Sain Engineering Associates, Inc. (SEA)
Resource Efficiency Management (REM) Services

Fort Hunter Liggett
Microgrid to Generate and Achieve Net Zero

Sain Engineering Associates, Inc. (SEA) Plays Vital Role in Microgrid Implementation to Generate Net Zero for Fort Hunter Liggett by Providing Resource Efficiency Management (REM) Services.

Several years ago, the Department of Defense (DoD) realized the need to conserve energy, avoid overtaxing the grid, and adapting to climate change. It began finding ways to reduce energy use by making buildings, utilities, and lighting systems more efficient. Around 2013-2014, they moved to the Net Zero concept to reduce consumption by installing renewables. Beginning in 2017, the Department of the Army expanded the goal to include Mission Resilience. Fort Hunter Liggett (FHL) in California is one of the nine Net Zero Initiative Pilot Installations selected by the Assistant Secretary of the Army for Installations, Energy and Environment.

Sain Engineering Associates, Inc. (SEA) was contracted by FHL in California to provide REM services in 2017. As project focus for resilience became a priority, in 2020 with the assistance of SEA REM Jarrod Ross, FHL conducted a groundbreaking ceremony to build a $21.6 million electrical microgrid, which will make it the first Army Installation to achieve Net Zero for mission critical operations. That means it will be capable of generating and distributing electricity for 14-days of energy resilience. It is an important first step in scaling this type of energy self-sufficiency throughout the Department of Defense.

The microgrid expansion will allow FHL to reach Net Zero goals by 2022. Even though FHL is an Army Reserve Installation, the base still performs a great deal of activity from the Army, Navy and Special Warfare Groups that are critical to training initiatives. FHL will be the go-to-pilot for the Department of the Army to model other installation resilience efforts. This innovative, fully integrated microgrid system is going to provide contingency electric power to the installation in the event of power outages and persistent grid instability.

What is a Microgrid?

A microgrid is a self-contained electrical distribution system capable of operating in the absence of the utility grid. FHL has been planning and anticipating this resilience project for several years.

The first steps they made for preparation was to upgrade and bury underground the medium voltage distribution system in the cantonment in anticipation of this resilience project. This has laid the groundwork to expand the solar array at the Equipment Concentration Site as well as add photovoltaic (solar) generation at the O&M yard.

The power will be stored in batteries so that electricity generated during the day can be distributed at night. The entire microgrid system will be governed by an automated Supervisor Control and Data Acquisition (SCADA) system that will respond to changes in grid conditions in as little as 1/30th of a second when needed.

Once the system is up and running, it will generate more electricity than FHL can consume over a 12-month period. This means FHL can fully disconnect from the power grid, and more electricity can be exported during summer months and then imported throughout the winter. In the end, it averages out and the net zero amount is achieved.

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Even with battery energy storage included in this contract, FHL will not have enough batteries to store every kilowatt of electricity generated by the system. During the day when the sun's out, FHL will generate more electricity than it can use or store, so the installation will export the excess energy onto the utility electrical grid. As a caveat ,the utility provider does limit the amount of power that can be uploaded onto the grid. As a result, the SCADA system helps curtail the output of the solar array to the grid without negatively impacting the management of their system.

FHL was an ideal pilot due to its cantonment size for this resilience project. It is scalable and has allowed SEA's REM to discover challenges and gaps that could be improved for best practices to be followed throughout other installations. Larger military installations of the world can model their resilience efforts based off of the pilot work completed at FHL to mitigate risk and accelerate implementation from lessons learned.

The start of any microgrid project is the culmination of more than a decade of projects, development, and planning. It requires forward-thinking to generate DoD projects at the grassroots level and is a huge win. SEA is pleased to recognize the work and contributions of many parties, including the work of our very own REM, so that FHL can be recognized as a leader in its energy, waste, and water resiliency and sustainability programs.

Holistically, FHL has produced one of the most forward-leaning programs. Must of this can be attributed to the exceptional level of technical and budgetary support from the Army Reserve Installation Management Directorate, Sustainment and Resiliency Division, which has long championed these efforts. SEA couldn't be more proud to be apart of this project paving the way for future resilience across the DoD.

Groundbreaking for microgrid project, Fort Hunter Liggett, CA.

SEA REMS - QUICK FACTS

Serving the DoD since 2002, SEA provides REM Services under NAISC codes 541330 and 541690. SEA's REM services increase the effectiveness of government energy programs by identifying energy conservation measures to reduce energy and water usage. Our conservation measures are accomplished through the implementation of cost-effective programs and practices derived from a review of available data and resources.

SEA is currently serving the DoD energy Programs with ongoing services, including thirty-seven (37) REMs based in thirteen (13) U.S. states and six (6) OCONUS bases/garrisons. The very first REM ever established with the U.S. Army for its REM program came from SEA, located at Fort Polk, LA. We have also built REM programs from the ground-up for the Air Force as well as USARCENT. Our REMS and professional engineers have achieved:

- Audits and Assessments for over 500M Square Feet of Facilities across the DoD
- Identified more than 5,000 Energy Conservation Measures (ECMs)
- Commissioned more than 14.1M Square Feet of Facilities
- LEED Certified 15 buildings, including the World's First Carbon-Neutral Hospital
- Received 62 Energy and Environmental Awards, including Secretary of Defense, Army, Navy, Air Force, FEMP, EPA (State and Local)
- Provided more than 850 Training Sessions Globally
- Provide Instructors for AEE's Certified Energy Managers, Contribute speakers to ASHRAE Councils and Board of Governors, Promote Technical Training Sessions at Energy Exchange, etc.
- Developed or Co-Authored more than nine (9) Federal Policies, including USARCENT Operation Energy Policy and FAA Guidance - Section 512 on Airport Power)
- Hosted as many as 72 Resource Efficiency Managers Concurrently worldwide

To learn more about how SEA's REM program can help your base, garrison, installation or federal energy achieve resilience and sustainability initiatives, please contact our Federal Programs Director, Michael Reed.

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