



PM FSS

UNITED STATES ARMY
PRODUCT MANAGER
FORCE SUSTAINMENT SYSTEMS



Product Manager Force Sustainment Systems

Contingency Basing and Operational Energy Initiatives

PM Force Sustainment Systems
SUSTAINING WARFIGHTERS AWAY FROM HOME

LTC(P) James E. Tuten
Product Manager
PM FSS

Report Documentation Page

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Outline

- **The Problem**
- **Contingency Basing (CB) Objective**
- **Strategic Overview**
- **CB & Operational Energy (OE) Lines of Effort (LOE)**
- **Life Cycle of Contingency Bases**
- **Army Power and Energy**
- **Efficiency & Environment Initiatives**
 - **Base Camp Integration Lab (BCIL)**
 - **Ongoing Assessments at BCIL Energy Efficient Products**
 - **Energy Efficient Rigid Wall Structures & Tent Liners**
- **Questions**

The Problem

The Army's basing approach is undefined

Current solutions create:

- Unaffordable logistical burdens
- Increased risk to our soldiers
- Cause unacceptable loss of our combat manpower to staff and operate bases



Contingency Basing Objective

- Base Camps become a **Force Multiplier**
- Base Camp Operations **Reduce Casualties**
- Base Camps become a **Combat Multiplier**

- Reduced Resource Requirements
- Improved Operational Sustainability
- Better Functional Systems and System of Systems Management
- Improved Deployability
- Increased Modularity, Scalability, Adaptability, Reusability, Durability, and Reliability of components and system of systems
- Enhanced Survivability
- Improved Training



The Army will synchronize and integrate contingency basing policy and DOTMLPF solutions in JIIM environments to provide safe, secure, and largely self-sustaining capabilities to support full spectrum operations

Strategic Overview

Key Strategic Documents

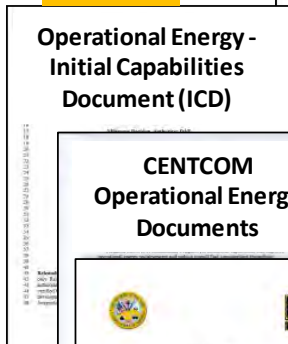


OE Campaign Plan



Army Campaign Plan

29 Jul 11



Army Energy Security Implementation Strategy (AESIS)

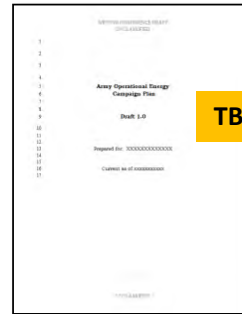
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CENTCOM Operational Energy Documents



Army Power and Energy White Paper

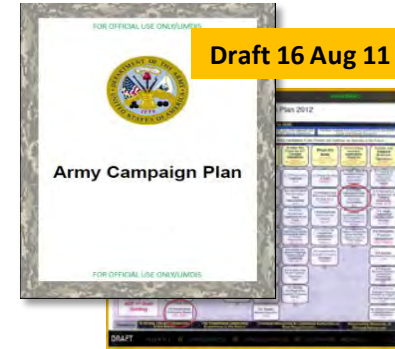
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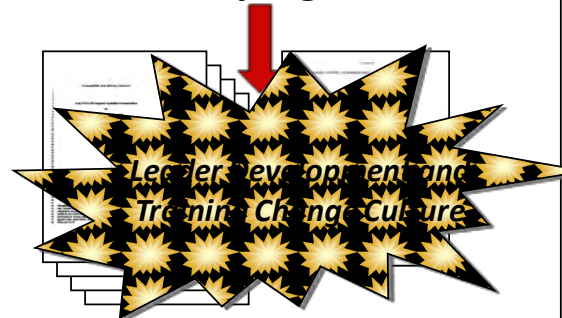


Draft v0.2, 30 Jul 11



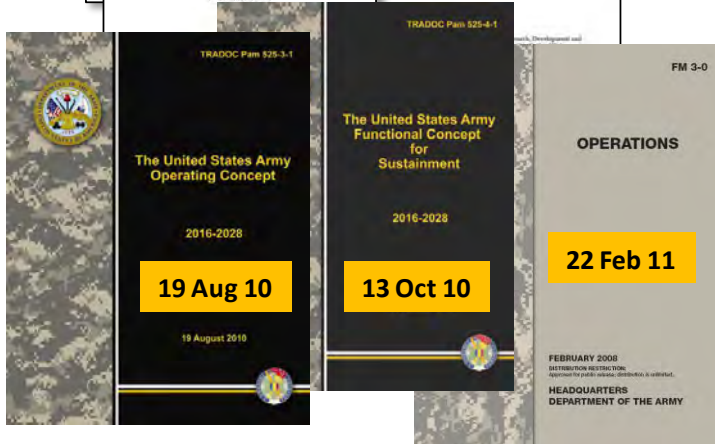
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CB Campaign Plan

