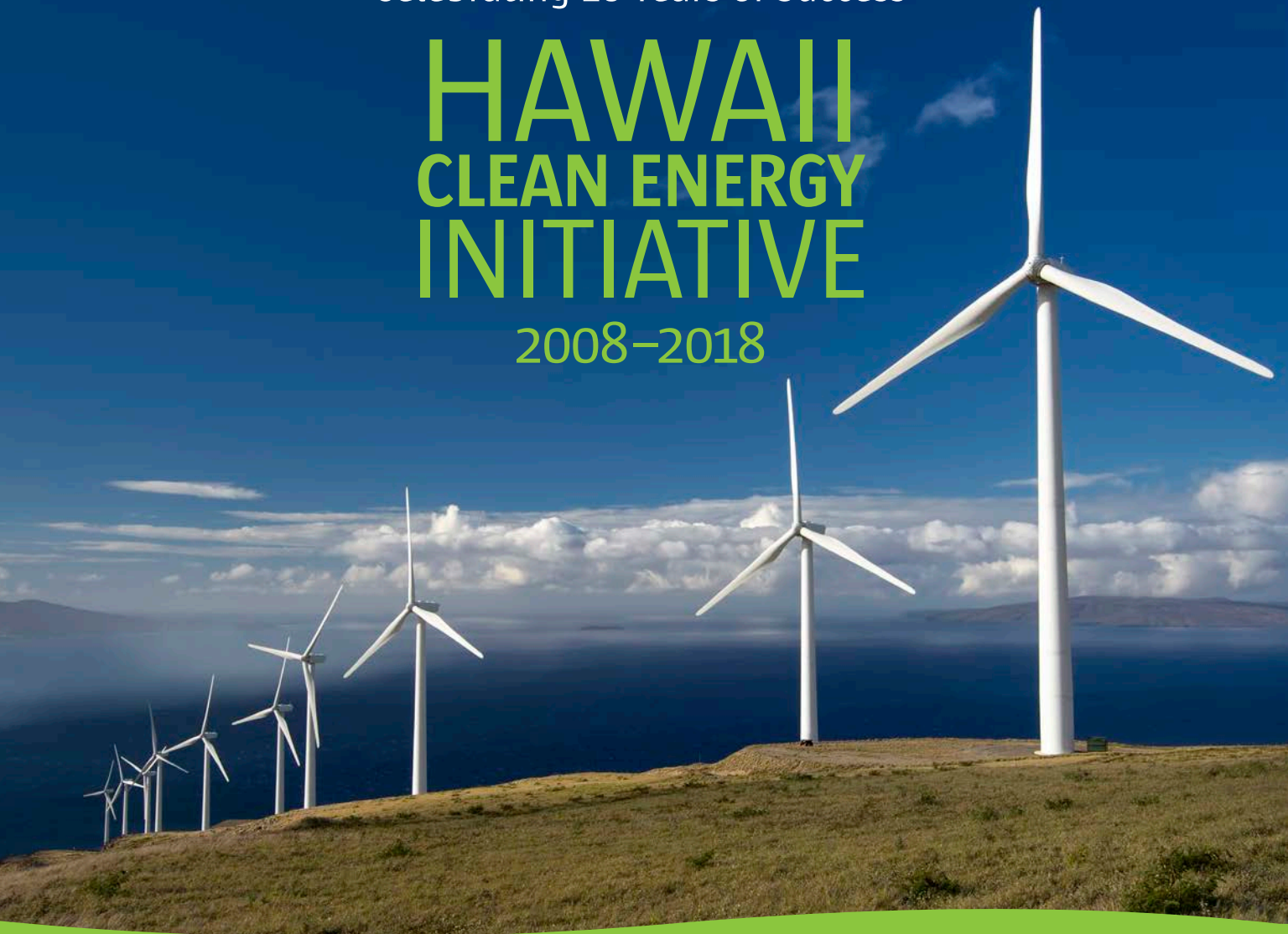


Celebrating 10 Years of Success

HAWAII CLEAN ENERGY INITIATIVE

2008–2018



Hawai'i Powered
Hawai'i Clean Energy Initiative

Navigating a Perfect Storm

A decade ago, oil supplied 90 percent of Hawaii’s energy. Ours was the most oil-dependent state in the nation — four times more reliant on oil than any other U.S. state — and demand was increasing rapidly. It was clear that importing oil to meet this demand was not sustainable.

