



# Hawai'i Natural Energy Institute Research Highlights

Energy Policy & Analysis

Energy Transition Initiative Partnership Program

**OBJECTIVE AND SIGNIFICANCE:** The Energy Transition Initiative Partnership Program (ETIPP) is a program with an initial three-year term established and funded by the U.S. Department of Energy to provide analysis, technical assistance, and policy guidance to address high energy costs, reliability, and inadequate infrastructure challenges faced by island and remote communities. In December 2020, HNEI was selected via a competitive solicitation to be the Pacific Regional Partner, one of five regional partners initially selected nationwide, to help communities coordinate with National Renewable Energy Laboratory (NREL) personnel to; solve critical questions and issues of importance by communities engaged in energy transitions, to support replicable energy transition technical assistance and knowledge sharing throughout the United States.

**BACKGROUND:** ETIPP provides technical assistance opportunities for remote, island, and islanded communities. Through its understanding of local energy and infrastructure challenges, goals, and opportunities, ETIPP's partner network is intended to empower communities to proactively identify and implement strategic, holistic solutions tailored to their needs. Selected communities receive support for a project scoping phase, approximately one to two months, followed by 12 to 18-month long energy planning and analysis projects that: 1) prioritize community energy values, goals, challenges, and opportunities; 2) identifies and advances the ability to implement strategic, whole-systems solutions; and 3) fosters high-impact, replicable community energy transition approaches. By participating in ETIPP, communities can expect to receive substantial in-kind support from the national labs and regional partners in the form of technical expertise on energy analysis, planning and implementation, and program guidance and education from the regional partners.

**PROJECT STATUS/RESULTS:** During 2021-2022, HNEI led efforts to seek qualified applicants for technical assistance and initial onboarding and orientation training session for representatives of five awarded Pacific Region Cohort 1 and 2 projects and participated in the delivery of training and technical assistance.

In 2022, HNEI supported the successful conclusion of the two Cohort 1 projects. The first, a Cohort 1 project proposed by community partner, Hawaiian Electric Company (HECO), identified locations within its distribution service territory in Honolulu deemed most appropriate for hybrid microgrid development. Such a map – perhaps the first in the United States developed by a utility – is intended to improve resilience of remote and low-lying electricity grids in the face of severe weather conditions, which have the potential to cause long-duration power outages. An example of the hybrid microgrid map for the northeast O'ahu community of Hau'ula is shown in Figure 1.

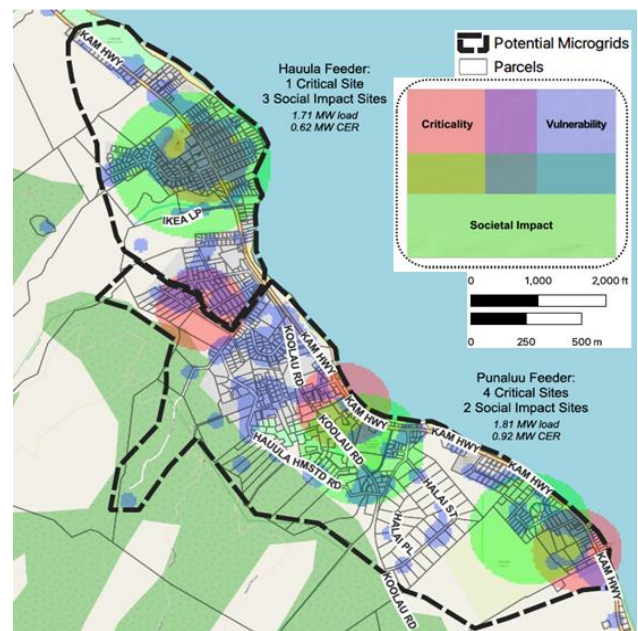


Figure 1. Potential Hau'ula sites for hybrid microgrids.

The second Cohort 1 project completed during 2022 was the County of Kaua'i's "Electric Vehicle and Multi-Modal Transportation Transition" project, which supports the island's effort to eliminate fossil fuel use in the ground transportation sector by 2045.

The Kaua'i program's technical assistance focused on three main tasks to support development of convenient mobility options:

1. Develop a shared transportation mobility data plan to collect information on movement patterns of both residents and visitors and assess detailed transportation demand around the Island;

2. Analyze and plan the role of emerging mobility technologies in conjunction with Kaua'i's existing transit plans to support a broader array of transportation choices for visitors and residents on the island; and
3. Devise plans for electric vehicle charging infrastructure to improve the mobility and accessibility needs of residents and visitors on the island and expand charging access for those who are not willing, able, or prepared to shift away from single occupancy vehicles at this time.

Results of the projects from Cohort 1 have been submitted to NREL.

In 2022, HNEI also supported the selection and scoping efforts for three projects under Cohort 2 in the Pacific Region, which are as follows.

*Hui o Hau'ula, Hawai'i (2022-2024):*

Hui o Hau'ula, a community organization of O'ahu, is coordinating the planning and development of a Community Resilience Hub, which will include the generation and storage of power for the surrounding Ko'olauloa District. HNEI is collaborating with NREL on evaluating a portfolio of renewable energy technologies for the Resilience Hub. The project will develop technical guidance and documentation for storm and disaster energy resilience throughout Ko'olauloa.

*University of Hawai'i, Hawai'i (2022-2024):*

The University of Hawai'i's project plans include analyzing the potential for geothermal cooling in buildings across its 10 campuses. HNEI is supporting NREL's efforts to conduct analysis on building heating and cooling loads at select locations and support NREL's modeling of shallow geologic conditions. The objective is to recommend geothermal technologies, materials, and design approaches that improve energy efficiency and significantly increase sustainability across campus communities. Outcomes will include increased capacity for geothermal energy analysis at the University and opportunities to apply project results in similar environments.

*Guam Power Authority, Guam (2022-2024):*

The Guam Power Authority (GPA) is seeking assistance on renewable energy resource integration, improved utility planning and energy security, and to establish a performance management system for its Clean Energy Master Plan.

In 2023, Mark Glick, HNEI's PI for the execution of this work took a leave-of-absence from HNEI to become the state's Chief Energy Officer. In order to compensate for the loss of Mr. Glick, HNEI hired Skog Rasmussen LLC to support HNEI's community efforts. Funds from the ESDSF were committed to this effort to ensure that all program requirements were met. During 2023, HNEI's team participated in the first Regional Partners meeting held in Denver, Colorado and worked with local communities to identify two additional applicants for Cohort 3.

Of the two Cohort 3 applicants – only one, the Moloka'i Community Hui – was selected to move forward. The Moloka'i application includes the three activities below, which are currently being developed for potential inclusion in the Scope of Work for Cohort 3.

1. Assessing the feasibility and cost-effectiveness of floating solar at the Kualapu'u reservoir in central Moloka'i, for which there is strong community interest.
2. Development of planning for renewable energy – a top community priority – for a range of critical infrastructure, county wide.
3. With a shared location at Kualapu'u reservoir, the community is interested in the feasibility of pumped-storage to meet community needs.

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