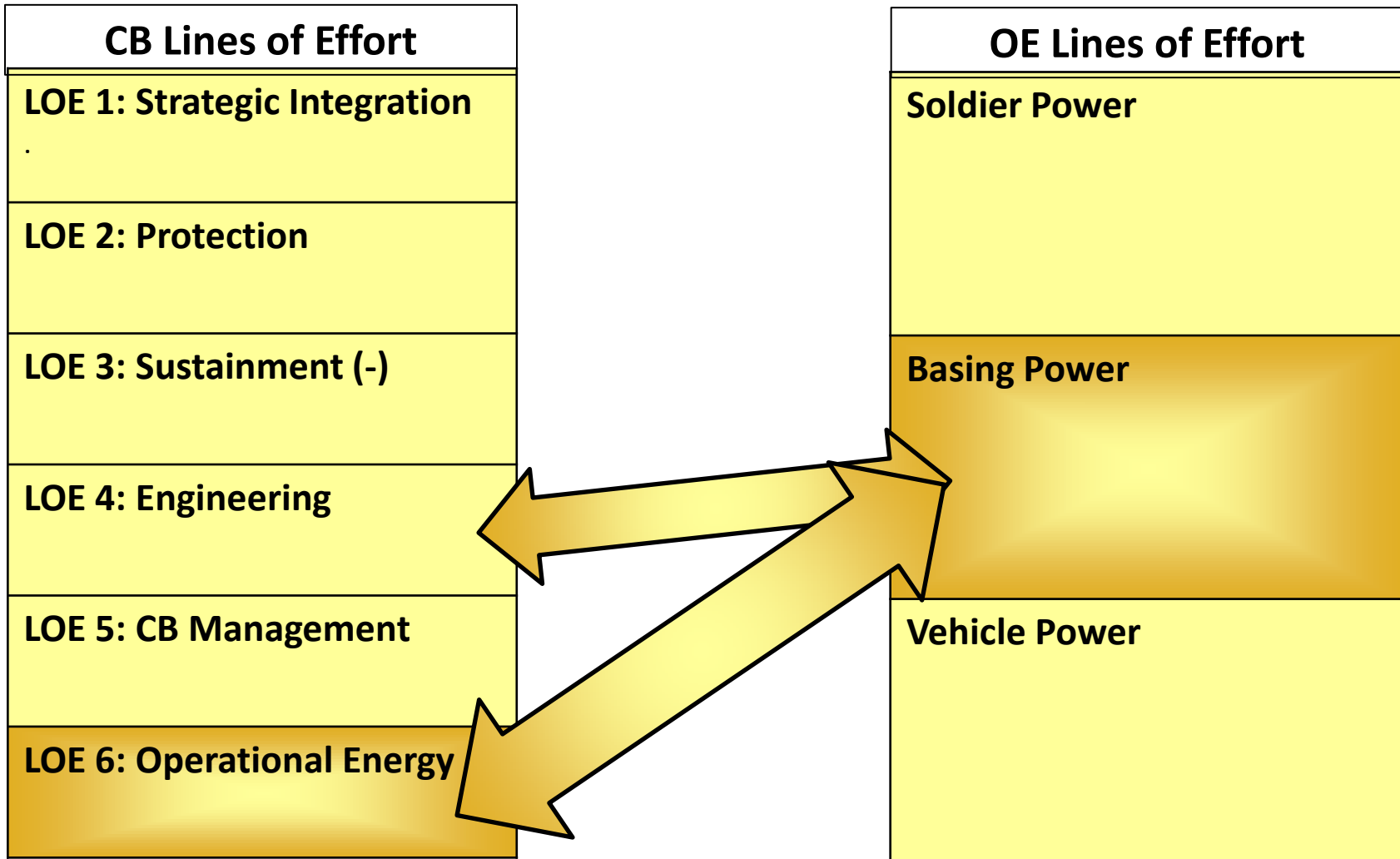


DICR's and Joint ICD

- Campaign Objective 2.0
Provide Facilities, Programs & Services to Support the Army and Army Families
- 2-8 Institutionalize Contingency Basing
- Campaign Objective 8.0
Improve Energy Security and Sustainability
- Major Objective 8-2
Enhance Operational Energy Effectiveness & Operational Sustainability



