

# Net Zero Operational Energy Demonstration (Task N.0813)

## Statement of Need

Net Zero is a strategy that strives to bring the overall consumption of resources on installations down to an effective rate of zero. The reasons for pursuing Net Zero at fixed installations are also relevant to Contingency Bases (CBs). CBs are highly dependent on outside resources and generate large amounts of waste. Base services and operational support require outside power and energy resources. Fuel must be shipped or air dropped in at high security and operational risk, and at a high cost. This threatens operational effectiveness and endurance. Striving to bring overall consumption to an effective rate of zero provides an overarching goal that will achieve multiple benefits as the overall footprint of bases is reduced.

Another aspect of the Net Zero Initiative is the ability to evaluate Net Zero project alternatives on an enterprise scale while also considering fiscal budgets and technological timelines. The Army currently lacks this ability, making project prioritization and funding decisions less than optimal. Currently, Army energy, water and waste projects are selected from a set of individual project proposals that meet established requirements but are solicited without comprehensive strategic guidance. Investment opportunities vary widely, from small portable technologies to large infrastructure projects.

## Technical Approach

In order to complete the objectives of the task, the NDCEE applied the concepts, principals and approach developed for Net Zero Installations Initiative to a single CB pilot site. The location of the pilot site was determined by stakeholders at Headquarters Department of the Army (HQDA) and the applicable Combatant Commands (COCOMs). The site selected was Camp Buehring, Kuwait. This site was selected because it is an isolated location, not self-sufficient or connected to any host nation infrastructure for energy or water. All food, fuel for generators and vehicles, water, and garbage is transported in or out. The NDCEE: 1) characterized the water and energy use and waste streams at Camp Buehring; 2) developed a baseline of water and energy usage and waste streams and presented them in a Water Balance Study, Energy Audit, and Material Flow Analysis Report for the Camp; 3) prioritized the best potential projects and activities for Camp Buehring and presented them in a Net Zero Action Plan; 4) conducted a demonstration of one action from the Action Plan; 5) developed recommendations for potential scale-up and

technology transition, and 6) conducted a policy study on applicability of Net Zero to contingency operations.

The second purpose of this task was to develop and demonstrate a software tool to identify the most efficient and effective energy projects to support an optimal Army enterprise-wide energy investment portfolio. The tool was demonstrated and validated using: (1) historical energy project data gathered from previous Program Objective Memorandum (POM) cycles; and (2) current energy data gathered at Net Zero Energy pilot installations.

## Results and Benefits

Results have informed operations to reduce the footprint of the pilot CB. Lessons learned for the pilot have transferred throughout the Army via the Contingency Base Community of Practice to inform the many stakeholders that seek to improve efficiency and effectiveness of forward operations. Data, lessons learned, and results of the policy study have informed the OASA (I,E&E) on effective Net Zero strategies for CBs going forward.

The energy analysis tool demonstration produced and compared investment portfolios from two vantages: (1) the current bottom-up approach, which requires the Army G-8 to build investment portfolios from project requests from all installations; and (2) a proposed top-down approach, which requires the Army G-8 to identify optimal projects and assign those projects to the appropriate installations. The tool developed by the NDCEE improved analytical techniques for renewable energy, energy security and energy efficiency project funding decisions.

**Government POC**  
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**Status**  
Complete

