Hawai'i Natural Energy Institute Research Highlights

Grid Integration & Energy Efficiency

EV Charging Infrastructure Master Plan for USMC Camp Fuji, Japan

OBJECTIVE AND SIGNIFICANCE: Aligned with the ambitious climate goals outlined in United States Executive Order 14057, the United States Marine Corps (USMC) has partnered with HNEI Grid*START* to develop a comprehensive master plan for fleet electrification and electric vehicle (EV) infrastructure implementation at Combined Arms Training Center (CATC) Camp Fuji in Gotemba, Japan. This plan will establish an accessible network of EV charging stations that are efficient, convenient, and safe, with the aim of encouraging EV adoption and promoting sustainability at CATC Camp Fuji.

Figure 1. View of Mt. Fuji from within CATC Camp Fuji (Source: U.S. Indo-Pacific Command).

BACKGROUND: CATC Camp Fuji, situated at the base of Mt. Fuji in Gotemba, Japan, is a USMC installation and training area encompassing various facilities such as barracks, warehouses, repair shops, fleet garages, and a military police post. Following the directives outlined in Executive Order 14057, the Camp is planning to transition its non-tactical vehicle fleet to EVs in the coming years. Presently, public EV charging infrastructure in Japan is limited. Therefore, Camp Fuji's EV charging network must be thoughtfully designed to accommodate the specific usage needs of each fleet vehicle, while also incentivizing the adoption of privately owned EVs at the camp.

PROJECT STATUS/RESULTS: In August 2023, HNEI Grid*START* met with stakeholders at CATC Camp Fuji to devise a fleet electrification strategy and identify optimal locations for EV charger deployment to serve the Camp's needs. This strategy delineated the vehicles most suitable for prompt conversion to EVs, as well as those better suited for conversion as public EV infrastructure and technology evolve. Considerations within the electrification strategy included range requirements, emergency responsibilities, charging turnaround times, and the current state of EV technology and infrastructure. The meeting also identified key priority locations for the installation of EV charging facilities. These selections considered existing infrastructure, current parking trends, geographical limitations, and the encouragement of EV ownership among Camp personnel. At these chosen locations, an optimized combination of DC Fast Chargers and Level 2 chargers was determined based on vehicle types and their expected usage demands.

Figure 2. Example of EV charging location from the master design file.

As part of the master plan, HNEI Grid*START* is presently evaluating the capacity of Camp Fuji's existing electrical infrastructure to accommodate the proposed EV chargers. With the cooperation of Camp Fuji personnel, HNEI is leveraging historical AMI data for CATC Camp Fuji to evaluate if the existing conductors, transformers, and panels can handle the additional load associated with EV chargers. The analysis will provide an assessment of the infrastructure's current capacity, while also identifying load patterns linked to seasons, population changes, or training activities.

Concurrent with the AMI data analysis, HNEI is developing a master planning file that will encompass the proposed construction drawings for each selected EV charging infrastructure site. Upon completion, these plans will be used as a technical blueprint for estimating the potential costs of fleet electrification infrastructure additions at each location and as a tool for visualizing the phases of EV infrastructure integration at Camp Fuji.

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