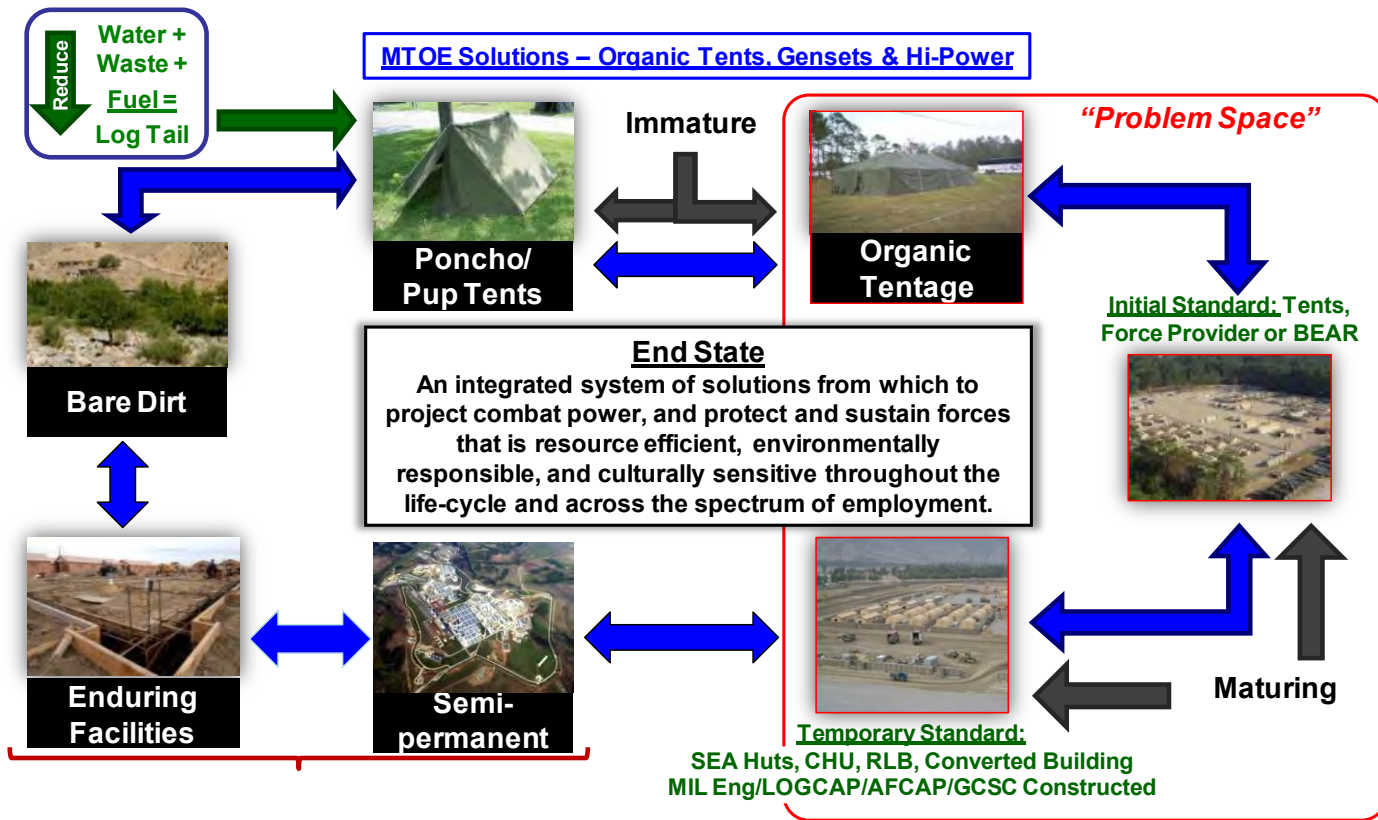
CB & Operational Energy (OE) Lines of Effort (LOE)



Life Cycle of Contingency Bases

Contingency Bases

- Provide Support for Sustained Operations
- Evolving locations
- Non-permanent
- Multi-Service
- Defined perimeter
- Established access controls



Army Power and Energy

Army Power and Energy Every Soldier An Energy Manager



Efficiency & Environment Initiatives

Fort Devens Base Camp Integration Lab (BCIL)

FORT DEVENS

BASE CAMP

INTEGRATION LAB

Allows for the integration and evaluation of immediate and future expeditionary Contingency Basing solutions providing data to substantiate and support the rapid fielding of solution sets that improve Energy & Resource Efficiencies for currently deployed and future force sustainment and basing systems.

