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PROJECT PROFILE

Securing Energy Resiliency for a Critical Mission

The Pacific Energy Assurance and Renewables Laboratory (PEARL) will improve energy resiliency with appropriate cyber security for the 154th Wing F-22 campus at Joint Base Pearl Harbor-Hickam. This microgrid will also serve as a test bed for future projects of its kind to support Hawaii's goal of 100% renewable energy by 2045.

Supporting National Defense and Renewable Energy Goals

Built to mitigate disturbances and strengthen Joint Base Pearl Harbor-Hickam's grid resiliency, the Pacific Energy Assurance and Renewables Laboratory (PEARL) will deliver reliable power for the F-22 mission.

Joint Base Pearl Harbor-Hickam (JBPHH) enhanced its ability to protect U.S. assets and the Pacific in 2014 by adding an F-22 squadron to its fleet. The 154th Wing F-22 Campus project brought photovoltaic (PV) arrays and other energy conserving features to the base. Now, to further build upon existing renewable infrastructure at the base and to offer additional resiliency during natural disasters, JBPHH is adding a microgrid.

Our team was retained to design and build a state-of-the-art renewable energy microgrid. Work began through funding from a Cooperative Agreement between the Air Force Research Laboratory and the Hawaii Center for Advanced Transportation Technologies.

Project Stats

Client
Hawaii Center for Advanced Transportation Technologies

Location
Honolulu, Hawaii

Anticipated Completion
December 2023

500
KWH OF ENERGY STORAGE

<1
SECOND TO RESTORE POWER TO F-22 MISSION

3
MVA OVERALL LOAD

The initial stage of PEARL provides a complete and usable backbone microgrid that can accommodate connection and expansion of future microgrids and phases. These microgrids provide energy assurance and security for the entire 154th Wing F-22 Campus while also helping make strides toward Hawaii's renewable energy goals. These microgrids will play a critical role in reducing Hawaii's dependence on fossil fuels, boosting the transition to renewable energy and creating a multitude of new jobs in the state.

PEARL will advance the state's 100% renewable energy vision, set in 2015. To reach this goal by 2045, Hawaii has made moves to increase energy self-sufficiency and security by developing and utilizing local energy resources in a balanced way.

PEARL will be a prototype for diversifying the state's energy portfolio; connecting and modernizing Hawaii's grids; balancing technical, economic, environmental and cultural considerations; serving as a catalyst for energy innovation and test bed investments; and creating an efficient marketplace that benefits producers and consumers.

Through the use of a design-build delivery method, this project will experience a more streamlined process, as several additional steps needed in other traditional delivery methods can be avoided. Design-build allows for a more efficient timeline for project completion and can provide significant cost savings by leveraging existing vendor and contractor relationships.

By managing each step of the project from design to procurement and through construction, our team has a hand in the entire project journey, providing a better project experience for the Hawaii Center for Advanced Transportation Technologies and the 154th Wing.

Additionally, our team can oversee that the highly technical and innovative aspects of the project are integrated more effectively.

Once complete, PEARL's technical capabilities will include solar PV integration, battery energy storage and the ability to restore power instantaneously.

Hawaii's embrace of clean energy is rooted in a commitment to end its historical dependence on fossil fuels. PEARL will be a catalyst that moves the state closer to a clean energy future, supporting both Hawaii's renewable energy goals and the national defense mission of JBPHH.

About Burns & McDonnell

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