

Blue Coast Small Business Procurement Event

**June 11 – 12, 2012
Baltimore, MD**



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Office of Naval Research
Department Head Sea Warfare & Weapons**



Revolutionary Research . . . Relevant Results

- **Energy Efficient Acquisition:** Evaluation of energy factors will be mandatory when awarding contracts for systems and buildings.
- **Sail the "Great Green Fleet":** DON will demonstrate a Green Strike Group in local operations by 2012 and sail it by 2016.
- **Reduce Non-Tactical Petroleum Use:** By 2015, DON will reduce petroleum use in the commercial fleet by 50%.
- **Increase Alternative Energy Ashore:** By 2020, DON will produce at least 50% of shore-based energy requirements from alternative sources; 50% of DON installations will be net-zero
- **Increase Alternative Energy Use DON-Wide:** By 2020, 50% of total DON energy consumption will come from alternative sources

Energy Systems S&T

	Fuel	Power Generation	Energy Storage	Distribution & Control	Power Loads
Maritime Systems	<p>Alternative Fuels Fuel Chemistry</p>	<p>Generators Fuel Cells GT Gen Set</p>		<p>Architectures Silicon Carbide High Power Switch Superconducting Cable</p>	<p>Electric Weapons Radars Propellers Hull Forms & Structures Motors & Actuators</p>
Unmanned Vehicles	<p>Alternative Fuels Fuel Chemistry</p>	<p>Fuel Cells Engines</p>	<p>Batteries Capacitors</p>		<p>Sensors Ion Tines USSV Ducted Fan</p>
Aircraft Systems	<p>Alternative Fuels Fuel Chemistry</p>	<p>... Combined into a Single Versatile Propulsion System for Naval Aviation</p>	<p>Batteries Capacitors</p>		<p>Reconfigurable Blades/ Blade Loading Aero Structures</p>
Expeditionary Systems	<p>Alternative Fuels Fuel Chemistry</p>	<p>APU's Engines PV Fuel Cells</p>			<p>Electric Power In-Vehicle Conversion Auxiliary Power Unit</p>
Shore Systems	<p>Alternative Fuels Fuel Chemistry</p>		<p>Grid Stabilization</p>		

Interagency Cooperation

Encourage Maximum Use of Renewable Energy



MEMORANDUM OF UNDERSTANDING
between the
DEPARTMENT OF AGRICULTURE
and the
DEPARTMENT OF THE NAVY

I. Purpose and Basis for this Memorandum of Understanding
This Memorandum of Understanding (Agreement) formalizes a relationship between the United States Department of the Navy (DON) and the United States Department of Agriculture (USDA) (hereinafter collectively referred to as "the Parties").

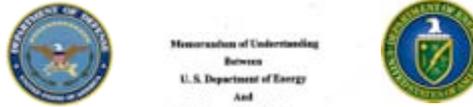
This Agreement establishes that the Parties agree to encourage maximum use of renewable energy, including outreach to other Federal, State, Local, and Tribal entities, as well as private entities, with the goal of providing technical assistance and financial products to these entities for the development of advanced biofuels and other renewable energy systems. The Federal Government, States, local governments, counties, utilities, private sector, non-governmental organizations, and other entities must all take steps to decrease nationwide energy use through the investment in and effective utilization of new, more efficient technologies, while also emphasizing the development of renewable energy projects.

Through this Agreement, the Parties will work together to support President Obama's initiative to reduce energy consumption derived from fossil fuels, and to increase energy production from renewable energy sources. Today, the United States depends on imported fossil fuels to meet over 60 percent of its energy needs. This dependence leaves the United States vulnerable to supply disruptions and highly volatile energy prices. Fortunately, the United States has abundant natural resources, including wind, solar, hydrokinetic, ocean thermal, and geothermal sources for electricity generation, and land for energy crops that can be refined into biofuels to meet both commercial and military transportation needs. The Parties are in agreement that developing the United States' renewable energy economy promises to make the United States a global leader in the production of sustainable, clean, and economically beneficial energy.