The heavy reliance on oil to meet our energy needs threatened our island home’s most precious resources. It also imperiled our economy. In July 2008, when world oil prices soared to nearly \$150 a barrel, gas prices in Hawaii surpassed \$4 per gallon. The 2008 energy crisis was one element in a perfect storm that wreaked havoc across our island communities. The heavy reliance on oil to meet our energy needs placed the state’s energy security, economic stability, and environmental sustainability in jeopardy.

Meanwhile, we spent \$7 billion outside Hawaii to meet our energy needs — money that could have been spent preserving our parks and beaches, improving our roads, increasing the quality and accessibility of our healthcare, creating new jobs, educating our children . . . investing in our future.

All signs pointed to the critical need to alter our course.

Leading the Way to Energy Transformation

Launched in January 2008, the Hawaii Clean Energy Initiative (HCEI) set out to turn a challenge into an opportunity. Its mission: transform Hawaii into a world model for energy independence and sustainability.

With its leading-edge vision to transition to a Hawaii-powered clean energy economy within a single generation, HCEI established the most aggressive clean energy goals in the nation. The initiative’s original goal was to meet 70 percent of the state’s energy needs through energy efficiency and renewable energy by 2030.

“HCEI represented a unique partnership between the State of Hawaii and the U.S. Department of Energy, which provided the comprehensive framework to pursue their joint clean energy goals and serve as a model for pursuing a clean energy future. This joint vision and strong federal-state partnership brought Hawaii’s clean energy initiative and its accomplishments into national as well as international prominence and served to catalyze similar efforts nationally and abroad. Hopefully the fundamental goals of HCEI will continue to transform Hawaii’s energy ecosystem toward a truly clean energy future.”

— Gerry Sumida, Former Chair, HCEI Steering Committee

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Photo from Polynesian Voyaging Society, ‘Ōiwi TV, Sam Kapoi

‘IMI OLA
Seek the best life



One Boat, Many Paddles: Pulling Together in Pursuit of a Common Goal

A partnership between the State of Hawaii and the U.S. Department of Energy (DOE), HCEI brought together business leaders, policymakers, and concerned citizens committed to leading Hawaii to a clean energy future while charting a course for others to follow.

From the outset, the Hawaii State Energy Office (HSEO) and DOE sought to create a holistic, locally driven strategy to advance Hawaii’s enterprising clean energy agenda by pooling the ideas, resources, and capabilities of a diverse team of stakeholders.

At its core, HCEI was designated as a collaborative effort among all of the citizens of Hawaii, leveraging their respective strengths to bring about a transformation that would benefit not only current constituents but future generations as well.

Working Groups

Fueled by grassroots support, HCEI was propelled by the concerted effort of more than 100 community members and national experts who formed working groups dedicated to carrying out its mission. The groups were tasked with advancing Hawaii’s clean energy goals in four energy sectors: electricity (generation and delivery), end-use efficiency, transportation, and fuels.

Drawing upon information and input from diverse perspectives across the state, along with scientific data and in-depth energy analysis provided by DOE and the National Renewable Energy Laboratory (NREL), the working groups developed a transformational road map that integrated policy and regulatory change, project development, community education and outreach, and overall planning and management.

“HCEI was an historic clean energy agreement that provided all of us with a holistic framework of specific, actionable goals. It memorialized our good faith commitment to work collaboratively to achieve the very aggressive clean energy goals of the state. We recognized we were all in this together.”

—Alan Oshima, President and CEO, Hawaiian Electric Company

Partnerships

Building on the early momentum created by the working groups and project teams, several public and private sector partnerships have been instrumental in furthering Hawaii’s clean energy goals through their collaborative efforts to promote transformative clean energy policy development, drive energy technology innovation, and spur clean energy enterprise.

Key partnerships include the following:

- **Drive Electric Hawaii**—aligning Hawaii, the Hawaiian Electric Companies, Kauai Island Utility Cooperative, Ulupono Initiative, Blue Planet Foundation, and Rocky Mountain Institute to accelerate the cost-effective electrification of Hawaii’s transportation sector
- **Hawaii Advanced Visualization Environment Nexus (HAVEN)**—providing HSEO access to advanced computing infrastructure and state-of-the-art visualization cyber-infrastructure through a competitive DOE State Energy Program grant establishing a partnership among HSEO, the University of Hawaii at Manoa’s Laboratory for Advanced Visualization & Applications, the Hawaiian Electric Companies, and key external stakeholders
- **Hawaii Energy Visualization Initiative (HEVI)**—leveraging HSEO, DOE, and NREL modeling capabilities to generate the data necessary for visualizations from future scenarios incorporating new energy efficiency targets and electric vehicle (EV) adoption
- **Hawaii-Okinawa Memorandum of Cooperation**—promoting clean and efficient energy development and deployment
- **JumpSmart Maui Net Zero Microgrid**—improving distributed energy resource integration and preparing the electric system for the widespread adoption of EVs
- **Memorandum of Understanding between the State of Hawaii and the U.S. Department of the Navy**—establishing working groups on alternative fuels in ground transportation; renewable energy project development; and grid safety, resiliency, and reliability

