration projects, given the current lack of specific information and uncertainty regarding related costs of the technology, the state's geographic isolation, permitting challenges, and the various logistical challenges and safety needs associated with transporting and managing nuclear waste. The report outlines unanswered questions associated with advanced nuclear reactors most applicable to Hawai'i. Until these questions are resolved within the industry, the working group considers any constitutional or regulatory changes to be premature.

Clean Transportation

Act 226, SLH 2023, established two Working Groups within the Department of Transportation for administrative purposes: a Clean Ground Transportation Working Group and an Interisland Clean Transportation Working Group. Act 226 further requires the Department of Transportation (DOT), Office

of Planning and Sustainable Development, and HSEO to develop plans to ensure that the state's electric charging capacity is sufficient and the state's electric charging capacity exceeds the rate by which electric vehicle sales are projected to replace internal combustion vehicle sales and the rate by which other electric transportation options are projected to require charging capacity. Act 226 authorizes the DOT and HSEO to adopt rules to effectuate the added HRS provisions.

Activities the Clean Transportation Working Groups are to address include developing metrics, benchmarks, plans, and recommendations for the state to achieve the goals set forth in Hawaii Revised Statutes sections 225P-5 and 225P-8, coordinating with other groups, agencies, and programs within and outside of the state that are working to achieve zero-emissions transportation. Working Group members are to coordinate with the state, and applicable stakeholders are to pursue grants and other funding opportunities for the state to achieve legislated goals.

HSEO activities, specifically, include benchmarking, developing a public EV charging roadmap, public and workplace charging deployment, incentivizing the adoption of ZEVs, facilitating the transition of the state's light-duty fleet, and utilizing the rule-making authority granted under Act 226, further discussed in the *Clean Transportation Solutions* and *Energy Planning* below.

Act 100 Priorities and Actions

Act 100 sets forth the priority objectives, policies and metrics to measure progress underlying HSEO's operational activities according to statutory objectives in HRS 196-71 and the 19 key responsibilities of the Chief Energy Officer under HRS 196-72. The major objectives of Hawaii's updated state energy strategy to achieve decarbonization for Hawai‘i under Act 100 are as follows:

Major Objective 1: Accelerate Renewable Energy Development (EO 25-01)

Implement EO Sub-objectives after achieving consensus among stakeholders and policy makers on renewable energy resource adequacy, to realize the state's 100% RPS and decarbonization policies by 2045. Complete geothermal resource characterization to inform assessments and decision making, to enable long-term energy self-sufficiency in Hawaii's energy system. Streamline permitting and regulatory approvals.

Sub-Objectives of EO 25-01:

- Accelerate the timeline for renewable development for neighboring island communities to reach a 100% renewable portfolio by 2035, a decade earlier than statute.
- Achieve a statewide target of 50,000 distributed renewable energy installations, such as rooftop solar and battery systems, by 2030.
- Enable faster, more efficient permitting of renewable energy system installations, such as establishing programs for same-day online permit issuance and self-certification permitting under certain circumstances.
- Encourage state departments to make renewable developments easier and faster to permit, which will cut energy costs and project development times. Engage the assistance of the Hawai‘i Public Utilities Commission and Hawaiian Electric Company in streamlining energy permitting, prioritizing the reduction of energy costs, and ensuring energy stability for Hawai‘i's residents.

Major Objective 2: Reduce Power Sector Costs and Carbon Emissions by Fuel Switching and Repowering, enabling fuel flexibility, increased plant efficiency, and operational cost savings

The Alternative Fuels, Repowering and Energy Transition Study updates and refines the Pathways to Decarbonization Report submitted to the Legislature in 2023, moving the state from the development of a viable pathway to statewide decarbonization to the implementation of a viable pathway, as an immediate response to renewable development headwinds and rollbacks in federal funding and environmental protections. This objective was furthered in 2025 with the signing of a Strategic Partnering Agreement between JERA and the state, enabling a large injection of value-aligned capital to provide energy security and get the state back on track to meet its 2045 targets.

Major Objective 3: Advance New Emergency Response, Energy Security, and Grid Resilience programs in partnership with critical lifeline network partners. Harden, diversify, and enhance transmission and distribution systems. Support microgrid development.

End State: Deployment of technology and grid resilience strategies to protect critical infrastructure, lives, and property from climate change events, including blackouts and energy shortfalls.

Major Objective 4: Reduce Energy Demand through End Use Efficiency, Commercial Building Performance Standards and Zero Energy Ready Homes

End State: Implementation of $68 million in home energy efficiency upgrades for low- and moderate-income Hawai'i households earning less than 150% of the Area Median Income. Adoption of a Building Performance Standard (BPS) to improve the energy performance of the state's largest commercial buildings (50,000 square feet and above), accounting for approximately 80% of the state's commercial energy usage and 78% of total commercial building emissions, and Zero Energy Ready Home energy codes.

Major Objective 5: **Lead-by-Example with State Zero-Emissions Vehicles, Charging Station Deployment, and Diesel Vehicle Replacement**

End State: By December 31, 2030, 100% of light-duty motor vehicles that are passenger cars in the State's fleet must be zero-emission vehicles; and b) By December 31, 2035, 100% of all light-duty motor vehicles in the State's fleet must be zero-emission. Create momentum in the ZEV medium and heavy-duty vehicle market through the implementation of Volkswagen Settlement Funds and federal grants to fund zero-emission transit buses, coaches in tour and charter operations, electric school buses, forklifts, and tractors. Effectuate a statewide EV charging roadmap, including addressing underserved markets that will be necessary to achieve state decarbonization goals, and deploy a public and workplace charging program in collaboration with DAGS.

Major Objective 6: Jobs and Workforce Development

End State: Keiki to career pathways, skilled trades development, and the realization of meaningful career opportunities arising from the transition from imported foreign fossil fuels to locally generated renewable energy. Increased public knowledge of, capacity for, and engagement in energy policy creation and decision-making.

Major Objective 7: Community Outreach and Engagement

End State: Achieve a broadly acceptable geothermal deployment strategy for the state, build capacity for local Community Based Organizations (CBOs) to engage on local, island wide, and statewide energy and resilience initiatives, deploy effective visualization tools to build consensus on power generation challenges and trade-offs, and address the energy burden for low-and moderate-income residents by constructing affordable solutions.

EO 25-01 Accelerating Renewable Energy Development

- Accelerates the timeline for renewable development for neighboring island communities to reach a 100% renewable portfolio by 2035, a decade earlier than statute.
- Sets a statewide target of 50,000 distributed renewable energy installations, such as rooftop solar and battery systems, by 2030.
- Calls for faster, more efficient permitting of renewable energy system installations, such as establishing programs for same-day online permit issuance and self-certification permitting under certain circumstances.

- Encourages state departments to make renewable developments easier and faster to permit, which will cut energy costs and project development times. Furthermore, EO 25-01 requests the assistance of the Hawai‘i Public Utilities Commission and Hawaiian Electric Company in streamlining energy permitting, prioritizing the reduction of energy costs, and ensuring energy stability for Hawai‘i’s residents.

Geothermal

The state’s energy transition to 100% renewable energy by 2045 will require more than the intermittent sources of energy that solar and wind provide. Firm and dispatchable resources, such as geothermal, are paramount to long-term energy reliability and grid stability. Geothermal energy, as a public trust resource, have the potential to provide the reliability that Hawai‘i’s energy ecosystem requires.

HSEO is carrying out slim hole drilling research to evaluate the potential of localized, safe, and resilient energy resources, to help the state find ways to secure reliable, local, and low-cost energy for its residents. Additional funding has been requested from the legislature to conduct resource characterization at other high probability locations in the state.

House Concurrent Resolution (H.C.R.) 58 House Draft (H.D.) 1 was passed by the Thirty-third Hawai‘i State Legislature during the 2025 Regular Session, and HSEO has convened a Geothermal Energy Working Group to evaluate the regulatory and policy landscape surrounding geothermal energy in Hawai‘i. The Working Group is comprised of designated representatives from relevant State and local government offices, representatives from relevant industry stakeholders, and other invited members. HSEO will submit a report of its findings and recommendations, including any proposed legislation, to the Legislature no later than 20 days before the convening of the 2027 Regular Session. HSEO joined the National Renewable Energy Lab (now the National Lab of the Rockies), Ulupono Initiative, Pa‘akai Communications, and other Native Hawaiian stakeholders on a geothermal research visit to Aotearoa in October 2025. The visit enabled cohort members to learn from Māori models of geothermal development and ownership, share insights about the similarities and differences in Hawai‘i’s culture and history, and discuss the critical roles Native Hawaiians with varying perspectives and professional capacities might play in Hawai‘i’s geothermal future. HSEO recognizes the importance of prioritizing community engagement, education, and collaboration throughout the research and project planning processes to ensure projects meet community needs and priorities. *See Community Outreach.*

Renewable Energy Project Reviews

In 2025, HSEO provided support for the review, siting, evaluation, policies, and development of renewable energy projects statewide, as the certifier of renewable fuels production for tax credit eligibility under Act 216, Session Laws of Hawai‘i 2022.

On an ongoing basis, HSEO conducts needs assessment with renewable energy developers, consultants, communities, and permitting agencies to identify potential project needs, including siting, workforce, project issues, and permitting; providing information, communication, and opportunities to address issues and develop solutions.

Actions support renewable energy and storage projects with longer lead times, including geothermal, offshore wind, pumped hydropower, green hydrogen, and other fuels with later procurement cycles. In this work, HSEO addresses knowledge gaps, areas of concern, and regulatory barriers to implementation, and where necessary, advocates for solutions, serving as a partner for federal funding opportunities.

Customer-Sited Energy and Demand Response Resources

HSEO supports and enables customer-sited energy resource deployment, including solar, energy storage, demand response, tariff options, and variances where needed, working with permitting agencies, owners, architects, engineers, and providers of grants and funding.

Energy Projects Directory

Annually, HSEO updates and maintains the Energy Projects Directory, the only state-controlled source of information on energy projects that contribute to Hawai'i's renewable energy mandate. The data-based geographic information systems (GIS) platform facilitates the sharing and analysis of project-specific details. Interactive layers such as zoning and land use districts, tax map parcels, and other items inform the user of the various energy projects throughout the state and their characteristics.

Energy System Modernization

HSEO advances long-term modernization of the state's energy system through planning, fuel transition analysis, infrastructure investment coordination, and efforts that improve affordability, reduce emissions, and enhance system flexibility.

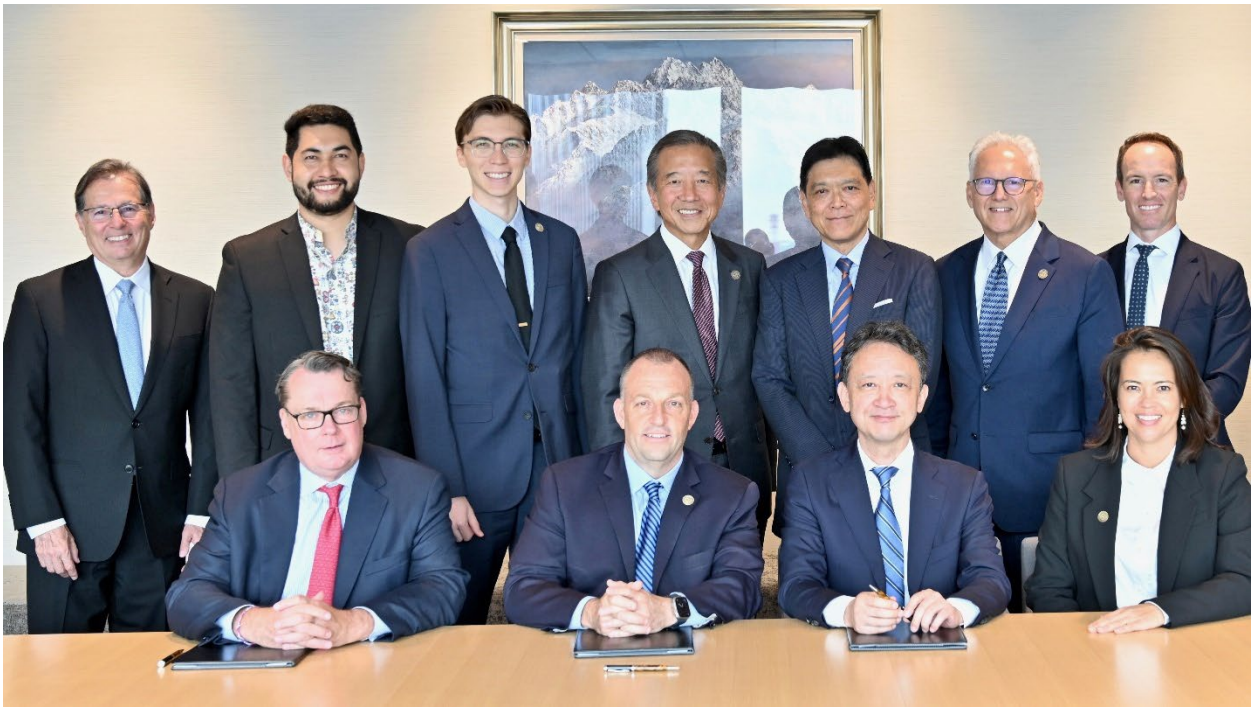
In January 2025, HSEO released the Alternative Fuels, Repowering, and Energy Transition Study as a key plank of the state's energy strategy. The Study provides a comparative analysis and evaluation of options to decarbonize and upgrade firm power generation infrastructure through fuel switching to reduce costs and lower greenhouse gas emissions across generation assets, while increasing renewable energy, efficiency, and clean transportation. The preferred path strikes a balance between ratepayer impacts and carbon reduction, considering infrastructure needs, permitting timelines, and community input.