21 January 2010

Navy & Agriculture

Strategic Partnership to Enhance Energy Security



Memorandum of Understanding
Between
U. S. Department of Energy
And
U. S. Department of Defense
Concerning Cooperation in a Strategic Partnership to
Enhance Energy Security

I. Purpose

The purpose of this Memorandum of Understanding (MOU) is to identify a framework for cooperation and partnership between the Department of Energy (DOE) and the Department of Defense (DOD), hereinafter referred to as the Parties, to strengthen coordination of efforts to enhance national energy security, and demonstrate Federal Government leadership in transitioning America to a low-carbon economy. This MOU covers, but is not limited to, efforts in the areas of energy efficiency, renewable energy, water efficiency, fossil fuels, alternative fuels, efficient transportation technologies and fueling infrastructure, grid security, smart grid, storage, waste-to-energy, basic science research, mobile-deployable power, small modular reactor nuclear energy, and related areas.

II. Legal Authority

DOE enters into this MOU under the authority of section 646 of the Department of Energy Organization Act (Pub. L. 95-61, as amended, 42 U.S.C. § 7256). DOD enters into this MOU under the authority of DOD Instruction 4000.19 "Inter-Service and Inter-Governmental Support" August 9, 1995.

III. Background

In the 2010 Quadrennial Defense Review, the DOD expressed an intent to partner with other U.S. agencies to research, develop, test, and evaluate new sustainable energy technologies. The DOE aims to speed innovative energy and conservation technologies from laboratories to military end users, and it uses military installations as a test bed to demonstrate and create a market for innovative energy efficiency and renewable energy technologies coming out of DOE laboratories, among other avenues. The DOE is currently supporting a range of projects aimed at improving energy efficiency and renewable energy efforts across the military services.

July 22, 2010

Defense & Energy

Development and Support of a Sustainable Biofuels Industry



MEMORANDUM OF UNDERSTANDING
BETWEEN
THE DEPARTMENT OF THE NAVY
AND
THE DEPARTMENT OF ENERGY
AND
THE DEPARTMENT OF AGRICULTURE

On 10 March 2011, President Barack Obama directed the Parties to work with private industry to create advanced drop-in biofuels that will power both the Department of Defense and private sector transportation throughout America.

This Memorandum of Understanding (MOU) is between the Department of the Navy (DON), Department of Energy (DOE), and the Department of Agriculture (USDA), hereinafter referred to as the Parties, is entered into to initiate a cooperative effort by the Parties to assist the development and support of a sustainable commercial biofuels industry and to foster mutual cooperation of the parties to achieve the goals and objectives further described herein.

4. Background

A robust advanced drop-in biofuels market is an essential element of our national energy security. Energy security for the Nation requires unrestricted, unimpeded access to affordable energy sources to power our economy and our military. Traditional fossil-fuel based petroleum is derived from crude oil that has increasingly challenging market and supply conditions. Chief among these is limited, unevenly distributed, and concentrated global sources of supply. America's growing dependence on foreign sources of crude oil undermines foreign policy objectives and comes at an ever increasing impact to the Nation's trade balance. In recent

June 2011

Navy, Energy & Agriculture

Passenger Ground Vehicles

Non-tactical Hydrogen Powered General Motors Fuel Cell Vehicles and Hydrogen Infrastructure

