

## Expeditionary Facilities Energy Consumption Baseline

### Technology Description

The Expeditionary Facilities Tent Camp Energy Consumption Baseline measured the power (kilowatts) and energy (kilowatt-hours) produced and used by Navy Expeditionary Combat Command (NECC) forces while operating Table of Allowance (TOA) mobile power generation equipment during Field Training Exercises (FTX). Energy and power usage was logged by facility type (e.g. by the Combat Operations Center, Self Service Laundry), and data was categorized by how the energy and power were used (e.g. heating and cooling, lights and receptacles, and load banks). The data obtained was used by EXWC to baseline the energy and power needs of NECC forces during operational scenarios and determine if there are opportunities for improvement.

The Secretary of the Navy (SECNAV) has set five energy goals to reduce the Department of the Navy's (DON's) overall consumption of energy, decrease its reliance on petroleum, and significantly increase its use of alternative energy. In response, the Chief of Naval Operations Task Force Energy (TFE) Expeditionary Working Group has further refined guidance and established two energy reduction goals for Expeditionary Forces:

- Reduce tactical petroleum consumption 15% by 2020
- Increase tactical energy efficiency 15% by 2020<sup>1</sup>



Expeditionary Power and Energy Dataloggers recording the loads supplied by a 60 KW Tactical Quiet Generator (TQG)

### Value to the Warfighter

By reducing the amount of petroleum consumed and increasing fuel efficiency, logistics support requirements are reduced. The reduced logistics burden decreases the number and amount of resupply convoys required when operating in forward locations while maintaining operational effectiveness. The reduced number of resupply convoys has an attendant reduction in exposure to hostile action.<sup>2</sup>

<sup>1</sup> Office of the Chief of Naval Operations, *A Navy Energy Vision for the 21<sup>st</sup> Century*, (Washington D.C., October 2010), <http://greenfleet.dodlive.mil/files/2010/10/Navy-Energy-Vision-Oct-2010.pdf>, accessed Nov 18, 2013

<sup>2</sup> Charles F. Wald and Tom Captain, *Energy Security: America's Best Defense*, (Deloitte Development LLC, 2009), [http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/AD/us\\_ad\\_EnergySecurity052010.pdf](http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/AD/us_ad_EnergySecurity052010.pdf), accessed Nov 18, 2013

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## **Economics of the Technology: ROI or Payback**

The reduction in exposure to hostile action due to fewer resupply convoys does not have a direct monetary value associated. The specific monetary ROI will depend on the efficiency increase and fuel use reductions made as a result of the evaluation. The baseline assessment conducted on a Naval Mobile Construction Battalion (NMCB) at Fort Hunter Liggett in May 2013 showed that about 50% of the energy produced was used to heat or cool shelters and 31% of the energy produced was not used at all but was dissipated in load banks to prevent generators from wet stacking while running under light loading. If shelter heating and cooling efficiencies can be increased and if wasted energy can be captured and used for more beneficial purposes (or not produced at all) the ROI could be quite substantial.



Datalogger installed in trailer mounted Environmental Control Unit (ECU)

## **Technology Transition Documentation**

Transition Category 4 - to provide the Government the knowledge base or information to make decisions

The Baseline Camp Power Test Event Report NMCB-3 Field Training Exercise May 2013 is in draft form and available upon request.

## **Site Implementation**

NAVFAC EXWC conducted a baseline power and energy study during NMCB-3 Field Training Exercise at Fort Hunter Liggett. EXWC is currently working with the NAVFAC Expeditionary Programs Office (NEPO) to determine the time and place for the next baseline assessment (tentatively scheduled for Spring 2014).

## **Specific Applications**

The Expeditionary Facilities Tent Camp Energy Consumption Baseline will provide the information needed by higher echelons to make informed decisions regarding any potential changes to doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) to meet the Task Force Energy goals.



Dataloggers measuring conditions in a climate controlled tent

Contact: Mr. Rob Johnston, EXWC EX320, [robert.johnston4@navy.mil](mailto:robert.johnston4@navy.mil) 805-982-1305

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