The results of HSEO's evaluation of fuels and power plant upgrades based on the criteria of technological maturity, commercial viability, cost-effectiveness, and lifecycle carbon intensity are covered previously in this report and were published on the HSEO website in January 2025, along with the Full Report and Technical Appendices, Greenhouse Gas Analysis, Engage Model Documentation, and an economic feasibility analysis by Facts Global Energy.

The study concluded that the import of natural gas, as an alternative to LSFO, could result in as much as a 38% to 44% reduction in lifecycle carbon intensity when used in more efficient power plants, establishing a viable pathway for natural gas to replace residual oil until it is phased out completely by 2045, as local biodiesel production accelerates and technology advances for importing green ammonia and hydrogen.

HSEO is engaging with private-sector partners, utilities, technology providers, and community stakeholders to build a shared understanding of fuel and technology options, identify cost-effective deployment opportunities, and support implementation of near-term transition strategies.

JERA Strategic Partnering Agreement



Governor Josh Green signed a Strategic Partnering Agreement with JERA in Tokyo on October 6, 2025.

In response to the urgent need for affordable and resilient energy solutions, the state signed a Strategic Partnering Agreement (SPA) on October 6, 2025, establishing a framework for collaboration among JERA Co., Inc. ("JERA Co."), JERA Americas Inc. ("JERA Americas", and together with JERA Co., "JERA") and The Office of the Governor of the state of Hawai'i to support the state's decarbonization goals and advance clean energy initiatives.

JERA is uniquely positioned to support the State of Hawai'i's transition to a more affordable, sustainable and reliable energy future, with its deep industry knowledge spanning renewable energy integration, advanced decarbonization technologies, and LNG procurement and terminal operations and capacity to leverage its capital, global experience and innovative approach, and provide tailored solutions that enhance energy security, reduce emissions, and unlock long-term value for local stakeholders.

Expected Outcomes

In alignment with the Study, JERA and the Office of the Governor intend to work together on the following initiatives:

a) Updated grid modeling analysis to determine the optimal generation mix and substantiate the specific recommendations in the Study;

b) Development and investment in new thermal generation as outlined in the Study, with a focus on

the five recommended new and repowered thermal generation facilities on O‘ahu;

c) Leverage JERA’s global development capabilities and procurement network to ensure the timely acquisition of key equipment and mitigate risks associated with long lead times on critical infrastructure;

d) Development of offshore LNG facilities to facilitate safe and efficient receiving, storage, and regasification of LNG;

e) Development of onshore infrastructure to safely and efficiently distribute natural gas to the key generation facilities;

f) Regulatory reforms, including, but not limited to, a new state-directed procurement process for power aligned with State policy, tariff development, interconnection support, and support for new generation required to attract low-cost sources of capital, modifications for efficient electrical dispatch not only to focus on reliability but to ensure economic considerations are made to reduce overall generation costs;

g) Establishment of a competitive financing structure to attract a lower cost of capital to help mitigate financing costs and, ultimately, benefit Hawai’ian ratepayers;

h) Leverage JERA’s relationships with leading U.S. and Japanese financial institutions, including JBIC (Japan Bank for International Cooperation), to ensure the most advantageous capital sources are utilized;

i) Continued development of renewable energy to responsibly balance sustainability with grid reliability and financial impact to ratepayers;

j) Establishment of an Energy Center of Excellence for the Pacific in conjunction with leading academic institutions in the state;

k) Creation of a workforce training program and collaboration on initiatives such as the Hawai’i Clean Energy Sector Partnership to help establish the next generation of skilled workers needed to operate and maintain a modernized energy system in Hawai‘i;

l) Creation of a curriculum that is sought out by other island nations in the Pacific to learn and share developments, with JERA bringing expertise from its portfolio of over 70 GW of thermal generation, renewable energy assets, and low-carbon fuels experience;

m) Establishment of a coalition of willing partners in Hawai‘i who share the Parties’ vision and are ready to execute on the State energy policy, including but not limited to energy utilities, IPP power generators, and project developers; and

n) Creation of a steering committee to manage these initiatives, including key members from HSEO, JERA, and industry.

The Alternative Fuels, Repowering and Energy Transition Study anticipates that it will take as much as US$2 billion to upgrade the state’s thermal infrastructure to more efficient equipment and ensure the lowest carbon, affordable fuel source is available to Hawai‘i. JERA is exploring opportunities to make the required equity investments in the state and to support the syndication of additional capital necessary

to fulfill the study's objectives and ultimate achievement of the state's renewable and decarbonization policies.

Electricity generation from fuels is needed in the near term to fulfill demand while intermittent resources (such as solar and wind) are developed. Accordingly, the decarbonization of firm energy must occur while Hawai'i develops other forms of renewables: an action that has not been prioritized since the establishment of the Hawai'i Clean Energy Initiative in 2008.

HSEO's top priority is to ensure the continued availability, delivery, and storage of reliable energy with resilient, modernized infrastructure over the entire energy system. HSEO also identifies and recommends policies to align utility goals with those of ratepayers, including the evaluation of utility models that best support state energy goals.

In the upcoming fiscal year, HSEO will continue to execute state energy planning and coordinate projects that expedite infrastructure improvements and support clean, resilient, and firm renewable resources, including opportunities to repower and fuel-flex existing assets where appropriate.

Planned Activities in 2026-2027

- Embark on initiatives a) to n) identified above in the JERA SPA
- Support and participate in PUC dockets and regulatory processes, permitting reviews, and procurements that enable cost-effective clean energy resources, repowering, and alternative fuel deployment.
- Work with utilities and developers to identify commercially viable firm renewable resources and transition pathways away from aging fossil assets.
- Integrate findings from the Alternative Fuels Study into outreach and stakeholder education efforts and regulatory participation.
- Develop long-term strategies to enable future growth opportunities and the deployment of infrastructure projects aligned with the state's 2045 goals and the urgent needs of our energy system.

Measures of Success

- Number of projects advancing through procurement or regulatory milestones
- Reduction in fossil fuel dependence and associated cost exposure.
- Increased deployment of firm renewable and fuel-flexible resources demonstrating improved system flexibility and reliability.
- Prudent utility rate base investments necessary to modernize and harden the grid, while minimizing ratepayer impact through strategic and regulatory collaboration.
- Significant relief to Hawai'i consumers, saving them an average of at least $340 annually.

In the upcoming year, HSEO will focus on advancing priority projects and regulatory filings that enable

repowering, fuel flexibility, and deployment of firm renewable and low-carbon resources informed by the Alternative Fuels Study, deploying resources to:

- Support procurement and planning processes for firm renewable and repowering projects to reduce reliance on aging fossil units.
- Develop and inform guidance for utilities and IPPs to incorporate alternative fuel pathways and lifecycle emissions analysis into project evaluation.
- Provide analytical and technical support to relevant regulatory dockets, as appropriate, related to fuel switching, resource procurement, and grid modernization.
- Coordinate infrastructure planning and regulatory approval with appropriate developers, state, and county agencies, inclusive of discretionary and ministerial permits.

In the next critical five years, HSEO will support cross-sector infrastructure coordination to ensure fuel, storage, and logistics systems are designed for future-compatible uses rather than fossil fuel lock-in.

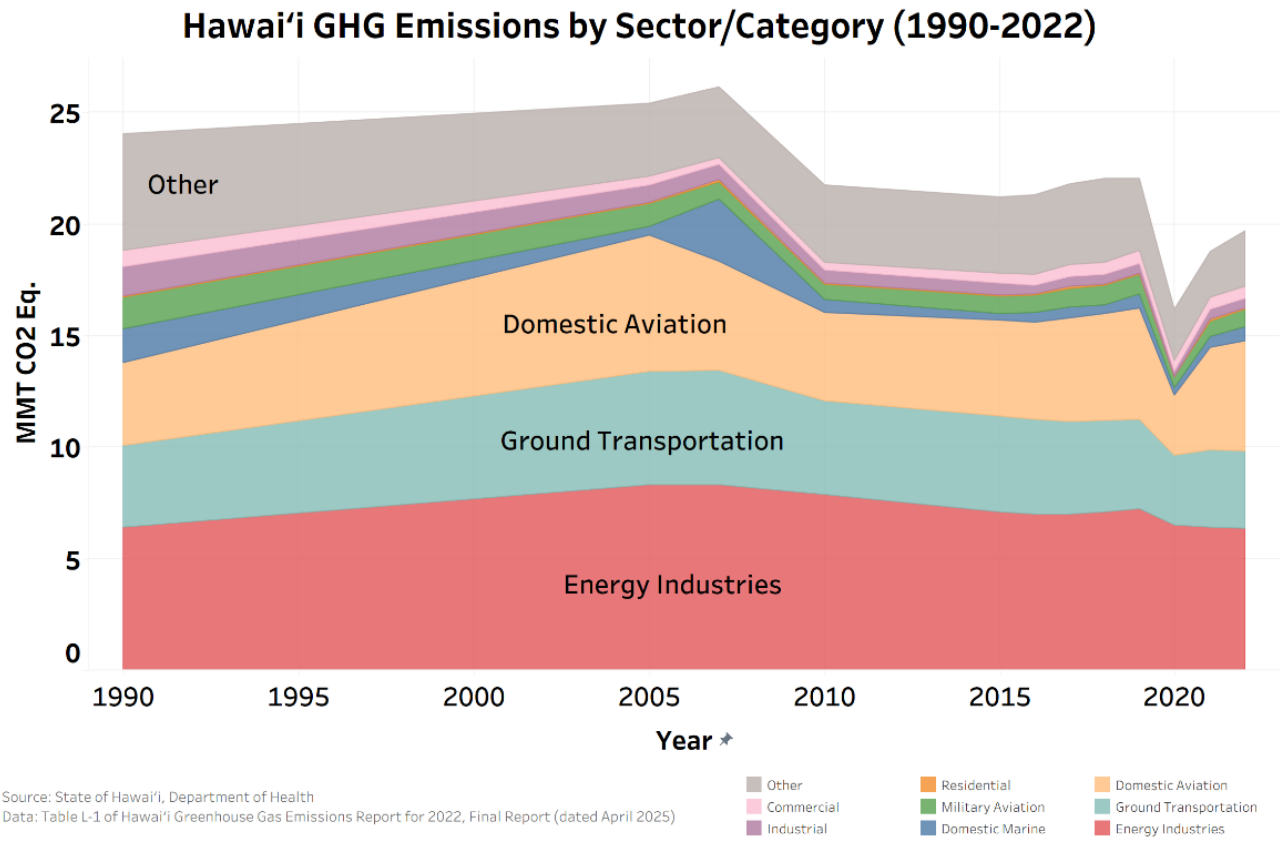


Figure 18 Hawai'i GHG Emissions by Sector. Source: Hawai'i Department of Health, 2025.

Emergency Response, Energy Security, and Grid Resilience

HSEO's statutory role to help achieve a resilient clean energy economy continues to grow in response to energy security threats ranging from geopolitical conflicts and cyberattacks to extreme weather, aging infrastructure, and supply chain disruptions, all of which jeopardize reliable, affordable energy access and put communities at risk. Critical vulnerabilities exist in reliance on imported fossil fuels, underinvestment in grid modernization, and wildfire risk. HSEO actively supports both the development of resilient energy infrastructure and the response framework by which Hawai'i responds to and recovers from all-hazard events.

In 2025, HSEO initiated a project to complete a statewide energy supply chain mapping initiative, tracing all energy imported and produced in Hawai'i through to the Federal Emergency Management Agency (FEMA) community lifeline facilities dependent on the energy system. The outcome is a Geospatial Decision Support System (GDSS), an ArcGIS-based tool that maps and visualizes the interdependencies of critical energy infrastructure to upstream and downstream assets. This system helps to prioritize resilience investments and provides an energy common operating picture for effective response during a crisis. The first phase was conducted for the island of O'ahu in 2023 and received the national award for innovation from the National Association of State Chief Information Officers (NASCIO).

GDSS Development and Risk Calculation Refinement

The GDSS considers overall risk to energy system nodes using the formula: Risk = Exposure x Sensitivity x Consequence. Consequence is defined as the impact of losing critical community lifelines dependent on specific assets on the energy system.

To refine the consequence calculation, HSEO secured technical assistance from the National Renewable Energy Lab, renamed the National Lab of the Rockies (NLR) in 2025, and initiated an analysis of social vulnerability—an assessment of community needs based on these critical lifelines.

