

US PACIFIC COMMAND MISSION AND ENERGY EFFORTS(U)



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This brief is:

UNCLASSIFIED



PACOM DOTMLPF Solutions to Energy Capability Gaps

Installation

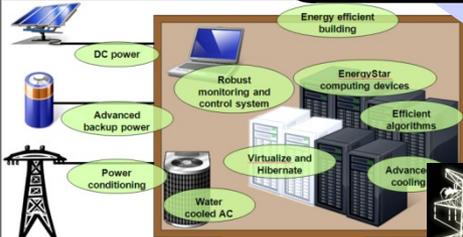
Operations

Local

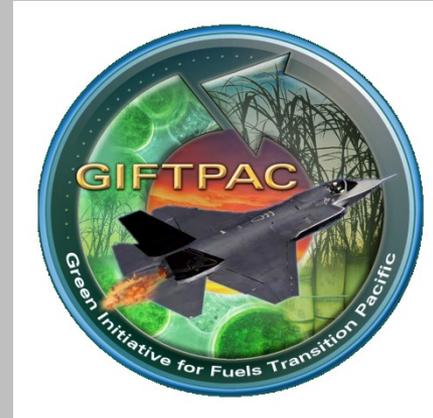
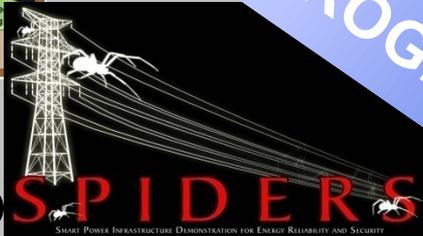
Energy Strategy in Cooperation with HI

Hawaii Hydrogen Initiative (H2I)

UH-PACOM MOU



E2C



PROGRESSION

Regional

AOR Installation Energy Strategy



OPLAN/
CONPLAN/Exercise
/Expeditionary
Modifications



PACOM Energy Strategy in Cooperation with the State of Hawaii

Vision Statement:

“USPACOM, in cooperation with the State of Hawaii, will develop key strategies and implement innovative solutions to harness clean, efficient, secure, renewable and sustainable energy for the benefit of the people of Hawaii and the Asia-Pacific Region.”

- **Strategic Goal:**
“Match or exceed the State of Hawaii goals.”

- **Five Parts**
 1. **Minimize dependence on fossil fuels**
 2. **Develop renewable energy resources**
 3. **Reduce greenhouse gas emissions**
 4. **Emphasize sustainability**
 5. **Exercise leadership**

- **Signed Oct 2009 by MG Steven Tom, PACOM Chief of Staff**



SPIDERS Overall Approach

STAIRWAY TO ENERGY SECURE INSTALLATIONS

Phase 1

JB PEARL-HICKAM CIRCUIT LEVEL DEMO

- Renewables
- Hydrogen Storage
- Hydrogen Fuel Cell
- Energy Management
- Cyber experiment & vulnerability assessment

Phase 2

FT CARSON MICROGRID

- Large Scale Renewables
- Vehicle-to-Grid
- Smart Microgrid
- Critical Assets
- CONUS Homeland Defense Demo
- COOP Exercise

Phase 3

CAMP SMITH ENERGY ISLAND

- Entire Installation Smart Microgrid
- Islanded Installation
- High Penetration of Renewables
- Demand-Side Management
- Redundant Backup Power
- Makani Pahili Hurricane Exercise

TRANSITION

- Template for DoD-wide implementation
- CONOPS
- TTPs
- Training Plans
- DoD Adds Specs to GSA Schedule
- Transition to Commercial Sector
- Transition Cyber-Security to Federal Sector and Utilities

CYBER SECURITY STRATEGY

RIGOROUS ASSESSMENT WITH RED TEAMING IN EACH PHASE

Green Initiative for Fuels Transition Pacific (GIFTPAC)



Pacific Region



GIFTPAC Objectives

- 1) Displace 25% of DoD fuel used in Hawaii. The fuel must be domestically produced, non-fossil, meet military specifications, be cost-competitive, and reduce price volatility.
- 2) Enterprise model inclusive of the local energy market that incorporates the agricultural, energy, environmental, government, industrial, and commercial sustainability objectives.
- 3) End state with sustainable ongoing competition among multiple commercial entities at many levels.

Strategic Imperatives

National: Dependence of U.S. economy and military upon petroleum. Need for new areas of technological innovation and economic growth for national competitiveness.

Regional: Allies and key nations similarly poor in fossil energy – opportunity to avert resource conflict. Remote and petroleum-dependent operating bases. Abundant clean and renewable energy resources.