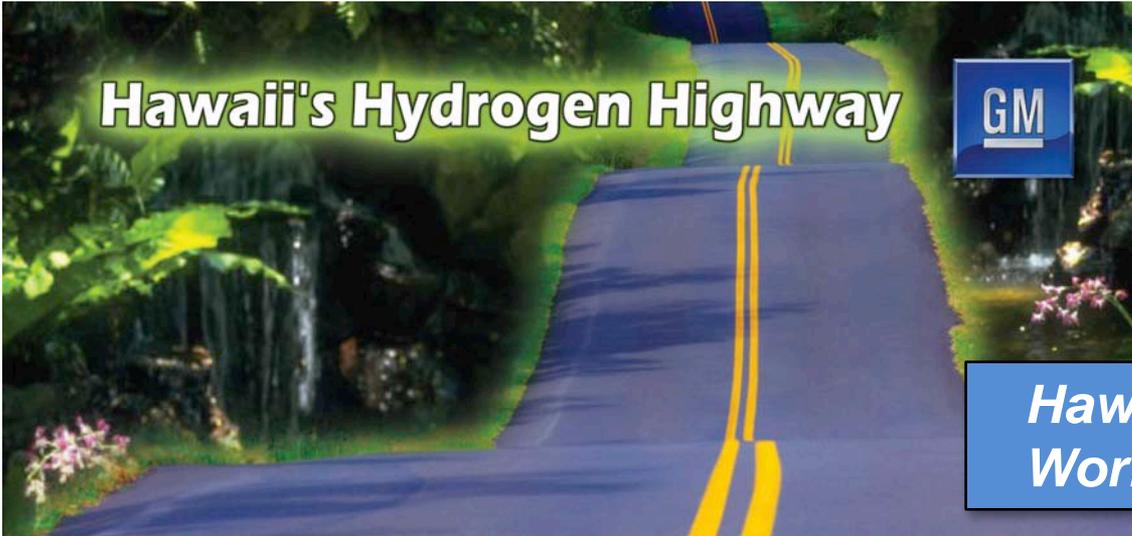
- Evaluation ongoing at Camp Pendelton and by MARFORPAC in Hawaii
- Coordinating with other Services and DoE



MARFORPAC & Marine Corps Base Hawaii



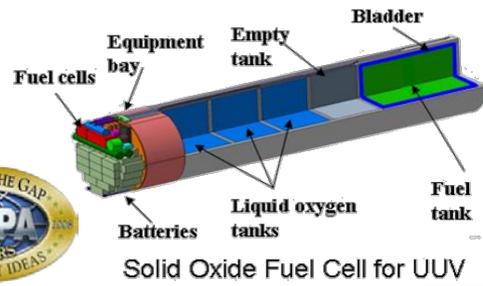
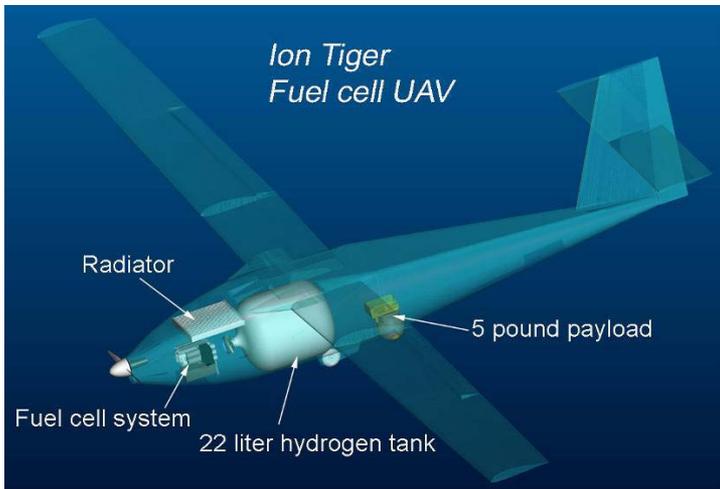
Marine Corps Base Camp Pendleton



Hawaii Advanced Vehicle Working Group (HAVWG)



Long endurance, Unmanned Air Vehicle (UAV) power (26hr flight Nov 2009)



Long endurance , air independent power systems for Unmanned Undersea Vehicles (UUV)