GDSS Goals and Resilience Investments

A core goal of the GDSS is to identify resilience investments and strategies. HSEO administers the Infrastructure Investment and Jobs Act (IIJA) 40101(d) funds for grid resilience and has developed applications for projects consistent with GDSS outcomes. These projects include the Ko'olaupoko Critical Customer Hubs (CCH) which are microgrids designed to harden and quickly isolate sections of the electric distribution system that contain a high concentration of community lifelines (e.g., hospitals, fire stations, and shelters) to be powered by mobile generation.

Data-Driven Decision Making and Grant Applications

The GDSS identified fire as one of the top two risks, significantly higher than its ranking in survey results, which emphasizes the value of data-driven decision-making. HSEO submitted a grant application for the use of fire-safe fuses and arresters on circuits in the highest-wildfire-risk areas of Kaua'i to minimize fire risk during fault and overvoltage conditions.

HSEO continues to administer two Grid Resilience and Innovation Partnership (GRIP) awards on Kauaʻi in partnership with KIUC. Combined, the two projects leverage $18 million in federal funds for a synchronous condenser conversion project and retrofitting existing intermittent utility-scale facilities with grid-forming technology. A Case Study of the project is featured in this Annual Report. Following the Lahaina fire, HSEO also submitted four projects, including two critical customer hubs for Maui, under the Hazard Mitigation Grant Program.

To address increased threats from cyber events, HSEO leveraged the U.S. Department of Energy's ClearPath XI exercise in 2024, which focused on a hurricane with a simultaneous cyber-attack to drive insightful tabletop conversations with a wide range of relevant agencies and private sector partners. In 2025, HSEO, in coordination with Hawaii's Office of Homeland Security (OHS), engaged the Idaho National Laboratory for cybersecurity technical assistance. Workshops and meetings were held with the Public Utilities Commission (PUC) and various stakeholders.

To further enhance energy emergency response capabilities, HSEO worked with HIEMA to establish in 2025 the Hawaiʻi Energy Task Force, engaging private sector partners to improve sector and emergency management coordination in the event of a major energy shortage scenario. Long term, the sharing of emergency plans, capabilities, and potential needs and the eventual integration of the energy sector in the emergency response framework through exercises, training, and real-world emergency events will improve Hawaii's energy security. HSEO also made progress on internal capacity building in its role as the primary and coordinating agency for Emergency Support Function-12 Energy (ESF-12) by initiating work on a new multi-year training and exercise program for all staff.

In the upcoming year, HSEO will begin work to complete its mapping of the energy system under the statewide GDSS to serve as an Energy Common Operating Picture (COP) for both energy assurance and resiliency planning and emergency response.

Implementation of competitively awarded Grid Resilience and Innovation Partnership (GRIP) grants on Kauaʻi will continue, and HSEO, in partnership with Hawaiian Electric, will initiate four Hazard Mitigation Grant projects to include two Lahaina Critical Customer Hubs, new Energy Management Systems for Maui and Hawaiʻi, a Wildfire Risk Assessment on Maui, and Distributed Energy Resources Insights.

Actions taken to formalize and build out a training plan and system to expand office-wide capability to support ESF-12 activities will proceed to the development of training modules and the use of a learning management system for on-demand delivery and tracking of staff training.

In the next five years, HSEO plans to have staff cross-trained in SERT roles and responsibilities to ensure its ability to respond to energy emergencies. HSEO also plans to expand the framework of the Hawaiʻi Energy Task Force to integrate private sector partners in training exercises such as the annual State hurricane exercise Makani Pahili and emergency event coordination. The State Energy Security Plan will be updated as necessary incorporating ongoing planning and energy risk-assessment work to fully define HSEO's role in areas such as cybersecurity threat mitigation, emergency response and recovery, and maintain a portfolio of active and identified energy resilience projects statewide that can be developed and pursued for annual federal funding opportunities.

Energy Technology Innovation Partnership Project (ETIPP)

In April 2025, the Hawai‘i State Energy Office became the Pacific Regional Partner for the U.S. Department of Energy's Energy Technology Innovation Partnership Project (ETIPP), which pairs local communities with national laboratories to tackle local energy challenges through planning and deep-dive technical projects. Now welcoming its fifth cohort, the program has supported more than 80 communities in eight regions across the United States and its territories with projects that include strategic energy planning, energy generation and storage assessments, weatherization, energy system optimization modeling and other in-depth energy analysis projects.

In 2026, HSEO will support the launch of five new ETIPP projects in Hawai‘i and American Samoa to strengthen energy reliability and security.

- **American Samoa, including Tutuila and Manua Islands**
  The American Samoa Department of Homeland Security seeks support to reduce downtime and maintain the capabilities of critical emergency operations centers and communication towers during natural disaster events. ETIPP will help the department analyze outage frequency, evaluate on-site energy generation and storage options, and provide guidance for integrating on-site generation with existing generators to provide redundancy, reliability and security during outages.

- **Hawai‘i County**
  Reliable power is essential for the county of Hawai‘i’s Department of Water Supply’s provision of potable water. The department seeks paths to energy reliability that will strengthen the county’s

water security. ETIPP will help the county analyze the energy use and vulnerabilities of its drinking water system and assess cost-effective solutions to improve its reliability, security and efficiency.

- **Hauʻula and Punaluʻu**
  Hauʻula and Punaluʻu are geographically isolated, meaning that outages are frequent, as power travels long distances to reach the communities through lines that are vulnerable to environmental damage. ETIPP will support Hauʻula and Punaluʻu in evaluating the feasibility and capacity of on-site energy generation at key facilities to improve the reliability and security of their isolated power system and ensure that critical services continue for community members during outages.
- **Wahiawā and Whitmore Villages**

  Wahiawā and Whitmore villages are communities on Oʻahu interested in identifying local, cost-effective energy generation and storage options to reduce costs, including from hydropower and pumped hydropower storage. ETIPP technical assistance will provide hydrologic resource modeling, conceptual microgrid designs, and implementation strategies to improve the reliability and security of Wahiawā and Whitmore's energy systems.

- **Waiʻanae**
  Through ETIPP, Waianae developed a strategic energy plan to identify potential solutions to support residents during emergencies and improve the reliability and affordability of their energy system. The program will continue supporting Waiʻanae's goals for community-level reliability by evaluating potential resilience hub locations, microgrid potential and generation options.

Community Outreach and Workforce Development

Community outreach and engagement are central to HSEO's objective to satisfy its statutory duty under HRS §196-71(b)(1) to "provide analysis and planning to actively develop and inform policies to achieve energy efficiency, renewable energy, energy resiliency, and clean transportation goals with the legislature, public utilities commission, state agencies, and other relevant stakeholders." This project also directly supports the implementation of Executive Order 25-01 through statewide community engagement on energy and resilience priorities.

In an expansion of the Clean Energy Wayfinders program, HSEO has partnered with Pa'akai Communications to conduct outreach focused on regional and statewide energy and resilience priorities, including efforts to inform communities about the need to replace Hawai'i's existing oil-based energy systems, and explore viable options to lower energy costs, reduce reliance on imported oil, and enhance reliability, including geothermal energy.

In the upcoming year, HSEO will conduct community engagement activities on energy priorities on O'ahu, Maui, and Hawai'i Island, in partnership with community-based organizations, including several large public meetings on each island. Educational Fact Sheets created in 2025 will help inform upcoming community meetings and the development of regional workplans. The outreach is intended to foster sustained, long-term community engagement on energy priorities at the community level.

Capacity Building with Community Organizations

In partnership with Pa‘akai Communications and the University of Hawai‘i Sea Grant College Program (Hawai'i Sea Grant), HSEO is engaged in a multi-year, in-depth community engagement project focused on priority energy and regional resilience issues and perspectives across the state, especially as they relate to Hawai‘i’s renewable energy goals.

The project enables community-based organizations (CBOs) across the state to build their capacity to lead and convene critical regional energy planning conversations, equipping communities with information, resources, and support to make more self-determined decisions that uplift broader community priorities, inform regional and statewide energy and resilience planning, and accelerate statewide renewable energy adoption.

Participating organizations will engage with communities on their needs and preferences through December 2026, pending finalized partnership agreements, with participating organizations to be announced soon.

HSEO’s Wayfinder program and the Pa‘akai Communications team have launched a new email newsletter for folks interested in community events and discussion opportunities where Hawai‘i’s energy options are on the agenda.

2025 Clean Energy Wayfinders

The Clean Energy Wayfinders (a cohort of five in 2025) serve as a personnel extension for HSEO on Kaua‘i, O‘ahu, Moloka‘i, Maui, and Hawai‘i Island, obtaining community input and disseminating information on available programs, energy savings and renewable energy options, with a focus on addressing the energy burden for low-and-middle-income residents. Funded in partnership with Kupu, the Wayfinders support community members and organizations by equipping them with foundational knowledge and resources to empower their participation and leadership in community, county, and statewide energy planning processes that align with the state’s energy and decarbonization strategy.

In the past year, the Wayfinders led or attended 70 community events or school activities, engaged over 2,300 individuals, and recruited 15 Hawai‘i Green Business Program awardees. In January 2026, some of the current five Wayfinders will progress as entry-level professionals in the energy and environment sectors. Others will continue to pursue higher education. Previous Wayfinders thrive in roles across the energy, environment, education, planning, and agriculture sectors.

In the next five years, HSEO hopes to establish the Wayfinders program as a perennially funded HSEO community extension service needed and desired by communities throughout Hawai‘i, developing young professionals for meaningful roles in the energy and environment sectors.

Figure 19 Caption: HSEO staff and Clean Energy Wayfinders cleared invasive species at Ho‘oulu ‘Āina in Kalihi, followed by an orientation and team building workshop led by Hawai‘i Sea Grant.

Outreach and Education Visualization Tools

Figure 20 HSEO staff present HAVEN to members of the Hawai‘i Okinawa 16th Annual Clean Energy Task Force

In a partnership with the University of Hawai‘i Laboratory for Advanced Visualization & Applications (LAVA Lab), HSEO develops and deploys advanced visualization tools and other educational materials to engage residents, schools, businesses, and community organizations in discussions about Hawai‘i's energy transition at local, regional, and statewide levels.

LAVA
Laboratory for Advanced Visualization & Applications
lava.hawaii.edu

In 2025, HSEO presented the Hawaiʻi Advanced Visualization Energy Nexus (HAVEN) at 27 events, including community events, conferences, meetings, and schools, reaching an estimated 1,150 users and viewers. HAVEN has become HSEO's primary educational tool for engaging students, energy stakeholders, and the public in conversations about Hawaiʻi's energy transformation goals, policies, projects, and initiatives, providing communities with a collaborative voice in the energy transition.

In the upcoming year, HSEO plans to develop and build HAVEN models for all the main Hawaiian Islands, securing host sites for six (6) new units in community organizations or schools on Kauaʻi, Oʻahu, Molokaʻi, Maui, and Hawaiʻi Island, finalizing a HAVEN curriculum, continuing development of the data and interface that feed the visualization tool and potentially developing new geographic information systems (GIS) layers.

Keiki-to-Career Pathways

HSEO supports the Hawaiʻi Department of Education (HIDOE) and other schools' career and technical education (CTE) programs, including the Energy Pathway; informing students and educators about career pathways in Hawaiʻi's diverse and well-paid energy sector, educating teachers about careers in Hawaiʻi's energy sector, and connecting local employers with students and job seekers. The objectives are to foster a stronger understanding of energy in Hawaiʻi's youth and realize meaningful career opportunities arising from Hawaiʻi's transition from imported foreign fossil fuels to locally generated renewable energy.

In 2025, HSEO continued to serve on the HIDOE CTE Energy Pathway Advisory Council, supporting energy curriculum development and teachers and students implementing the pilot CTE Energy Pathway. HSEO connected students and educators with local work opportunities in Hawaiʻi's energy sector. Two successful educator externships were conducted in 2025 involving 25 educators from schools on Oʻahu and Hawaiʻi Island, who will facilitate student opportunities to engage in energy sector planning and discussions.

HSEO continues to schedule school visits and coordinate educator externships with HIDOE and the Hawaiʻi Chamber of Commerce throughout the state, assessing energy education program impacts and needs, with a view to expand the energy education program to offer STEM and natural resource management programs to additional schools.

Figure 21 Figure 21 HSEO staff present HAVEN to James Campbell High School Energy Pathway students

Recent Interactions with Students

In November, HSEO strengthened its commitment to youth education in a series of outreach initiatives, joining young leaders passionate about environmental stewardship and climate policy at the Climate Future Forum and Youth Climate Summit at the State Capitol, and continuing a close partnership with James Campbell High School in Ewa Beach, currently in its third year of implementing the Energy Pathway, at various events.

At the Campbell High School Career Day and Campbell 4 Causes events, students eager to learn about the diverse pathways into energy careers were surprised to discover opportunities beyond engineering roles, using a VR headset to get an 'on-the-ground view' of various energy projects around O'ahu. Classroom presentations allowed students to "see" O'ahu's electric grid using HAVEN (Hawai'i Advanced Visualization Energy Nexus), empowering them to connect the existing classroom curriculum to real-world problems and tools.

HSEO also connected with students at Radford High School's Career Fair and 'Ilima Intermediate School's comprehensive two-day Career Explorations event, focusing on Hawai'i's energy goals, engaging students with a demonstrated interest in understanding the challenges in discussions aided by the use of HAVEN.

