

# About HNEI

 [hnei.hawaii.edu/about-hnei/](http://hnei.hawaii.edu/about-hnei/)



## History

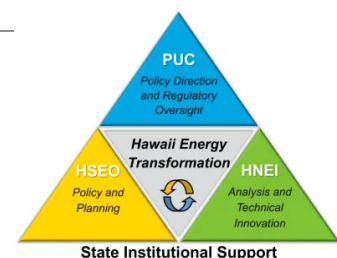
The Hawai'i Natural Energy Institute (HNEI) was created in 1974 to stimulate the development of natural energy resources and reduce fossil fuel use in Hawai'i. Through multidisciplinary research and education and public-private partnerships, HNEI has emerged as a leader for sustainable energy deployment and demonstration projects in Hawai'i.

In 2007, the Hawai'i Legislature established HNEI in state law with an expanded mandate to coordinate with state and federal agencies, and demonstrate and deploy energy efficiency and peak demand reduction technologies. The law also created the Energy Systems Development Special Fund which receives a portion of the State tax on imported fossil fuels, to match funds from federal and private sources, and to award contracts or grants for developing and deploying renewable energy technologies. (HRS Secs. **304A-1891**-1894 and Sec. **304A-2169.1**)

HNEI seeks alliances to support transitions to reliable and affordable clean energy while enhancing the benefits afforded to residents of Hawai'i and beyond. These have included close working relationships with industry and governmental entities at every level, such as federal funding agencies, the Hawai'i Public Utilities Commission, Hawai'i State Energy Office, the Hawai'i Legislature, members of Hawai'i's Congressional delegation, and governments in the Asia-Pacific region. By engaging a wide range of disciplines and stakeholders, HNEI is able to tackle the urgent and complex clean energy needs of our State, the nation, and the global communities in which we serve.

## Mission

A core part of HNEI's mission is to help guide Hawai'i through its clean energy transformation by focusing on cost effective and practical solutions to help deliver commercially viable renewable energy for Hawai'i and the world. Hawai'i's energy transformation is driven by bold state policies that include a mandate for 100% renewable electricity, and carbon neutrality by 2045. (HRS Secs. **269-92** & **225P-5**)



To accomplish this mission, HNEI integrates analysis, research, engineering, economics, and science to develop and demonstrate technologies, strategies, and policies that will significantly impact energy transformation initiatives in Hawai'i and beyond.

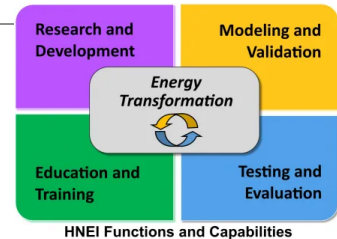
In Hawai'i, HNEI closely collaborates with the State Energy Office and the Public Utilities Commission to support state energy policy and Hawai'i's energy transformation. We provide independent and impartial research, analysis, demonstration and testing to help inform critical decisions made by regulators, legislators, utilities, and other energy stakeholders.

## Core Functions

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HNEI's activities can be grouped into four core functions:

- Research & Development
- Testing & Evaluation
- Modeling & Validation
- Education & Training



HNEI core functions are inter-related and overlap by design to maximize collaboration and leverage resources to help accelerate the State's energy transformation.

### ***Research & Development (R&D)***

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As an Organized Research Unit within the University of Hawai'i at Mānoa (UH), HNEI has a strong core research team consisting of multidisciplinary faculty and staff with a wide range of backgrounds. HNEI also works closely with other units on campus, including the School of Ocean & Earth Science & Technology (SOEST), College of Engineering, College of Tropical Agriculture and Human Resources, and College of Social Sciences. This critical mass allows HNEI to conduct increasingly comprehensive and complex research. With a strategic focus on remaining flexible to support the dynamic needs of renewable energy development, HNEI's direction continues to evolve.

### ***Modeling & Validation***

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HNEI conducts and supports analysis and modeling of forward looking scenarios for renewable energy generation, grid improvements, and storage. These analyses are critical to identifying optimal and realistic pathways to meet energy transition objectives such as those of the Hawai'i Clean Energy Initiative. Results from these studies guide energy policy and utility planning and help identify important validation projects in areas such as biofuels, grid integration, and hydrogen.

### ***Testing & Evaluation***

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Moving R&D discovery from UH labs to market is an important aspect of HNEI's testing and evaluation mission. HNEI faculty and staff have been successful in transferring patented HNEI technology in a variety of areas to demonstration scale, and even commercial implementation.

Additionally, there are many emerging technologies of potential significance to Hawai'i's energy needs developed elsewhere. We identify and bring to Hawai'i technologies of interest, for testing and assessment for use in Hawai'i. These activities are frequently guided by our analysis and modeling efforts and supported by our R&D activities. These projects usually involve industrial partnerships and often include cost share. A good example is the ongoing effort to evaluate emerging grid scale battery energy storage technology as a solution to both transmission and distribution level issues associated with high penetration of intermittent renewable energy technologies.

## ***Education & Training***

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While HNEI does not have its own academic program as a research institute, its active partnerships with other departments within the university greatly enhance HNEI's effectiveness and reach. Faculty members develop and present courses for academic units in SOEST, the College of Engineering, and the College of Tropical Agriculture and Human Resources. HNEI faculty support and supervise graduate students and post docs across these departments. Additionally, HNEI's state-of-the-art research facilities are used by UH research collaborators. HNEI also currently provides funding to Maui Community College, Kaua'i Community College and the College of Engineering (UH Mānoa) to support curricula and workforce development. Other funded projects include the Pacific Asian Center for Entrepreneurship and E-Business (PACE), which supports several fellowships at the UH College of Business to develop a workforce cross-trained in the business, legal and technical aspects of future energy systems. HNEI also supports the Asia-Pacific Technology and Education Partnership (APTEP), funded by the Office of Navy Research (ONR).