Membership



Co-Sponsors: PACOM and Navy

DoD Members: ASD OEPP, DLA-Energy, DARPA, Defense Production Act Title III, AFCO, IMCOM PAC.

Other members: USDA, USDOE, EPA Office of Transportation AQ, State of Hawaii, Air Transport Association, Hawaiian Electric Co.



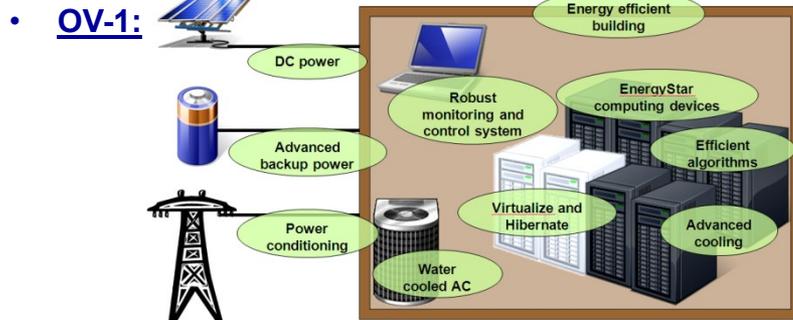
GIFTPAC Implementation Plan

- **President's Blueprint for Secure Energy Future (2 Mar 11)**
- **Navy-USDA-DOE \$510 million Defense Production Act Title III program**
 - \$170M Navy FY11-13 funds
 - \$170M USDA Commodity Credit Corporation (CCC) funds
 - \$170M DOE In-Kind Nat'l labs
- **PACOM a member of Integrated Product Team**
 - Participation funded by joint experimentation funds through FY12
- **RFI issued 31 Aug 11, responses due 30 Sep 11**



Energy Efficient Computing (E2C) JCTD FY12-13

- **Operational Problem:** Escalating energy costs and rapidly expanding demands on computational capacity and power are straining the ability of military data centers to deliver cost effective support to the warfighter in an environmentally sound manner.



Specifics:

- 100% tech refresh of all IT equipment
- Virtualize and hibernate to the greatest extent possible
- Adopt SW code changes for max algorithm efficiency
- Complete the recommendations in FEMP report
- Install voltage regulation and MERS power conditioning
- Convert to DC power
- Advanced efficient backup power
- Install water cooled AC system
- Add rooftop spray foam insulation
- Robust monitoring/control system

Year 2 & Beyond:

- Large-scale E2C conference on Maui to advertise results

Requirement:

- Make the MHPCC a test bed for energy efficient computing
- Minimize the energy consumption of the MHPCC through improvements in hardware, software, facility and electrical infrastructure
- Manage data center power/consumption efficiently
- Achieve data center Energy Star label

Competing Technology:

- Existing data centers with little or no server virtualization, hot/cold aisle sequestration, or facility energy efficiency measures
- Outsourced and un-metered data centers with no incentive to reduce energy consumption

Funding (\$Thousands):

ORG	FY12	FY13	TOTAL
OSD R&E (confirmed)	\$7,000	\$0	\$7,000
AF (confirmed)	\$1,100	\$500	\$1,600
Army (confirmed)	\$300	\$40	\$340
Navy (probable)	\$200	\$450	\$650
MHPCC (confirmed)	\$500	\$450	\$950
OSD/RFD (proposed)	\$1,230	\$1,305	\$2,535
TOTAL	\$10,330	\$2,745	\$13,075

Transformative Reductions in Operational Energy Consumption (TROPEC)



Return on investment for operational energy solutions depends on the operating environment

Management Structure	
Oversight Executive	PACOM
Operational Manager	PACOM
Independent Assessor	MARFORPAC
Technical Managers	Oak Ridge & LBNL

Conceptual Overview
<ul style="list-style-type: none"> • Test Bed for expeditionary technologies in tropical/ jungle environments to test for water/humidity integrity, corrosion resistance, biological activity resistance • Fit at Kaneohe MCBH, deploy at Cobra Gold, Balikatan, Crimson Viper series of exercise • Proposed for Asst SECDEF for Operational Energy Plans and Programs, Operational Energy Capabilities Improvement Fund (OECIF) • \$24.3M program value FY12-16, \$3.85M requested in FY12



Other PACOM Initiatives

- **Signed Hawaii Hydrogen Initiative**
- **PACOM-UH MOU**
 - Energy
 - Water
 - Humanitarian Assistance & Disaster Relief
- **APEC**
- **ADM Willard & Gov Abercrombie to meet 3 Jan**
 - Energy
 - Education
 - PACOM-UH Collaboration