> *"Giving the students the chance to talk to industry professionals was powerful. For me it was probably one of the best moments I've had teaching Energy. To see our students participate in sustained conversations with HSEO about the state of energy in Hawai'i, and to understand what HAVEN is and dive deeper into the details of how to adapt what HSEO is sharing into what they are learning was a great way to encourage more of them to continue on the energy pathway next year.*
>
> Spencer Alexander, Energy Pathway Teacher, James Campbell High School

Clean Energy Sector Partnership / Good Jobs Hawai‘i

HSEO serves as the Clean Energy and Skilled Trades Sector lead under Good Jobs Hawai‘i led by the University of Hawai‘i Community Colleges (UHCC). One of the requirements of Good Jobs Hawai‘i was to establish a new Clean Energy Sector Partnership (CESP): a robust coalition led by industry experts, encompassing employers, educators, and community organizations.

The CESP is dedicated to shaping a skilled workforce by focusing on several key areas: identifying in-demand entry-level positions and developing clear career pathways; pinpointing essential skills required in the clean energy sector; developing and disseminating training resources to meet industry needs; and facilitating on-the-job training to enhance both employment opportunities and career progression. In Year 3 of Good Jobs Hawai‘i, there were 174 trainees, 84 individuals completed the training, and 17 were employed (includes new job or business, wage gain) at an average wage of $34-$37.50/hour. The CESP convened three times in 2025 with 186 attendees, and the CESP Steering Committee convened three times with 30 attendees.

In 2026, HSEO will continue to administer the CESP, working with the Hawai‘i Chamber of Commerce and UHCC to schedule meetings and workforce development activities, fundraise for the Sector Partnership Fund, and assess industry needs that can be met or supported through the CESP.

Workforce Training

HSEO applies for applicable and valuable federal workforce development grants as they become available and secured $1,194,820 from the U.S. Department of Energy in 2025 for Training for Residential Energy Contractors (TREC) focused on the installation of residential energy efficiency technologies and home retrofits, including those qualified to perform work eligible for home electrification rebates from the U.S. Department of Energy through HSEO’s *e*Hale™ rebates program.

Training for Residential Energy Contractors (TREC)

In December, HSEO soft-launched the Training for Residential Energy Contractors (TREC) program, a new statewide initiative providing high-quality, industry-recognized training for contractors, tradespeople, aspiring contractors, energy professionals, and community partners interested in expanding their skills in home performance, energy efficiency, and heat pump technologies. TREC will be hard launched starting in January 2026 and is scheduled to run through December 2027.

Through a partnership with Hā Sustainability, Everblue Training, and Hui O Hauʻula, participants will gain access to online courses, certifications, and live webinars that equip them with the tools and knowledge to make Hawaiʻi homes more energy-efficient, comfortable, and resilient. Current trainings provided through TREC will include BPI Building Science Principles (BSP) Certification, BPI Building Analyst Technician Certification, Everblue Heat Pump Installation, BPI Building Analyst Professional Certification, ENERGY STAR Certification Overview, and Multifamily Energy Auditing.

For more information, visit: TREC Energy Training Program - Hawaiʻi State Energy Office.

HSEO was also conditionally awarded $900,000 from the U.S. Department's competitive Energy Auditor Training program to train local commercial energy auditors.

Energy Efficiency and Building Codes

Hawai‘i learns from, and contributes to, national and local organizations of experts in energy efficiency technologies, building codes and standards, and business and government operations and procurement. This allows HSEO to effectively collect information, assess feasibility, recognize, and share best practices, to inform, validate, increase success, and promote implementation of energy efficiency measures, programs, and projects at all levels.

In 2025, HSEO:

- Designed *e*Hale™, the $68 million federal HEAR and HOMES electrification and appliance rebate program, for launch in Q1 2026
- Collaborated with the Governor’s Housing Office on a policy and work plan to reinstate the State Building Code Council and promulgate the adoption of IRCC 2024 with Hawai‘i amendments.
- Launched a State Facilities Benchmarking Project to evaluate energy use in state buildings, identify cost-effective efficiency measures, and provide support for ENERGY STAR® certification of selected facilities.
- Collected all state-owned facilities' utility bills and energy usage data and make this data publicly available. Commenced benchmarking for over 500 state facilities and developed energy efficiency and renewable energy strategies, as directed by Act 239.
- Trained over 200 industry, code officials, and other stakeholders on the 2018 International Energy Conservation Code (IECC) and related energy code and beyond-code measures and projects
- Served on the Technical Working Group for Hawai‘i's Energy Efficiency Portfolio Standards requirements as established under Section 269-96 of the Hawai‘i Revised Statutes.
- Launched a new category for breweries and distilleries and commenced the development of a residential category and checklist for the Hawai‘i Green Business Program.

Subject to the official “green light” from the U.S. DOE, HSEO is ready to launch the *e*Hale™ energy efficiency rebate programs in the first quarter of 2026. Additionally, in the upcoming year, HSEO will design a building energy code implementation program, provide training and facilitate the timely adoption of Hawai‘i and county amendments to, and support for county adoption of, energy codes as they are updated on a 3-year cycle. This important work provides certainty to builders and developers on energy codes. Additionally, HSEO will complete benchmarking of state facilities with commensurate development of energy efficiency and renewable energy strategies. The Hawai‘i Green Business Program will expand in 2026 with the introduction of entry-level award programs for green housing (including a program for renters), farms, small hotels, ecolodges and hostels.

Over the next five years, energy efficiency programs, including the implementation of $68 million in home efficiency upgrades for low- and moderate-income (LMI) households and the adoption of a commercial Building Performance Standard (BPS) and Zero Energy Ready Home energy codes

will make a measurable difference in end use efficiency. HSEO will continue training and support for county adoption of updated building energy codes, recruitment and expansion of training programs for trade and professional associations while pursuing the growth of public and private industry programs, including the Hawai‘i Green Business Program, through collaboration and partnership, pursuing federal and other funds to support the expansion and growth of programs and projects that increase the bottom line for local businesses and contribute to the achievement of a 100% RPS.

Tactically, this involves

- Collect utility bill and energy usage data for state-owned facilities and posting data on the HSEO's Energy Data Portal. Working with the Public Benefits Fee Administrator (PBFA) to target and provide rebate and incentives information to state agencies. Notifying state agencies of the requirements under Act 239, SLH 2022, related to existing as well as new facilities.
- Continuing to participate in the State Building Code Council, working with state agencies, counties, businesses, non-profits, and energy professionals to provide Hawai‘i-specific amendments to, and adoption of, the International Energy Conservation Code, Zero Energy Ready Home energy code, and BPS. Developing an early adopter incentive program with the PBFA and offering training on minimum energy performance standards for commercial, residential, and other buildings in Hawai‘i. HSEO staff will also sit on the committees of the Cool Roof and Cool Wall Rating Councils and the Urban Heat Island committee.
- Recruiting more Green Business Program participants and providing technical assistance and training. Conducting forums and recognition ceremonies to promote businesses and organizations that are leaders in energy efficiency, renewable energy, and clean transportation. Continuing to collaborate with the Clean Energy Wayfinders, Hele Imua Interns and VISTAs and other organizations to reach more small and rural businesses and organizations on O‘ahu and the Neighbor Islands.
- Supporting pilot programs that evaluate innovative energy efficiency measures such as grid-interactive services, time-of-use rates, and demand reduction and energy optimization initiatives, and sharing results with appropriate implementing parties including the PUC, Hawaiian Electric, Hawai‘i Energy, and others.

The measure of success is energy saved, with state building energy benchmarks completed and a measurable reduction in state agency energy consumption from 2005 levels. Success will also be measured by the number of professionals and code officials

trained on the IECC, the adoption of Zero Energy Ready Homes code and a statewide BPS. Each year the Hawai‘i Green Business Program will measure energy, water, and waste reduction metrics shared by hotels, restaurants, businesses, event venues, farms, and residences.

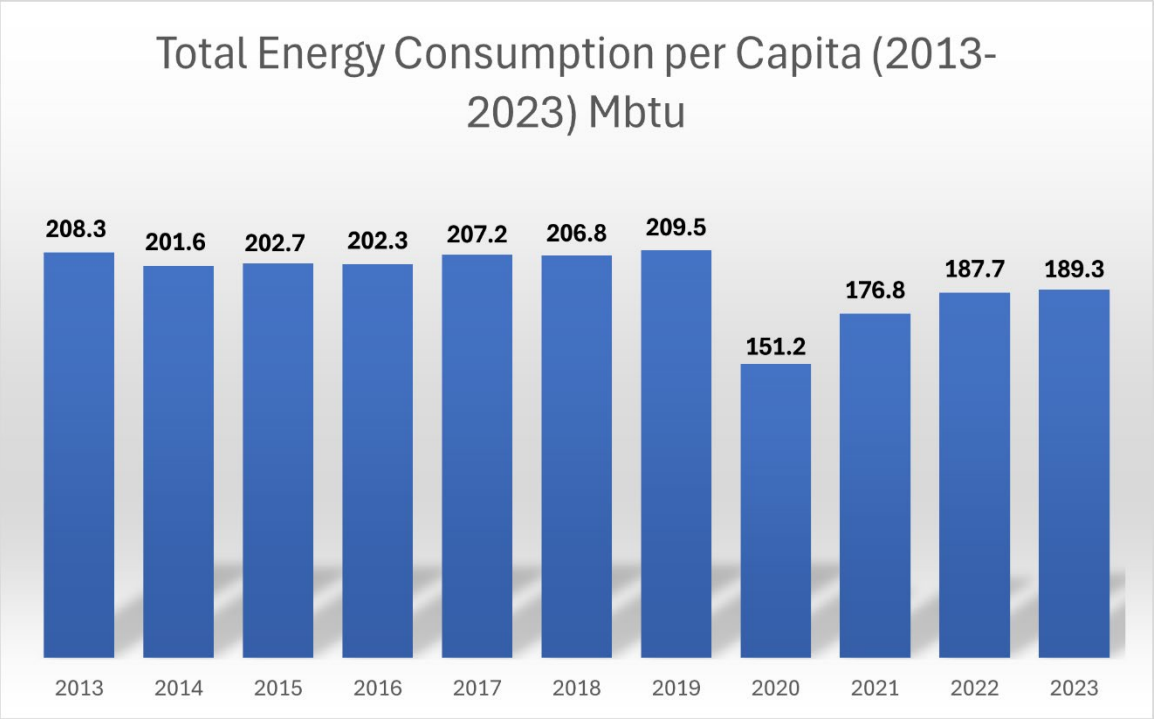


Figure 22 Total Hawai‘i Energy Consumption (Mbtu) over 10 years. Source: U.S. Energy Information Administration (EIA)

eHale™ Energy Rebates Program

The Hawai‘i State Energy Office’s residential energy rebate program is designed to help homeowners and renters save money on energy-efficient appliances and home improvements. The High Electrification and Appliance Rebate pathway (HEAR) and the Whole Home Energy pathway (HOMES) are expected to be fully available for Hawai‘i residents in 2026.

The funding for these rebate programs is provided by the Inflation Reduction Act of 2022 (IRA). This act provides funding to the U.S. Department of Energy (DOE) for a variety of programs concerning residential efficiency and electrification rebates.

The **High Electrification and Appliance Rebates (HEAR)** pathway under the IRA provides rebates to Hawai‘i residents who purchase and install qualified electrification appliances and, or materials. This can include installing Energy Star-certified heat pumps for space heating and cooling, Energy Star-certified heat pump water heaters, electric breaker boxes, electric wiring, and more! The HEAR pathway is completely income-qualified and is designed to help reduce the financial burden of energy-efficient appliance upgrades.

The **Home Efficiency Rebates (HOMES)** pathway under the IRA provides performance-based rebates to single-family and multi-family homes in Hawai‘i. This can include installing efficient equipment, weatherization measures like insulation or air sealing, and more! Home Efficiency Rebate amounts will vary depending on project scope, energy savings, and household income. The HOMES pathway will help reduce the financial burden of whole-home energy efficiency improvements.

HEAR pathway eligibility is based entirely on total household income. Rebates are available for household income under 150% Area Median Income (AMI). Households with total household income below 80% AMI may qualify for a rebate of up to 100% of the eligible project cost. Households with total household income between 80% and 150% of the AMI may qualify for a rebate of up to 50% of the eligible project cost.

eHale Energy Saver Rebates
Electrification + Efficiency Upgrades

The Hawai‘i Green Business Program

Pursuant to HRS §196-71(b)4, HSEO engages the private sector to lead clean energy efforts. The Hawai‘i Green Business Program (HGBP) recognized 45 Hawai‘i businesses and events today for their commitment to energy and water efficiency, waste reduction, pollution prevention and community involvement, as well as cultural and natural resource preservation.

The 45 awardees representing six islands were recognized during the annual HGBP awards ceremony at historic Washington Place. Hosted by HSEO, the Honolulu Board of Water Supply and Hawai‘i Energy, the awards program showcases the businesses advancing Hawai‘i’s clean energy and sustainability goals, emphasizing energy efficiency as a key solution in accelerating Hawai‘i’s move to renewable energy.

