



**Fleet Energy Training Event 2014**

***Commander, Naval Air Force, Atlantic***

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Naval Station Norfolk

25 Mar 2014



# Agenda

- CVN Energy Conservation
- Aviation Fuel Usage
- Air ENCON Program Overview
- Beta Test
- Current Focus
- Your Role
- Questions



# Aircraft Carrier Energy

- At sea, Aircraft Carriers are powered by an alternative energy source – Nuclear
- Inport, Aircraft Carriers use pier electrical service and shore steam to power shipboard equipment





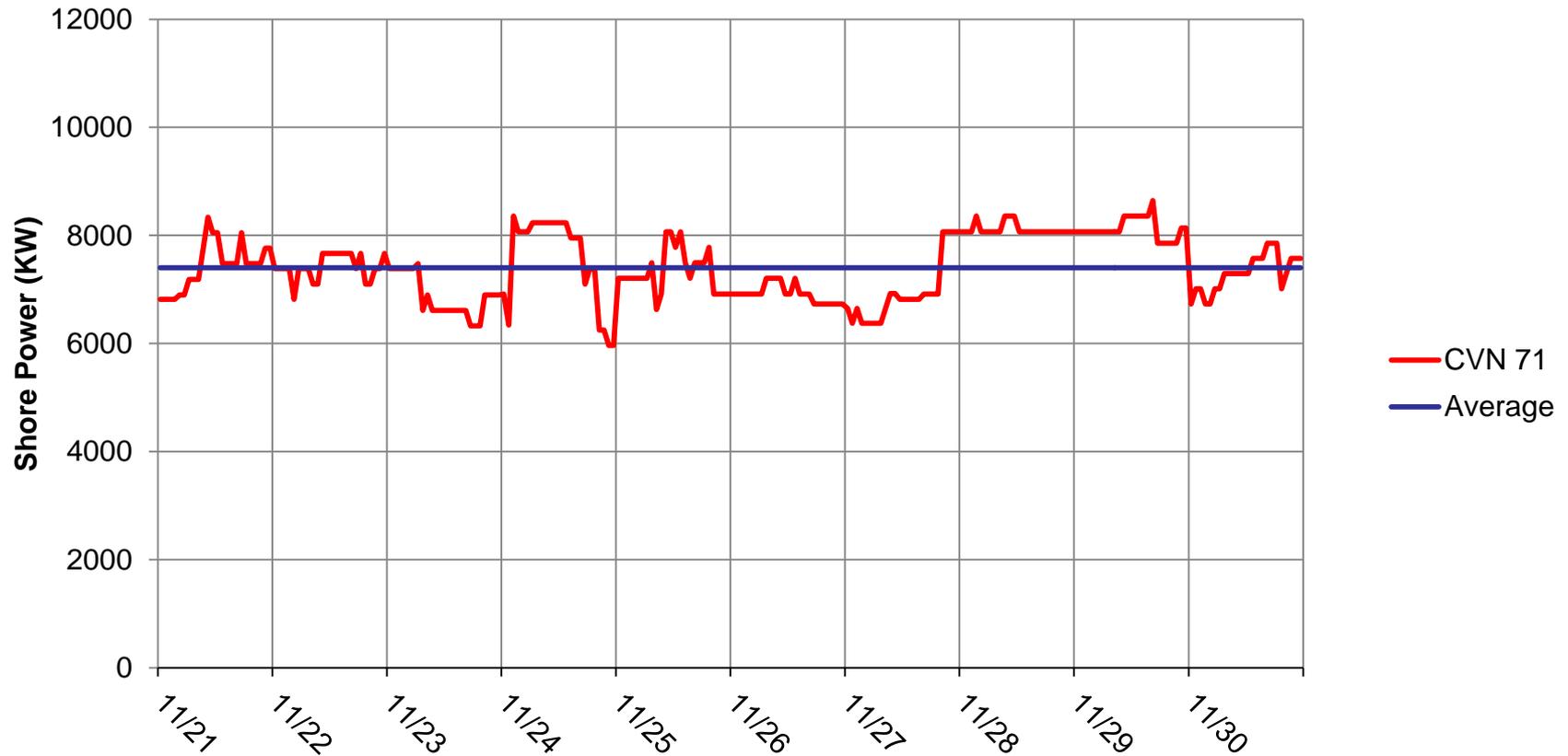
# CVN 68 Class Energy Conservation

- Bulbous Bow installed on CVN 76 and follow-on ships
- BioFuel: 50/50 blend of JP-5/BioFuel authorized for use in CVN Emergency Diesel Generators
- Simulators used to train Bridge and Propulsion Plant Watchstanders
- Environmental Protection and Energy Conservation (EPEC) Award added to Battle “E” score