AIRBEAM SHELTER SYSTEM

Integration of Insulating Liners and Shading Systems Reduce Cooling/Heating Requirements



SHOWER WATER REUSE SYSTEM (SWRS)

Treats Washwater for Reuse - Reduces Shower Water Demand by 75%



EXPEDITIONARY TRICON SYSTEM (ETS)

Employment of Efficient Packaging Techniques Allow for Transport of One 150-bulder Outpost on a Single C-17 Aircraft



ENERGY-EFFICIENT RIGID WALL SHELTERS

Evaluating Re-Locatable Energy Efficient Solutions for Long-Term Deployments



ULTRA LIGHTWEIGHT CAMOUFLAGE NET SYSTEM (ULCANS)

Reduces Cooling Requirements by Cutting Solar Loading



RIGHT-SIZED ENVIRONMENTAL CONTROL UNIT (ECU)

Integration of SmartKit, More Efficient ECUs will Reduce Power Demand and Ultimately Fuel Usage



60KW TACTICAL QUIET GENERATOR (TOG) MICRO-GRID

Efficiently Matches Power Production to System Loads Reducing Operational Energy Requirements



Efficiency & Environment Initiatives

Fort Devens Base Camp Integration Lab (BCIL)

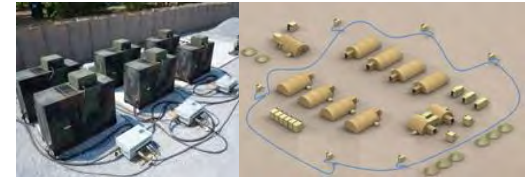
- **Goal:** Support the evaluation of current and future integrated expeditionary CB solutions, and provide systems data (technologies, training, installation, maintenance, etc.) to support rapid fielding of systems integrated into currently deployed, developmental, and future expeditionary basing solutions.
- **Benefits:**
 - Integrate and assess new technologies, materials and/or methods in a realistic environment
 - Enhances the Warfighter's ability to execute the mission by aligning troop to task ratios
 - Improves our ability to create efficiencies in power, water and waste management
 - Provides data to substantiate and support all aspects of contingency basing



Efficiency & Environment Initiatives

Ongoing Assessments at BCIL

- **Power Generation: Micro-Grids:**
 - Provide solutions that reduce the amount of fuel required to generate power for contingency bases
- **Right-Sized, Efficient Environmental Control Units and Heaters**
- **Solar Shades:**
 - Immediate energy savings
 - ULCANS now; fitted ULCANS coming soon
- **Energy-Efficient Rigid Wall Structures:**
 - Lightweight, deployable, rigid-wall and thermally insulated
- **Insulated Tent Liners:**
 - Optimize energy savings by increasing effectiveness of cooling & heating units



Efficiency & Environment Initiatives

Energy Efficient Rigid Wall & Tent Structures

- Goal: Improve system insulation and reduce the BTUs supplied for cooling & heating
- Currently assessing tent liners (R-values 4 to 6) and rigid wall shelters (R-values 20 to 30+)
- Intersection of Operational Energy & Contingency Basing initiatives

ENERGY EFFICIENT INITIATIVE: ENERGY EFFICIENT STRUCTURES

Investigating lightweight deployable, rigid wall, thermally insulated structures or alternative technologies for energy conservation and thermal efficiency.

These EES structures may replace soft walled shelters or other existing shelters employed in theater and throughout the world today.