In 2024/2025, the energy efficiency measures of the above businesses resulted in 38.8 million gallons of water saved, 6.5 million kWh of electricity saved, 22.7 tons of green waste diverted, 12,372 tons of waste recycled,119,110 therms (1 therm = 100,000 BTUs) of gas saved, 6,725 metric tons of CO2 equivalent for electricity kWh reduced and 945 metric tons of CO2 equivalent for gas reduced.

For further information, please visit **the Hawaii Green Business Program**.

Strategies for Zero Energy Housing

Affordable housing is a top priority for Hawai‘i’s communities. Achieving long-term affordability means addressing construction costs, energy use, and disaster resilience.

In November, HSEO hosted Sam Rashkin, the former National Director of the Energy Star for Homes Program and author of *Housing 2.0*, for a public event and meetings with energy stakeholders to explore these issues—including a public presentation on six strategies for affordable zero energy housing, hosted by AIA Honolulu, Hawai‘i Energy, and the Hawai‘i State Energy Office.

Meetings with the Department of Hawaiian Home Lands, the Office of Planning and Sustainable Development, U.S. Housing and Urban Development, the Hawai‘i Housing Development and Finance Corp., and the Hawai‘i Public Housing Authority, informing the proposed introduction of a new entry-level category for Zero-Energy Housing Development in the Hawai‘i Green Business Program in 2026.

Find more information here.

The Case for a Building Performance Standard

Hawai‘i’s state energy policy sets a path to net-negative greenhouse-gas emissions by 2045, with a 50% reduction target by 2030. Analyses prepared for the legislature underscore that load reduction—chiefly through aggressive efficiency—is among the most cost-effective ways to cut emissions in the near term especially while large renewable-energy, storage, and grid projects continue to advance. A BPS turns this vision into an execution framework for the buildings that use the most electricity. It is worth noting that globally, buildings account for ~42% of all carbon emissions when including both operational and embodied emissions.

Roughly 25% of Hawai‘i’s commercial buildings are larger than 50,000 square feet, yet they account for about 79% of the entire sector’s energy use and 78% of its emissions. Targeting these large facilities first captures outsized savings or “low-hanging fruit” for the sector. Lodging/large hotels and resorts are our top consumers—no surprise in Hawai‘i’s tourism-driven economy—followed by offices, education, health care, retail, and warehouses. A significant number of Hawai‘i’s larger commercial buildings were built before the 1990’s—a time before robust energy efficiency construction codes were in place. These older buildings benefit greatly from upgrades to modern efficiency technologies and building controls.

Reducing demand at the building level also lowers peak grid load, flattens demand load shapes, and can potentially lower the costs of future transmission and distribution upgrades. An enforced statewide BPS policy can scale these measures from one-off projects to a portfolio-wide practice, making the grid easier and cheaper to operate while Hawai‘i’s renewable energy build-out continues. Building Performance Standards of this nature have already been adopted as binding policies in several states and local jurisdictions across the nation – Washington and Colorado have state-wide BPS programs, and several cities like Seattle, New York, Denver, and Boston have their own set of similar policies.

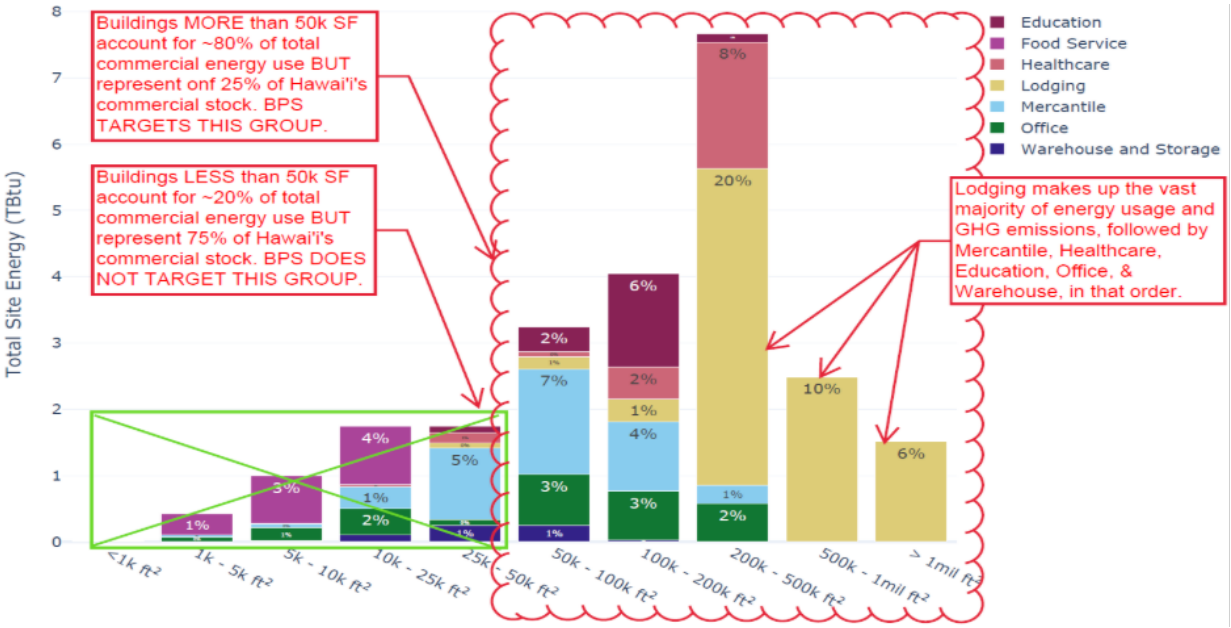
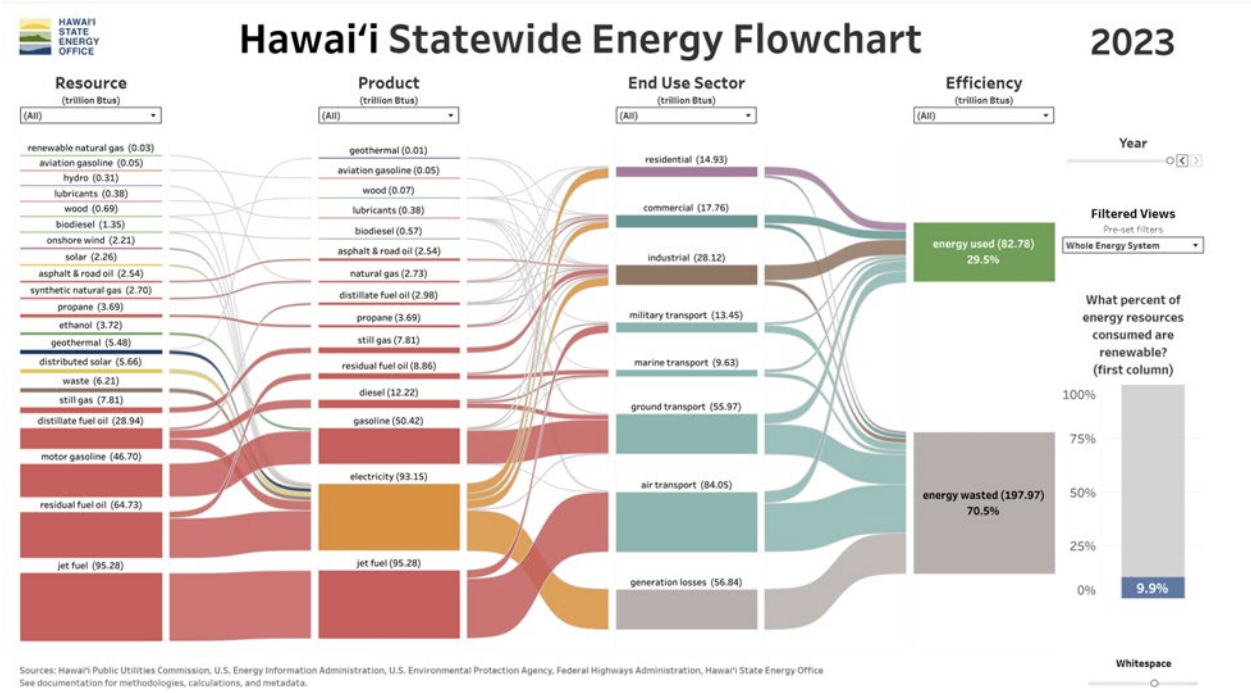


*Figure 23 Site energy consumption of Hawai'i's commercial buildings[1]. Note that the 'Lodging' building type makes up the majority of overall site energy use within the state. A subsequent chart visualizing the **emissions** of these buildings looks almost identical to this – thus highlighting that Scope 2 emissions reflect the primary emissions type of buildings in the state. Data and visualization courtesy of NLR and USDOE. Markups in RED by HSEO.*

Long-run simulations via the Hawai'i State Energy Office (HSEO) and the National Laboratory of the Rockies (formerly NREL) estimate that targeting specific commercial building types in Hawai'i could achieve about 2,100 GWh in energy savings over several decades.

Energy Planning

Accessible, reliable, high-quality data produced by HSEO undergirds all efforts to achieve a resilient, clean energy decarbonized economy. Collection, analysis, and open access to quality data is critical to Hawai'i's successful transition to a decarbonized economy using a data-driven approach to analyzing, formulating, and recommending policies and plans to achieve the State's energy goals. Data supports the development of equitable and economically viable energy system planning and models, clean transportation, resilience, and energy efficiency programs. Data, both inputs and outputs of energy modeling and analysis, feed visualizations utilized to assess alternatives and guide decisions. Data is used to monitor and track progress towards state energy and climate goals.

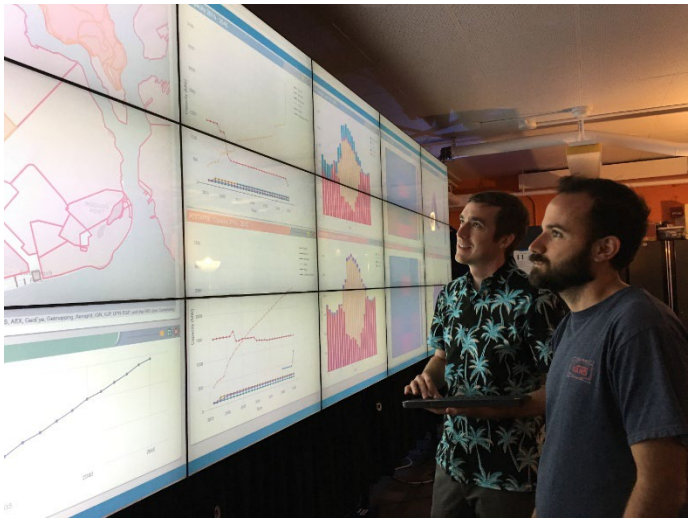


HSEO has established an energy ecosystem data governance framework and in 2025, continued to source, develop, and maintain curated data sets utilized by office staff and energy stakeholders, curating new data sets on the HSEO online data portal that utilize statewide vehicle registration data, vehicle miles traveled through odometer readings, and in the case of O'ahu, housing data. This data will be used to support statewide public EV charging road mapping, and provide a more holistic view of energy burden, integrating the electric sector and transportation with a regional perspective, and assessing the impact of public charging availability on EV adoption.

In 2025, HSEO partnered with the University of Hawai'i at Manoa's Data Science Institute (DSI) to sponsor three Data Science Institute (DSI) Fellows. The Fellows are focused on three distinct high-value projects on cleaning, integrating, and creating curated transportation data sets from registration and housing data (also see *Developing a Roadmap for Charging Infrastructure)*, developing a model to calculate bill impacts from utility AMI data, and refactoring a web version of HSEO's visualization tool HAVEN.

HSEO utilizes "Engage," a capacity expansion and production cost model previously known as the Hawai'i Energy Visualization Initiative, or HEVI, as the backbone analytical tool for the electric sector in energy planning studies such as HSEO's *Alternative Fuels, Repowering and Energy Transition* and *Pathways to Decarbonization* studies. HSEO developed the Engage Model in collaboration with the United States Department of Energy's (DOE) National Laboratory of the Rockies (NLR). Technical assistance from NLR has been utilized to support staff operation of Engage and upgrade the model to incorporate advanced geothermal as a resource. Outputs from the Engage model feed HSEO's visualization tools, such as HAVEN and HSEO's Hawai'i Statewide Energy Flowchart.

HSEO collaborates with the University of Hawaii's Laboratory for Advanced Visualization and Applications (LAVA Lab) to develop visualization technologies to inform energy system planning and decision makers. HSEO is also supporting LAVA Lab in their application for PRESAGE: Prescient Response in Emergency Situations with AI-supported Group Engagement, a system that leverages collaborative computing, AI, and data visualization capabilities of SAGE3 (the Smart Amplified Group Environment), while innovating new tools and workflows tailored to the needs of emergency management.



HSEO continues to deploy the HAVEN visualization platform as an engagement tool, creating a streamlined interface to upload GIS layers and enabling a readily customizable tool that can be quickly modified to display layers relevant to current issues and audiences. HAVEN supports the analysis and communication of information contained within complex energy data sets, highlighting energy and related sector interdependencies and scenarios. It has been effectively utilized in discussions on the tradeoffs of alternative fuels and resources, including natural gas and geothermal.