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LAULIMA
Collaboration

Edging Forward:
Progress through Policy Action

Without maps or navigational tools to guide them, the original settlers of the Hawaiian Islands set out on an unprecedented voyage fraught with risk. Reaching back to the ancient Polynesian skill of wayfinding to guide Hawaii’s current course, the thought leaders, innovators, and developers leading Hawaii’s energy transformation are navigating uncharted waters and circumventing unseen obstacles in pursuit of an audacious vision.

Casting doubt and skepticism to the wind, they are demonstrating the value of working together with intent and purpose as they mark each new milestone en route to a clean energy future just beyond the horizon. HCEI’s landmark renewable energy and energy efficiency targets, which have been codified into law, are the mainstays of Hawaii’s clean energy policy agenda. Other groundbreaking policy actions have enabled advances on several fronts, from regulatory reform to tax policy and clean energy financing. Collectively, these policies and practices serve as guideposts that keep Hawaii on course.



“It seems like just yesterday I was working on the original 2008 analysis for the Hawaii Clean Energy Initiative. Knowing where we started and seeing where we are now, the progress has been remarkable. It’s a testament to how policy can accelerate innovation—and lead to lasting community change. And we’re just getting started!”

—Dawn Lippert, Chair, HCEI Advisory Board, and CEO, Elemental Excelerator

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Act 118 – Established Public Benefits Fee and Fee Administrator Act 150 – Amended net energy metering Act 204 – Mandated solar water heating	Act 155 – Increased Hawaii’s renewable portfolio standard (RPS) to 40 percent by 2030; set a precedent for electrical utility clean energy portfolio standards by including a separate goal for energy efficiency, establishing an energy efficiency portfolio standard that called for 4,300 GWh reduction in electricity use via efficiency measures by 2030	Act 73 – Established Energy Security and Energy Systems Development Special Funds through a \$1.05 per barrel tax on petroleum products and codified HCEI into Hawaii law Act 186 – Protected EV/clean transportation infrastructure	Act 203 – Approved study to explore the expansion of biofuel production Act 204 – Established on-bill financing for energy efficiency and renewable energy	Act 168 – Established incentives for the registration, licensing, parking, and operation of EVs Act 193 – Amended State Planning Act to include geothermal	Act 37 – Established economic incentives and cost-recovery mechanisms Act 78 – Appropriated funding for Hawaii Refinery Task Force	Act 109 – Established principles for grid modernization Act 164 – Modified Building Code Council and provided clarifying terminology	Act 38 – Amended State Planning Act for increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawaii’s dependence on imported fuels for electrical generation and ground transportation Act 97 – Amended RPS to 100 percent Act 100 – Established Community-Based Renewable Energy program	Act 202 – Established a renewable fuels production tax credit	Act 32 – Aligned Hawaii with Paris Agreement goals

Photos from Office of the Governor, State of Hawaii



Making Headway: HCEI Accomplishments

Ten years after its launch, HCEI has significantly outdistanced the lofty targets established as Hawaii embarked on its ambitious quest for energy independence. The state now generates 27 percent of its electricity sales from clean energy sources like wind and solar, placing it 12 percentage points ahead of HCEI's original 2015 RPS target of 15 percent. Other key accomplishments are highlighted here.



Buildings and Homes*
\$507 million
in energy performance contracts
saved enough energy to power
388,000 homes for **1 year**
\$1.2 billion in cost savings
anticipated over the life of the contracts



Electricity*
60 utility-scale renewable energy
projects installed
#1 renewable energy source is
distributed solar PV with **827 GWh**
or **33.5%** of total generation in **2016**

* Source: HSEO



“As the first state to commit to 100 percent clean energy, Hawaii leads the nation in our pursuit of energy independence, and 10 years into HCEI, we have a lot to be proud of. This initiative has spurred innovation, reduced emissions, and cut costs in the energy sector. I’m honored to represent a state that is on the cutting edge of clean energy, and I look forward to the progress we’ll continue to make in the next decade and beyond.”