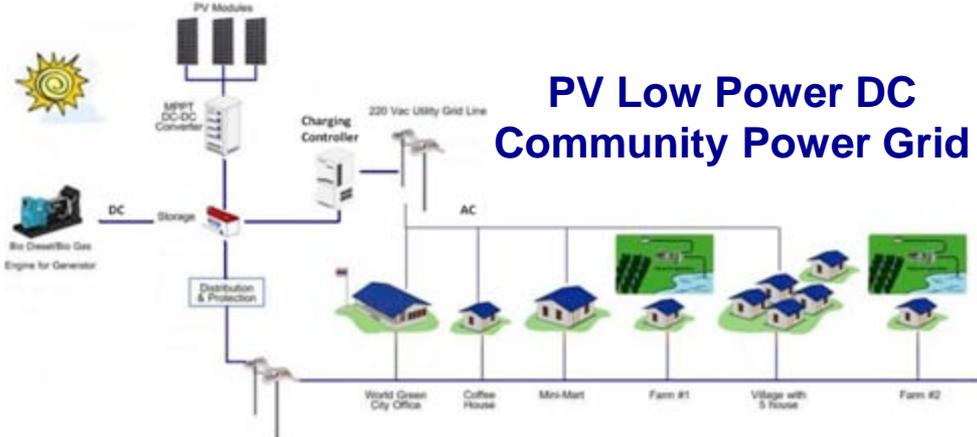


Expeditionary Waste Disposal

Micro Auto Gasification System (MAGS)

- Terragon Environmental Technologies, Inc gasification system
 - ❖ Treats organic waste, plastics, chemicals, wood products, and bio-hazardous waste
 - ❖ Processes 1,500 lbs daily [~1,000 Marines]
 - ❖ Waste heat available for other uses – hot water, space heating
 - ❖ Uses fuel source to start process – then self-sustaining
- ONR developed for expeditionary operations
- ONR-MARFORPAC evaluating in Hawaii





Program Description

- ***Reduce energy costs and increase energy security at Department of the Navy (DoN) facilities by accelerating the introduction and adoption of advanced energy systems and equipment.***
- ***Conduct advanced technology demonstrations to evaluate emerging energy technologies using Navy and Marine Corps facilities as test beds.***
- ***Collect and analyze data to evaluate the performance and reliability of energy technologies under various environmental and operating conditions.***
- ***Derisk new energy technologies to help enable their acquisition and adoption.***

ESTEP Program Structure

SPAWAR

Program Management
Info/Network Security Expertise
Technical & Business Training

***Incorporate Veteran
& Wounded Warrior***

***ONR Oversight &
Funding***



NPS

Energy ROI Research
Student Project Participation
Technical & Business Education

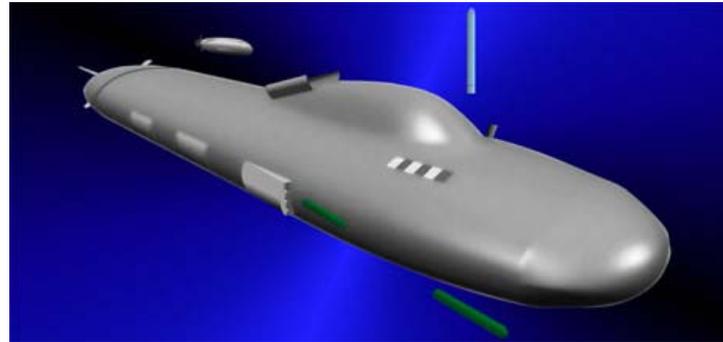
NAVFAC/NFESC

Project Management
Facility Expertise
Technical & Business Training

"And I'm proud to announce that the Department of Defense, working with us, the world's largest consumer of energy, will make one of the largest commitments to clean energy in history -- with the Navy purchasing enough capacity to power a quarter of a million homes a year." - President Barack Obama (State of the Union Address, 24 Jan 2012)

"As we recover from this recession, the transition to clean energy has the potential to grow our economy and create millions of jobs - but only if we accelerate that transition. Only if we seize the moment." - President Barack Obama (White House Website, 29 Jan 2012)

...Superiority



...Survivability



...Affordability



Materials, Power and Systems for Surface,
Sub-Surface Platforms and Sea Weapons