Revenues collected through utility electric sector rates amount to over $3 billion per year, a material market influence on the adoption of distributed energy resources, zero-emission vehicles, energy efficiency, and resilience. This is why HSEO has utilized one of the DSI Fellows to develop a model to calculate bill impacts from utility AMI data. The ability to better calculate the value proposition and potential impacts on all customers for alternative utility tariffs and rates will be instrumental as Hawai'i depends increasingly on the investment decisions of all residents in the transition to a decarbonized economy. HSEO collaborates with Enterprise Technology Services (ETS) and the Department of Law Enforcement to provide the necessary computing power to analyze utility bills for the entire population of customers with meter reads from every hour of every day in the year. This capability supports the realization of customer-sited technologies such as EV charging (*Also see Developing a Roadmap for Charging Infrastructure),*

battery storage, and rooftop solar.

HSEO will continue to fully optimize HSEO's data portal and energy system tools, such as HAVEN, GDSS, and Engage, to produce data-driven decision points to efficiently achieve Hawaii's energy goals and policies.

Clean Transportation Solutions

The objective of HSEO's clean transportation programs is to achieve the state's goals to decarbonize the transportation sector. HSEO's near term activities emphasize ground transportation, an area with significant potential for decarbonization. State agencies are directed to transition 100% of light-duty vehicle fleet to zero-emission vehicles (ZEVs) by December 31, 2035.

HSEO acts as a catalyst for the ZEV medium and heavy-duty market through the implementation of Volkswagen Settlement Funds and federal grants to fund zero-emission transit buses, coaches in tour and charter operations, electric school buses, forklifts, and tractors. Working with transportation stakeholders, HSEO is developing a statewide EV charging roadmap to address underserved markets that will be necessary to achieve state decarbonization goals. In support of EV charging infrastructure deployment and development of a statewide EV charging roadmap, HSEO is collaborating with DAGS to deploy a public and workplace charging program.

Multiple clean transportation goals have been identified for the upcoming year, including:

- Establishing a public EV charging roadmap to meet demand growth, incorporating AMI, registration, VMT, housing, and socio-economic data
- Building out the state workplace charging pilot in collaboration with DAGS.
- Administering the Diesel Replacement Program in coordination with the Hawai'i Department of Health to achieve a targeted spend of 80% of Volkswagen Settlement funds by the end of 2027
- Initiating a rulemaking for the EV exemption process to transition the state's fleet to EVs, supporting departments and agencies rolling out a fleet transition model for their use.

Fleet Transition Activities

Act 74 SLH 2021 mandates that agencies manage their fleets to achieve the broader decarbonization goals established under Chapter 225P as well as the clean ground transportation goals outlined in HRS §196-9(c)(11). These goals specify that each agency shall plan and coordinate vehicle acquisition to meet the following clean ground transportation goals:

a) By December 31, 2030, 100% of light-duty motor vehicles that are passenger cars in the State's fleet must be zero-emission vehicles; and

b) By December 31, 2035, 100% of all light-duty motor vehicles in the State's fleet must be zero-emission vehicles.

Additionally, HRS §26-6 b)(12), as amended by Act 74 SLH 2021, further defines procurement policies for the State's fleet:

a) starting from January 1, 2022, all new light-duty motor vehicles that are passenger cars purchased for the State's fleet are required to be zero-emission vehicles;

b) effective no later than January 1, 2030, all new purchases of light-duty multipurpose passenger vehicles and trucks for the State's fleet must also be zero-emission vehicles."

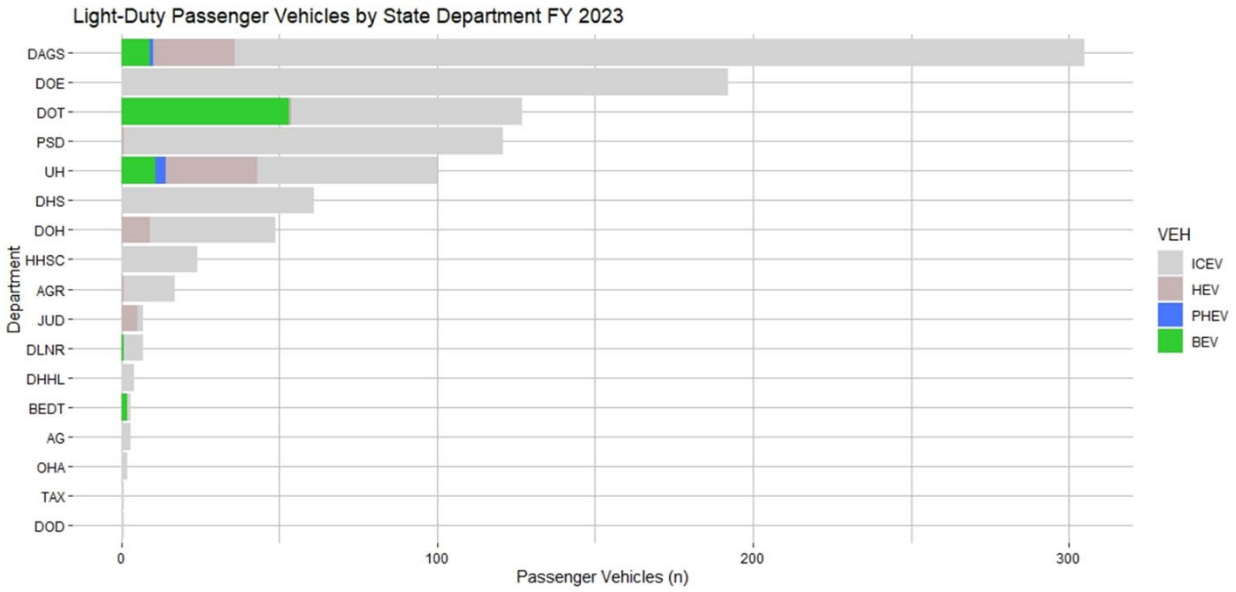


Figure 24 Transition to light duty ZEVs by state department 2023

HSEO developed and implements the Zero-Emission Vehicles (ZEV) procurement exemption process in collaboration with DAGS. Where procurement of a zero-emission vehicle would negatively impact the operations of the agency, the agency may request an exemption. The agency must submit an exemption request through an online form on HSEO's website with an explanation and justification of why procuring a zero-emission vehicle or other priority-level vehicle would not be feasible. The request is processed by the Hawai'i State Energy Office with a recommendation provided to the Comptroller of the Department of Accounting and General Services (DAGS), who holds the authority to grant or deny exemptions for new fleet vehicle

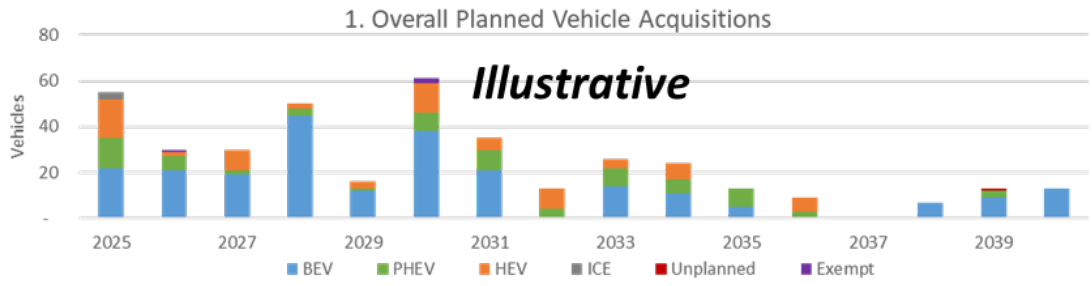
purchases. To streamline the vehicle procurement process, HSEO also posts the Vehicle Procurement Request form AMD-MP-007 on its website, reviews, and provides a recommendation for compliance with section 103D-412 of the Hawai'i Revised Statutes (HRS) clean vehicle procurement prioritization.

To formalize the process, HSEO completed a U.S. Climate Alliance grant to analyze and draft a potential rulemaking for the EV exemption process. Consistent with HRS §196-9(c)(11) requiring all agencies to plan and coordinate the state fleet transitions to meet statutory goals and HRS §196-71 (b) (2) "The Hawaii state energy office shall lead efforts to incorporate energy efficiency, renewable energy, energy resiliency, and clean transportation to reduce costs and achieve clean energy goals across all public facilities."

Through technical assistance provided by the National Lab of the Rockies, HSEO developed a template for a fleet transition model for departments and agencies to utilize, working with DAGS as the first agency to utilize the model. The model assesses the existing fleet vehicles, operational requirements, age, and charging suitability to assess an agency's transition based on expected procurement cycles, assessing its ability to meet statutory goals.

Existing Vehicle Information				*Illustrative*	
Site Name	VIN	Existing Make	Existing Model	Existing Model Year	Fuel Type
Dept of Transportation	1G1FY6S	CHEVROLET	BOLT	2021	BEV
Central Motor Pool	1GCEC14	CHEVROLET	C1500	2002	ICE
DOH Kinau Hale	2GNALB	CHEVROLET	EQUINOX	2017	ICE
DOH Kinau Hale	2GNALB	CHEVROLET	EQUINOX	2017	ICE
Maui District Office	1GNDU2	CHEVROLET	UPLANDER	2008	ICE
Central Motor Pool	1G1RA6	CHEVROLET	VOLT	2012	PHEV

BEV Considerations		
2025 BEV Availability	BEV Total Cost of Ownership (TCO) Impacts	Quality of BEV Candidate
Existing BEV	3 - Unknown	**Existing BEV**
1 - Identical BEV	5 - Significant Additional TCO	**4 - Challenging**
1 - Identical BEV	2 - Near Equivalent TCO	**1 - Great**
1 - Identical BEV	2 - Near Equivalent TCO	**1 - Great**
3 - Consider PHEV	3 - Unknown	**5 - Consider PHEV**
Existing PHEV	3 - Unknown	**Existing PHEV**



Developing a Roadmap for Charging Infrastructure

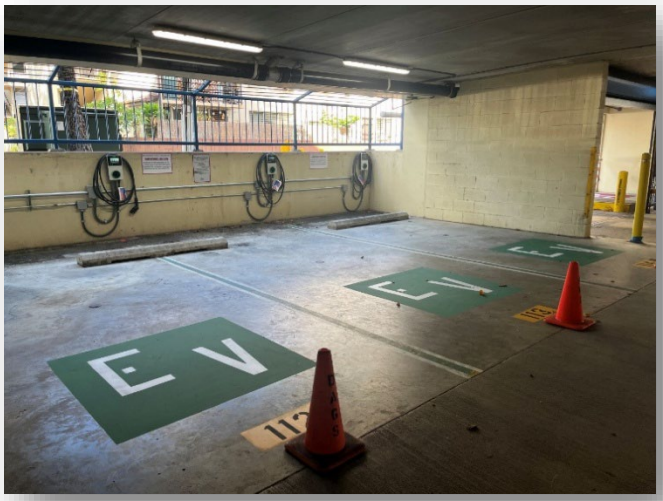
HSEO is developing a roadmap for public EV charging infrastructure deployment to cost-effectively drive adoption of EVs in markets not currently served and promote equity so that all consumers can participate: a requirement for achieving the penetration required by state decarbonization objectives. An analytically rigorous roadmap will identify priority areas and underserved market segments that can then be considered in the deployment of incentives and development of a nascent public charging market.

Figure 25 Hawai'i Department of Transportation

Significant market segments facing barriers to the adoption of ZEVs include renters (38% of households), occupants of multi-unit dwellings (37% of building stock), and tourists (accounting for 15% of the population in the Hawaiian Islands on any given day), who are generally understood to take twice as many "trips" relative to residents. All three of these segments face overlapping barriers, including access to public chargers. Identifying and characterizing the transportation demands of these market segments supports the efficient deployment of charging infrastructure.

HSEO is currently in discussions with HECO and the National Laboratory of the Rockies (NLR) in the assessment of a statewide public EV charging network. NLR has developed EVI-Pro Lite (Electric Vehicle Infrastructure Projection Tool Lite), a web-based tool to estimate future electric vehicle charging needs and grid impacts, analyzing daily charging demand, power loads, and infrastructure requirements based on various scenarios and travel data. It can help determine

the quantity and types of chargers needed for different areas, allowing for the adjustment of variables (e.g., home and workplace charging access, EV adoption rates) to see different outcomes. Hawaiian Electric is working with NLR on enhancing the model to provide a refined regional overview, and HSEO is exploring how to extend the model to cover the entire state and host the tool.



Charging Infrastructure Deployment

In 2025, HSEO launched a workplace charging pilot in collaboration with the Department of Accounting and General Services (DAGS), leveraging $1M of Volkswagen settlement funds. The first project includes three spaces at Vineyard parking lot where DAGS and HSEO are working through the requirements of running a workplace charging program, including deployment, operations, maintenance, billing, and administration. A broader Memorandum of Agreement, based on the pilot, will deploy roughly 100 to 200 public and workplace chargers with four sites encompassing 50 chargers currently under development. The collaboration between HSEO and DAGS serves as a catalyst, with critical market data to be leveraged in HSEO's ZEV charging infrastructure roadmap. HSEO has also worked with the county of Kaua'i to utilize $50,000 of Volkswagen funds to support DC fast charging infrastructure.