IMPROVED ENERGY EFFICIENCY OF RIGID WALL STRUCTURES:

- Increase energy efficiency
- Containerized, Deployable, Re-useable, Expeditious
- Minimize logistics: weight, packing, & manpower to employ
- Assessing industry solutions at Ft Devens CB SIL



ENERGY EFFICIENT INITIATIVE: LINERS

Insulated Tents will Reduce Fuel Consumption by Helping to Maintain a Habitable Temperature Conditions within Army Deployed Shelter Systems



OPTIMIZE ENERGY SAVINGS:

Improve insulation to increase effectiveness of cooling units in summer & heating units in winter

EXTREME WEATHER INSULATED LINERS FOR TENTS:

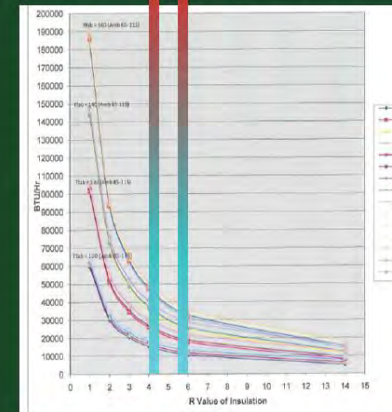
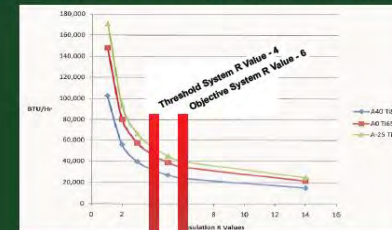
- Retain heat during winter
- Reduce external heat load during summer
- Reduce fuel consumption
- Testing liner systems with R values of 3 to 6



	Class of Insulation	System R Value Range	Weight Range (oz/sq yd)
MATURE: Ready To Field	Single Ply (fielded configuration)	2	4.5
	Non-Woven Composites (variety of batting materials)	2 to 4	10 to 17
	Bubble Packs	2.5 to 5.5	10 to 20
	Fiberglass Cloth, Batting & Film Composites	3 to 6	20 to 30
Developmental	Polyethylene Foams	2.5 to 3.5	7 to 11
	Cellular Panels	4 to 6	10 to 12

ENERGY EFFICIENT INITIATIVE: LINERS

TENT HEATING:
BTU/HR / R-VALUE VS. AMBIENT / INTERIOR TEMPERATURES



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PM Force Sustainment Systems
Sustaining Warfighters Away from Home



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PRODUCT MANAGER
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Questions

Product Manager

Force Sustainment Systems

Kansas Street

Natick, Massachusetts 01760

(508) 233-4071

FAX (508) 233-5554

<http://peocscss.tacom.army.mil/pmFSS.htm>

BACK-UP SLIDES

Way-Ahead: Testing & Evaluation

- **Rigid Wall Shelters – (May ~ Sep 2011)**
 - Determine the energy efficiency of various Rigid Wall Shelter alternatives.
- **Soft Side Shelter Energy Efficiency Short Test – (Sep 2011)**
 - Two week test to determine if solar shades and insulated liners reduce the solar load/temperature increase in soft side shelters. Additionally to determine if downsizing the standard FP ECU can comfortably sustain interior temperatures in the soft side shelters.
- **Soft Side Shelter Energy Efficiency Large Scale Test – (FY12)**
 - Side by side comparison test between various insulated liners to determine the best efficiency and pack out requirements to support Force Provider Air Beam Tents.
- **Base Camp Baseline – (Sep 2011)**
 - Determine, balance and calibrate the power, fuel and water usage requirements between the two 150 man camps within the Base Camp Integration Lab.
- **Micro Grid Test – (Sep 2011/Feb 2012)**
 - Determine the efficiency and energy (fuel) savings in adoption of a micro grid power grid within a 150 man base camp environment using 6 MEP 806B generators.

Way-Ahead: Testing & Evaluation (continued)

- **SAGE Photovoltaic - (FY12)**
 - Determine the effectiveness of photovoltaic system feeding to a commercial hybrid micro grid system
- **SAGE Micro Grid – (FY12)**
 - Test and evaluate the effectiveness of a commercial hybrid micro grid system with energy storage system (batteries) in providing support of base camp operations
- **SAGE Rigid Shelters – (FY12)**
 - Determine the energy efficiency/savings (fuel) of various rigid wall shelter systems in support of base camp operations as compared to soft side shelters.
- **SAGE Solar Hot Water – (FY12)**
 - Evaluate and determine energy savings (fuel) through use of a solar hot water production to supplement conventional water heat
- **Small Incinerators – (TBD)**
 - Evaluate the capability, safety, efficiency, and adaptability of small incinerators to dispose of solid waste within a base camps operations.