



Hawai'i Natural Energy Institute Research Highlights

Grid Integration & Renewable Power Generation

Marine Corps Base Hawai'i Installation Energy Security Plan

OBJECTIVE AND SIGNIFICANCE: HNEI is supporting Marine Corps Base Hawai'i (MCBH) in completing its Installation Energy Security Plan (IESP) to enhance installation energy resilience and improve mission assurance. The IESP will document the current and future energy security requirements of MCBH, its ability to meet those requirements, and plans to address high priority gaps. It will take into account resource constraints, statutory mandates, executive policy, and service-level priorities.



Figure 1. Marine Corps Base Hawai'i at Kaneohe Bay. (Photo Credit: MCBH)

BACKGROUND: On May 30, 2018, the Office of the Assistant Secretary of Defense Energy, Installations, and Environment (OASD-EI&E) issued the memorandum "Installation Energy Plans – Energy Resilience and Cybersecurity Update and Expansion of the Requirement to All DoD Installations," mandating an IESP be prepared for MCBH. The IESP must take into account the capacity, reliability, and condition of the existing energy infrastructure on base and the ability to meet future growth requirements. The IESP is envisioned to discuss, compare and contrast alternatives for energy security and resiliency, and recommend technical strategies and solutions. The solutions are to be based upon technologies that are already proven commercially viable and ready-to-go. Thus, it's intended to deliver an actionable energy plan for MCBH with a focus on resilient, proven, and economically viable energy systems ready for implementation. HNEI's GridSTART and MCBH are cooperating through

regular interaction and exchange to secure necessary information on the electrical infrastructure, plans, operations, critical load priorities, relevant base studies/assessments, and the like to facilitate HNEI's support of the IESP. The IESP includes seven stages and follows the planning framework shown in Figure 2.

PROJECT STATUS/RESULTS: An initial draft report of the IESP including stages 1, 2, 3, and 4 has been delivered to MCBH and is currently under review. HNEI continues its work on stage 5 of the IESP. This stage proposes solutions addressing the installation's energy resilience requirement of fourteen days without commercial power. Alternative microgrid designs are being developed and assessed, including a microgrid solution that powers the entire base and smaller microgrids that maintain power to base priority loads. Figure 3 illustrates a conceptual microgrid design that utilizes the existing rooftop PV at MCBH and proposes additional generation and energy storage resources to power the entire base through an extended utility service outage.

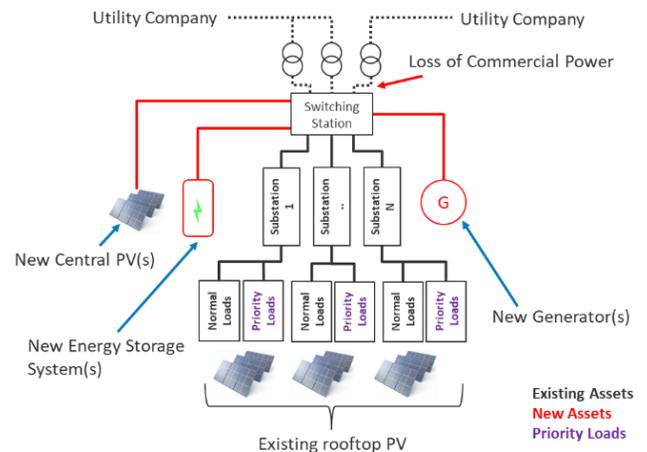


Figure 3. Conceptual design of a full base microgrid.

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Figure 2. IESP process flow chart.