Supporting the Transition to Medium and Heavy Duty Zero Emission Vehicles

In 2020, Hawai'i, with HSEO as the lead agency, signed onto the Multi-State Medium and Heavy Duty Zero Emission Vehicle MOU (MDHD ZEV MOU). The alliance includes 15 signatory states and Washington DC accounting for almost 50 percent of the U.S. economy and nearly 40 percent of goods moved by truck (by value).

Hawai'i Zero Emission Transit Buses

In July, HSEO, the Hawai'i Department of Transportation (HDOT), and the counties of Kaua'i, Hawai'i, and Maui unveiled new all-electric, zero-emission buses. With this delivery, 12 diesel buses were replaced with battery-electric buses. The estimated nitrogen oxides (NOx) emissions reductions for each bus replaced is 1.445 tons over the lifetime of the bus, equating to a total reduction of approximately 17.34 tons of greenhouse gas emissions.

The Federal Transit Administration contributed $11.2 million to the Zero Emission bus project, and the Hawai'i State Energy Office contributed $3.53 million from the Volkswagen Settlement funds, with the remaining amount covered by the counties.

All counties have set a goal to convert public bus fleets to 100% renewable fuels by 2035. Honolulu currently has 17 zero-emission buses that operate island-wide on Oʻahu, and the city has secured funds to purchase up to 78 additional buses in the next three years.[4] The City and County of Honolulu is constructing new and additional charging stations for electric buses at the Alapaʻi Transit Center, Kalihi Transit Center, Pearlridge Mobility Hub, and the Pearl City Bus Facility.

HSEO Diesel Replacement Rebate

HSEO continues to administer the Diesel Replacement Rebate and successfully added $4.5M of competitive DERA funds to the Diesel Replacement Rebate (DRR) program in 2025. In 2025, HSEO received four applications for one tractor, two tour buses, and one shuttle bus; all were deemed eligible. One tour bus rebate has been issued for $463,417 and the remaining three applications are pending for an estimated rebate of $900,000.

Marine Transportation

HSEO is providing technical assistance and exploring potential resiliency options using HDOT's Honolulu Harbor Zero-Emission Technology Deployment grant to replace diesel cargo yard tractors with hydrogen-fueled vehicles and the installation of a hydrogen fueling station. The Geospatial Decision Support System (GDSS) *(Also see Emergency Response, Energy Security and Grid Resilience)*, identified Honolulu Harbor as one of the most significant nodes in the energy supply system and a critical community lifeline. 98% of all goods enter Hawaiʻi through harbors managed by Honolulu Harbor. HSEO is reviewing opportunities to leverage federal grant funds to expand the impact of the Honolulu Harbor Zero-Emission Technology Deployment.

[4] *Hawaiʻi Department of Transportation Press Release, July 2025.*

International Alliances

16th Annual Hawai‘i Okinawa Clean Energy Task Force Meeting

The Hawaii Okinawa Clean Energy Task Force convened its 16th annual meeting in Honolulu in August with representatives of HSEO and Okinawa Prefecture's Industrial Policy Division. Attending in observer status were directors and executives from the Hawai‘i Natural Energy Institute, The East West Center, the Ministry of Economy, Trade and Industry of Japan, Okinawa Institute of Science and Technology (OIST), the University of Hawai‘i at Manoa, the Economic Research Organization of at the University of Hawai‘i (UHERO), Ulupono Initiative, Hawaiian Electric, the Hawai‘i Public Utilities Commission, the Hawai‘i Department of Commerce and Consumer Affairs (DCCA) and Okinawa Electric Power Company (OKIDEN.)

Dr. Denise Konan, Dean of Social Sciences at the University of Hawai‘i at Mānoa, concluded her keynote address, saying: *"The Hawai‘i–Okinawa partnership has not only advanced clean energy locally—it has built a bridge across the Pacific, connecting U.S. and Japanese innovation to a global dialogue on sustainable development. As we renew our Memorandum of Cooperation for the next five years, our work will matter not only for our islands, but for every community grappling with the challenges of climate change, energy security, and economic resilience."*

Renewal of the Hawai‘i Okinawa Clean Energy Memorandum of Cooperation

Figure 26 Governor Josh Green and Governor Denny Tamaki hold signed copies of the Hawai'i-Okinawa Memorandum of Cooperation on Clean Energy

In October 2025, Governor Josh Green and Okinawa Governor Denny Tamaki signed a Five-Year Memorandum of Cooperation on Clean Energy, renewing a partnership that began in 2010

between the Hawai‘i State Energy Office and the Okinawa Prefectural Government to advance shared goals for renewable energy, clean transportation, and grid innovation.

The visit also marked two major milestones: the 40th anniversary of the Hawai‘i–Okinawa sister-state relationship and the 125th anniversary of Okinawan immigration to Hawai‘i. These historic connections continue to shape the social, cultural, and economic fabric of both island communities, deepening bonds built on shared values of aloha, family, and perseverance.

Governor Green was joined by state legislators and business leaders, including Senate President Ronald Kouchi, Vice Speaker Linda Ichiyama, Senators Glenn Wakai, Chris Lee, and Michelle Kidani, Representatives Gregg Takayama, Dee Morikawa, and Kyle Yamashita, as well as Department of Business, Economic Development, and Tourism Director James Kunane Tokioka and Hawai‘i Chief Energy Officer Mark Glick.

2025 Hawai‘i Alaska Policy Tour

Alaska legislators and utility executives met with HSEO and the Hawai‘i Public Utilities Commission on a policy tour in November, sponsored by the University of Alaska Fairbanks Alaska Center for Energy and Policy (ACEP). Over the course of a busy three-day agenda, the group also visited Hawai‘i Natural Energy Institute, Mililani Solar and Agrivoltaic Park, Bana Pacific, KIUC Kapaia Power Station, Pacific Biodiesel, and Kapolei Energy Storage.

Alaska and Hawai‘i face common energy challenges rooted in geographic isolation, namely high energy costs, heavy reliance on imported fossil fuels, and the resulting issues of energy security and resilience. Both states are actively transitioning to renewable energy and face the dual challenge of reducing energy costs (energy affordability) while needing additional power generation. When narrowing to the electric power sector, only two states generate over 5% of their electricity from petroleum— Hawai‘i (64%) and Alaska (13%).

Energy Program Funding

Hawaii Clean Energy Initiative Program
Fiscal Year 2026 Spending Plan

ANNUAL SPENDING PLAN

	State Funds	Other Funds	Total
Hawaii State Energy Office Operations	2,637,131	1,689,006	4,326,137
Programs and Projects	795,000	31,094,548	31,889,548
	3,432,131	32,783,554	36,215,685

Spending plan is based on anticipated spending levels for FY25

FUNDING SOURCES:

State Funds			
General Funds	2,637,131		2,637,131
Energy Security Special Fund	5,749,428		795,000
Federal Funds			
DOE - State Energy Program - Program Years 21/22/23		22,045	22,045
DOE - State Energy Program - Program Years 24/25/26		586,764	586,764
DOE - SEP BIL		600,000	600,000
DOE - Energy Efficiency & Conservation Block Grant *		250,000	250,000
DOE - SEP American Recovery & Reinvestment Act *		200,000	200,000
FEMA - Advance Assistance		-	-
Coronavirus State Fiscal Recovery Funds		2,352,181	2,352,181
DOC - Hawai'i Good Jobs Challenge		65,497	65,497
DOE - 40101D		200,000	200,000
DOE - High-Efficiency Electric Home Rebate Program		8,500,000	8,500,000
DOE - Home Energy Efficiency Rebate Program		8,500,000	8,500,000
DOE - EECGB		500,000	500,000
Congrestional - Wayfinders Program		671,101	671,101
DOE - Contractor Training Grant Program(TREC)		120,000	120,000
EPA - National Clean Diesel Program (DERA)		749,250	749,250
DOE - Utility Solar Grid Forming Tech (USGFT)		5,870,993	5,870,993
DOE - Enabling High Penetration of Renewables with Synchronous Conden		465,723	465,723
DOE - Integrating Resilience Strategies for Zero Emission Vehicles (ZEV)		650,000	650,000
DOE - Energy Transitions Initiative Partnership Project (ETIPP)		170,000	170,000
Trust Funds			
VW Settlement Trust Funds		2,050,000	2,050,000
US Climate Alliance Grant		260,000	260,000
	8,386,559	32,783,554	36,215,685

* Repurposed ARRA Funds

Energy Security Special Fund

Expenditures from the Energy Security Special Fund

ENERGY SECURITY SPECIAL FUND	Actual FY2025	Projected FY2026
BEGINNING FUND BALANCE	**3,820,943**	**5,081,503**
REVENUES		
Environmental Response, Energy and Food Security Tax	1,161,785	1,161,000
Investment Pool Interest	117,614	110,000
Solar Water Heater Variance Fees	22,087	10,982
Other		-
TOTAL REVENUES	**1,301,487**	**1,281,982**
EXPENDITURES		
Hawaii State Energy Office Operations:		
Administrative cost	-	-
Special Fund Assessments	-	95,000
Programs	28,927	700,000
TOTAL EXPENDITURES	**28,927**	**795,000**
TRANSFERS		
Loan to S-23-551 to cover end of year PR shortage	(12,000)	12,000
NET TRANSFERS	**(12,000)**	**12,000**
ENERGY SECURITY SPECIAL FUND BALANCE	**5,081,503**	**5,556,485**

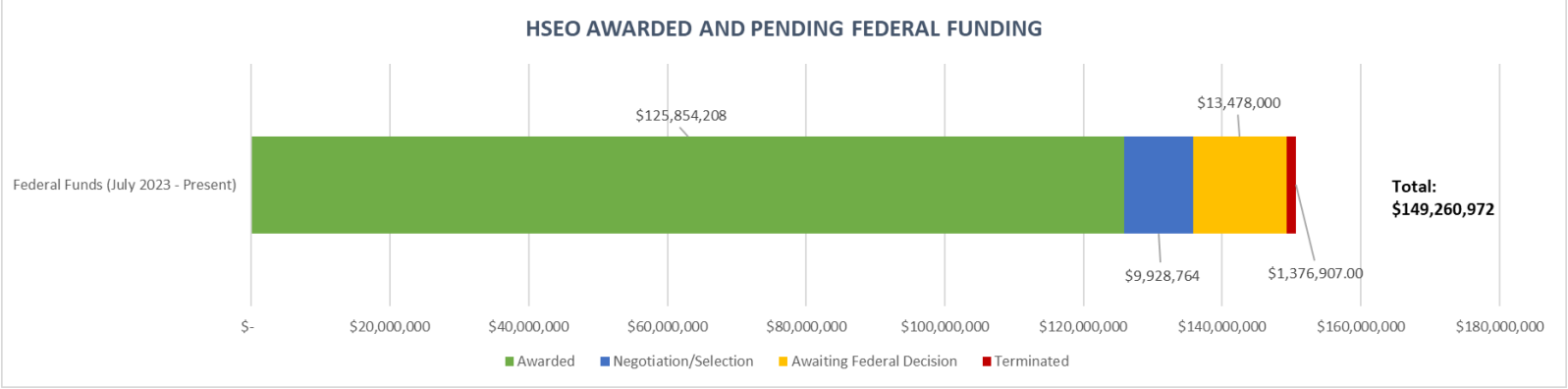
Pursuant to Section 201-12.8, HRS

APPROPRIATION ACCOUNT/TITLE	MOF	REVENUE	EXPENDITURES	ENCUMBRANCES	ENDING BALANCE
S-17-216 STATE ENERGY PROGRAM-ARRA REPURPOSE	N	1,967,306	1,601,492	88,767	365,813
S-17-518 EECBG - ARRA REPURPOSE	P	2,840,225	930,692	48,279	67,279
S-18-255 STATE ENERGY PROGRAM	N	1,154,287	1,154,287	1,698	-
S-23-226 SEP BIL - Hawai'i	N	941,446	941,445	338,742	1
S-23-503 POWERING PAST COAL TASK FORCE	V	-	151,739	148,261	148,261
S-23-551 HAWAII GOOD JOBS CHALLENGE	P	184,760	196,502	-	258
S-24-276 STATE ENERGY RESILIENCE PROJECT	V	-	2,496,080	820,763	3,503,920
S-24-295 HIGH-EFFICIENCY ELECTRIC HOME REBATE PRO	N	689,366	685,375	3,257,086	3,992
S-24-296 HOME ENERGY EFFICIENCY REBATE PROGRAM	N	127,198	124,468	-	2,730
S-24-557 40104D FORMULA BIL	P	184,892	184,892	-	-
S-24-563 BIL- EECBG PROGRAM - HAWAII	P	150,613	144,196	78	6,417
S-24-567 HAWAII CLEAN ENERGY WAYFINDERS PROGRAM	P	128,899	128,899	666,716	-
S-25-255 STATE ENERGY PROGRAM	N	47,483	69,075	50	1,025
S-25-277 SEP FORMULA ANNUAL	N	363,806	345,790	8,136	21,617
S-25-297 CONTRACTOR TRAINING GRANT PROGRAM (TREC)	N	-	-	1,075,388	-
S-25-518 EECBG - ARRA REPURPOSE	P	-	358,633	20	1,506,220
S-25-571 DERA	P	463,417	463,417	-	-
S-25-574 UTILITY SOLAR GRID FORMING TECH (USGFT)	P	-	-	16,250,000	-
S-25-575 BIL-SCCT	P	-	-	1,675,000	-
S-25-578 BIL - ZEV INFRASTRUCTURE	P	-	-	-	-
S-25-583 ETIPP	P	-	-	-	-
T-XX-910 VW DIESEL EMISSIONS ENVIRONMENTAL MITIGATION TRUST-NON-ADMIN EXP	T	7,471,657	844,589	-	6,627,067
T-23-922 US CLIMATE ALLIANCE GRANT PGM-VMT	T	385,520	325,178	57,870	60,342