— Brian Schatz, U.S. Senator



“On the 10-year anniversary of the Hawaii Clean Energy Initiative, it’s important to reflect on how this pioneering effort has established Hawaii as a leader in energy policy and deployment of energy efficiency measures and renewable generation. As the state’s blueprint for energy transformation and independence, HCEI is helping stimulate economic growth in an innovation economy by elevating Hawaii’s job growth prospects and business opportunities.”

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



Transportation*
#2 in U.S. for per-capita
EV adoption
>6,600 EVs on the road
and **>250** charging stations



Jobs**
5,100 people employed in
energy efficiency
4,900 work in the
solar industry



Clean Air***
750,000 metric tons of carbon emissions
avoided from **2010 to 2015**, the equivalent of:
160,000 passenger vehicles removed from our
roads for **1 year**
260,500 tons of waste recycled
84 million gallons of gasoline use avoided
81,000 homes’ energy use avoided for **1 year**

* Source: Hawaii Department of Business, Economic Development, and Tourism
** Source: DOE 2017 U.S. Energy and Employment Report
*** Sources: Hawaii Department of Health, Clean Air Branch; EPA Greenhouse Gas Equivalencies Calculator

Photo from Michael Callahan, NREL

KŪLIA I KA NU‘U
Achievement

Leading with Initiative

Having surpassed HCEI's original renewable energy goals, Hawaii has now set its sights even higher. In May 2015, the state legislature adopted an RPS of 100 percent by 2045, positioning Hawaii to become the first U.S. state to produce all of its electricity from indigenous renewable sources and establishing interim targets of 30 percent by 2020, 40 percent by 2030, and 70 percent by 2040.

Over the course of a decade, Hawaii has served as the nation's leading test bed of clean energy innovation, establishing a replicable road map for others to follow. Today, it is leveraging critical lessons learned, along with financial and technical support from committed public and private-sector partners, to strengthen its position as a pioneer in advanced energy technology adoption. Through ongoing technical assistance, NREL, DOE, and other key partners are sharing world-class analytical and technical expertise in areas such as grid modernization and data visualization to inform Hawaii's path forward as it charts a new course toward a clean energy future.

“HCEI reveals how an ongoing commitment of public and private stakeholders can catalyze investment in advanced energy technology and manifest commercial opportunities for both new and established companies. DOE is leveraging the success to date as a playbook for replicating energy transitions across the United States and around the world. While Hawaii's path to clean and secure energy stretches into the future, its foresight and leadership in establishing market access for new technologies will guide continued strides toward this ultimate goal.”

—Stephen Walls, Energy Transition Initiative
Program Lead, DOE Office of Energy Efficiency
and Renewable Energy

How Do We Get There from Here?

Stakeholder Engagement

HSEO has hosted a series of charrettes, convening knowledgeable land owners, academics, subject matter experts, and public advocates for intense planning sessions designed to generate deep thinking and answers to critical problems. Facilitated by experts, these charrettes create an opportunity for Hawaii stakeholders to provide leadership in the areas of energy efficiency and transportation while working alongside national and international leaders on transformative issues vital to our island communities.

Modeling Costs and Benefits

In March 2017, HSEO signed a \$970,000 contract with London Economics International LLC to conduct a study evaluating the costs and benefits

of various electric utility ownership models, as well as the viability of various utility regulatory approaches, to aid Hawaii in achieving its energy goals.

Visualizing the Future of Clean Energy in Hawaii

Hawaii is also applying visualization as a means of analyzing and communicating the trade-offs and interdependencies of transitioning to a clean energy economy. Partnerships such as HAVEN and HEVI are providing Hawaii access to state-of-the-art capabilities and infrastructure to help guide critical decisions about the state's evolving energy ecosystem and enhance data-driven energy planning and policy development as Hawaii advances toward its 2045 goal.

Photo from HSEO

ALAKA'I
Leadership

Energy independence . . .

It's up to us.

Learn more about HCEI's ongoing collaborative work to strengthen Hawaii's economy, increase our energy security, and ensure a cleaner, more sustainable environment for future generations at: hawaiiicleanenergyinitiative.org



“For the past 10 years, the Hawaii Clean Energy Initiative has been instrumental in Hawaii's bold pursuit of a clean energy future that benefits all of the state's residents. Built on the foundation of our invaluable partnership with the U.S. Department of Energy and other key stakeholders, HCEI will continue to serve as a guiding force as we face the challenges of transitioning to a 100 percent clean energy future.”

—David Y. Ige, Governor of Hawaii

AIA IĀ KĀKOU
It's up to us

Photo from Kenneth Kelly, NREL 20156



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