MOF = Means of Financing
N = Federal Funds
P = Other Federal Funds
T = Trust Funds

Pursuant to Section 37-52.5, HRS

Federal Funds Secured



Agency and Program

$	315,512	USDOE (SCEP)	IRA SECTION 50121 – HOME ENERGY EFFICIENCY REBATE PROGRAM (HOMES)
$	1,639,120	USDOE SCEP	Energy Efficiency and Conservation Block Grant IIJA - FY22
$	1,000,000	USDOE SCEP	Hawai‘i Clean Energy Wayfinders Program
$	34,093,900	USDOE Golden Field Office (SCEP)	IRA SECTION 50122 – HIGH-EFFICIENCY ELECTRIC HOME REBATE PROGRAM (HEAR)
$	458,560	USDOE SCEP	SEP PY 24
$	4,500,000	EPA	2022-2023 Diesel Emissions Reduction Act National Grants
$	450,000	FEMA/HIEMA	BRIC - Advance Assistance 2.0 - Kauai, Maui, and Hawaii Counties Energy System Resiliency Assessment
$	2,547,724	U.S. DOE/GDO	BIL – PREVENTING OUTAGES AND ENHANCING THE RESILIENCE OF THE ELECTRIC GRID FORMULA GRANTS TO STATES(FY24)
$	1,675,000	U.S. DOE/GDO/OCED	GRIP - Enabling High Penetration of Renewables with Synchronous Condenser Conversion Technology (IIJA) (KIUC)
$	16,250,000	U.S. DOE/GDO/OCED	GRIP - Utility Solar Grid Forming Technology (IIJA) (KIUC)
$	-	U.S. DOE/Joint Office	Ride and Drive Electric, FY 2023
$	18,169,099	USDOE SCEP	Assistance for Latest and Zero Building Energy Code Adoption
$	7,324,540	USDOE Golden Field Office (SCEP)	IRA Hawai‘i Energy Code Update and Zero Code Adoption Project - Assistance for Latest and Zero Building Energy Code Adoption
$	1,194,820	U.S. DOE	IRA: State-Based Home Energy Efficiency Training for Residential Energy Contractors (TREC) (Formula)

$	33,909,441	USDOE Golden Field Office (SCEP)	IRA SECTION 50121 – HOME ENERGY EFFICIENCY REBATE PROGRAM (HOMES)
$	1,834,482	NREL	ETIPP Island and Remote Community Stakeholder Engagement Regional Project Partners
$	492,010	USDOE Golden Field Office	SEP PY 25
$	**125,854,208**	**Awarded**	
	8,329,318	FEMA/HIEMA	BRIC - Critical Customer Hubs
$	499,446	U.S. DOE	Energy Future Grants (EFG) Creating a Community-Led Energy Future
$	900,000	DOE	Energy Auditor Training - Commercial
	200,000	DOE	GTO GRID (Planning and Simulating Geothermal Energy in Hawai‘i’s Decarbonized Future) (HSEO subrecipient
$	**9,928,764**	**In Negotiation/Selection**	
	5,078,000	FEMA/HIEMA	HMGP - CCH
		FEMA/HIEMA	HMGP - Drones ($5.115)
		FEMA/HIEMA	HMGP - AI and Veg Management ($5M)
$	1,000,000	FEMA/HIEMA	HMGP - DER Insights
$	1,000,000	FEMA/HIEMA	HMGP - Climate and Wildfire Risk Assesment
$	5,000,000	FEMA/HIEMA	HMGP - SP7
$	1,400,000	DOE	State-Based Home Energy Efficiency Training for Residential Energy Contractors (TREC) (Competitive)
$	**13,478,000**	**Awaiting Federal Decision**	
$	**1,376,907**	**Terminated**	
$	**149,260,972**		

This Annual Report satisfied the requirements of Energy Act 100, Section 7 (SLH 1999), HRS 201-12.8(C), ACT 122 (SLH 2019), HRS Section 141-9, ACT 216 (SLH 2022, HRS Section 201-104, HRS 196-10.5(7)(C), HCR 17 (SLH 2023), HRS 196-41(C)(3), SCR 82 SD1 (SLH 2023).

Appendix A Nameplate Capacity of State Projects Exceeding 2 MW

Existing Facilities*					
Project Name	**Capacity (MW)**	**Storage (M**	**Technology Type**	**In-service dat**	**PUC Docket**
Hawai'i Island					
Hale Kuawehi Solar LLC	30	120	Solar + BESS	3/25/2025	2018-0432
Hamakua Energy	60	-	Biofuels + Oil	7/1/2000	1998-0013
Hawi Renewable Development	10.5	-	Wind	5/18/2021	2021-0200
Hill Steam Plant/Kanoelehua Plant	55.7	-	Oil	12/31/1961	-
Keāhole Power Plant	77.6	-	Oil	1984	-
Pakini Nui Wind Farm	20.5	-	Wind	4/1/2007	2004-0346
Pu'u'eo Hydroelectric Plant	3.4	-	Hydro	12/1/1918	-
Puna Geothermal Venture	38	-	Geothermal	2/28/1993	2019-0119
Puna Steam Plant	36.7	-	Oil	7/31/1988	-
Waikoloa Solar, LLC	30	120	Solar + BESS	4/30/2023	2018-0430
Pana'ewa Substation	1.25	-	Oil	-	-
Waiau Hydroelectric Plant	1.1	-	Hydro	11/30/1921	-
Punalu'u Substation	1.25	-	Oil	-	-
Wailuku River Hydroelectric Plant	12.1	-	Hydro	5/1/1993	2014-0028
Waimea Plant	7.5	-	Oil	11/30/1970	-
O'ahu					
Airport Emergency Power Facility	8	-	Biofuels	17-Jun	-
Aloha Solar Energy Fund I	5	-	Solar	2/28/2017	2015-0223
Aloha Solar Energy Fund II	5	-	Solar	2/28/2017	-
Campbell Industrial Park Generating Sta	130	-	Oil	6/30/2009	-
Ho'ohana Solar I	52	208	Solar + BESS		2018-0431
H-POWER	68.5	-	Waste-to-Energy	10/31/1989	2012-0129
Kahe Power Plant	650	-	Oil	2/28/1963	2015-0341
Kahuku Wind	30	-	Wind	2/28/2011	2009-0176
Kalaeloa Partners	208	-	Oil	9/30/1989	-
Kalaeloa Renewable Energy Park	5	-	Solar	12/31/2013	2011-0384
Kalaeloa Solar Two	5	-	Solar	11/30/2012	2011-0051
Kapolei Energy Storage	185	565	BESS	12/18/2023	2020-0136
Kapolei Sustainable Energy Park	1		Solar	1/31/2012	2011-0185
Kawailoa Solar	49	-	Solar	10/31/2019	2014-0356
Kawailoa Wind	69	-	Wind	10/31/2012	2011-0224
Kūpono Solar	42	168	Solar + BESS	6/6/2024	2022-0007
Lanikuhana Solar	14.7	-	Solar	8/31/2019	2014-0357
Mauka FIT I	3.5	-	Solar		-
Mililani I Solar	39	156	Solar + BESS	7/28/2022	2018-0434
Nā Pua Makani Wind Project	24	-	Wind	11/30/2020	2013-0423
Par Hawai'i	18.5	-	Oil	4/11/1972	5025
Schofield Generating Station	50	-	Biofuels	5/31/2018	2017-0213
Wai'anae Solar	27.6	-	Solar	12/31/2016	2014-0354
Waiau Power Plant	500	-	Oil	11/30/1947	-
Waiawa Solar Power LLC	36	144	Solar + BESS	1/10/2023	2018-0435

Waihonu North and South	5	1.5	Solar	6/30/2016	2008-0273
Waipio PV	45.9	-	Solar	8/31/2019	2017-0108
West Loch Solar	20	-	Solar	10/31/2019	2016-0342
West Oahu Solar	12.5	50	Solar + BESS	3/20/2024	2019-0050
Maui					
Auwahi Wind	21	11	Wind + BESS	11/30/2012	2011-0060
Hāna Substation	2	-	Oil	3/31/2001	-
Kaheawa Wind Power	30	-	Wind	12/31/2005	2004-0365
Kaheawa Wind Power II	21	10	Wind + BESS	5/31/2012	2010-0279
Kahului Power Plant	37.6	-	Oil	1948	-
Kuʻia Solar	2.87	-	Solar	9/30/2018	2015-0224
Kuihelani Solar	60	240	Solar + BESS	5/31/2024	2018-0436
Kuihelani Substation	2	-	Oil	-	-
Māʻalaea Generating Station	212.1	-	Biofuels + Oil	1971	-
South Maui Renewable Resources	2.87	-	Solar	4/30/2018	2015-0225
Lānaʻi					
Lanaʻi Sustainability Research, LLC	1.2		Solar	11/30/2008	2008-0167
Miki Basin Power Plant	9.4	-	Oil	3/31/1990	-
Molokaʻi					
Molokaʻi BESS	1	0.397	BESS	-	-
Pālāʻau Plant	12	-	Oil	3/31/1982	-
Kauaʻi					
BBCP, Wainiha/Kalaheo	6	-	Hydro	6-Jan	2012-0150
Gay & Robinson, Olokele	7.3	-	Hydro	2/28/1982	2014-0203
Kaʻieʻie, Port Allen	6	-	Solar	12-Dec	2011-0180
KIUC, Anahola	12	-	Solar	15-Oct	2011-0323
KIUC, Kapaia	27.5	-	Fossil	2003	2015-0331
KIUC, Koloa	12	-	Solar	14-Jul	2012-0383
KIUC, Port Allen	83	-	Fossil	1968	-
Lawai Solar + Storage	20	100	Solar	11/30/2018	2017-0018
Mahipapa	6.7	-	Biomass	4/30/2014	2011-0032
KAA, Waimea/Kekaha	1.5	-	Hydro	-	2001-0055
Kapaa Solar	1	-	Solar	-	2010-0179
PMRF Solar + Storage	14	70	Solar	11/30/2019	2017-0443
Tesla Solar + Storage	13	52	Solar	2017	2015-0331

Total Production Capacity (MW) ***3319.84***
Total Storage Capacity (MWh) ***2015.897***

*Reflecting generation of 2 MW or more.

Appendix B Value of Contracts

Total Contract Amount	Contractor Name	Contract Description
$ 479,088.00	**Duncan, Weinberg, Genzer & Pembroke, P.C.**	Expert witness and technical support for regulatory proceedings.
$ 953,880.00	**Pa'akai Communications LLC**	Strategic communications related to natural resources, priority energy issues, and community planning
$ 5,000,000.00	**University of Hawai'i**	Provide slim-hole testing and geologic characterization services.
$ 16,250,000.00	**Kauai Island Utility Cooperative**	Provide planning, project management, construction, and installation of battery energy storage systems.
$ 1,675,000.00	**Kauai Island Utility Cooperative**	Provide design and installation for renewable energy with synchronous condenser technology.
$ 7,496,291.00	**IEM International, Inc.**	Program to assist low- and moderate-income residents achieve housing upgrades through whole-home retrofits of efficient electric appliances.
$ 133,927.00	**HDR Engineering, Inc.**	Develop a multi-part energy strategy for improved energy efficiency, building operational performance, and bill savings for State facilities,
$ 720,509.96	**JCN Partners Inc. dba Everblue Training Institute**	Partner with the state, training organizations, and non-government and workforce engagement organizations to implement a program to train, test, and certify energy efficiency and electrification contractors to perform home energy efficiency and electrification upgrades.

$ 354,878.04	**Ha Sustainability LLC**	Partner with the State, training organizations, and non-government and workforce engagement organizations to implement a program to train, test, and certify energy efficiency and electrification contractors to perform home energy efficiency and electrification upgrades.
$ 569,838.06	**RHA Energy Partners LLC**	Provide energy auditing, benchmarking, technical assistance, third-party review, and analyses to State Agencies.
$ 300,000.00	**University of Hawai‘i**	Design, develop, and deliver interactive visualizations to support the Hawaii State Energy Office in meeting its statutory role.
$ 989,462.86	**ICF Incorporated, L.L.C.**	Analyze the operational needs of Hawaii state and county vehicle fleets and identify potential solutions to ensure that ZEV charging infrastructure is adequate for future transitioned fleets
$ 34,922,874.92		