# Aircraft Carrier Inport Energy Profile

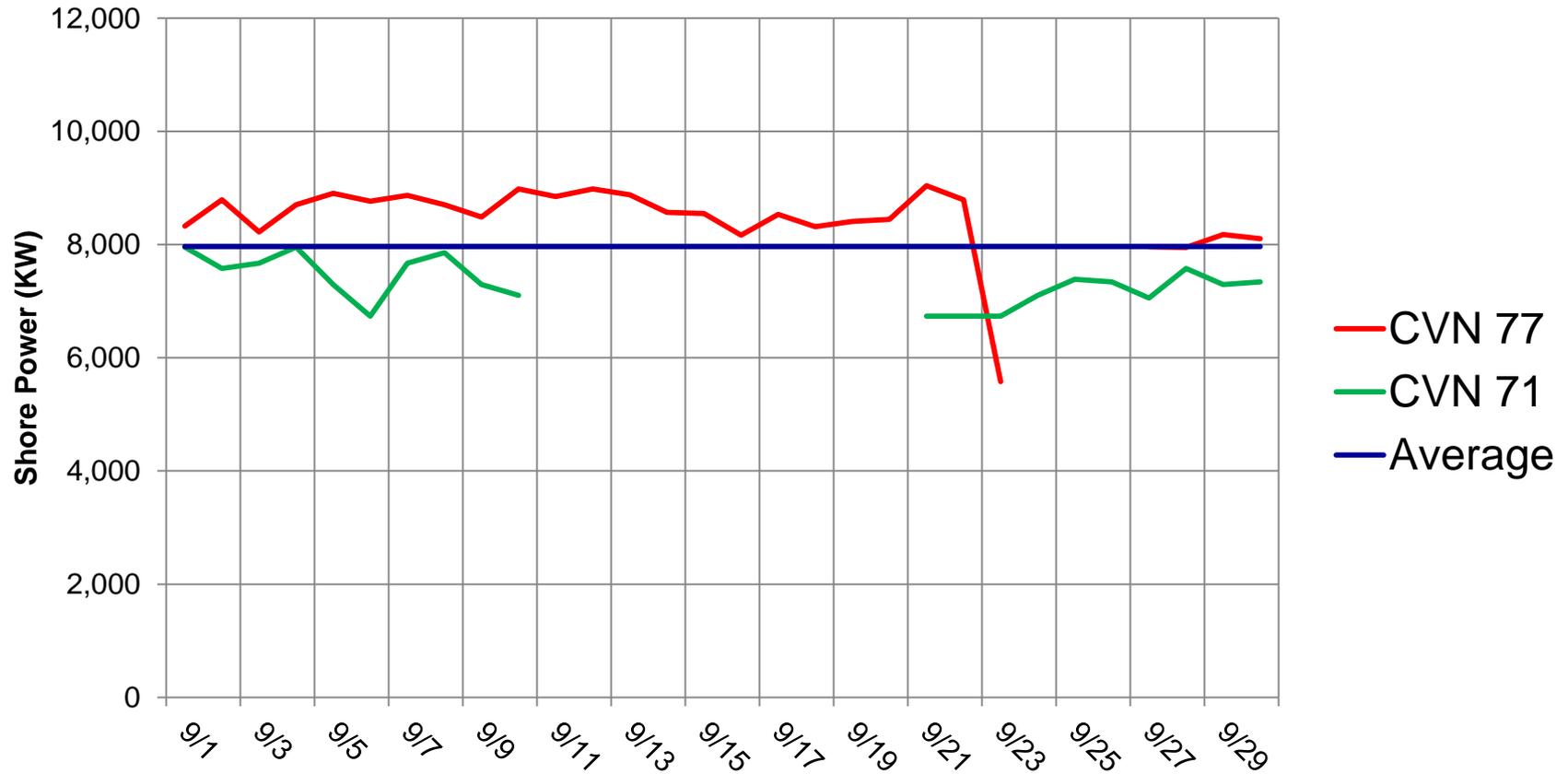
## CVN 71 Power Consumption (11/20-11/30)





# Aircraft Carrier Inport Energy Profile

## Norfolk Aircraft Carrier Inport Energy Consumption (Sep 2013)





# CVN 78 Class Energy Conservation

- Catapult steam, service steam and steam turbine driven auxiliaries eliminated
- Electric water heaters installed
  - Reduced maintenance load and reduced ships weight by eliminating a piping network that covered the entire ship
- High efficiency fluorescent T-8 lighting
  - Produces more light than legacy T-12 with reduced energy consumption

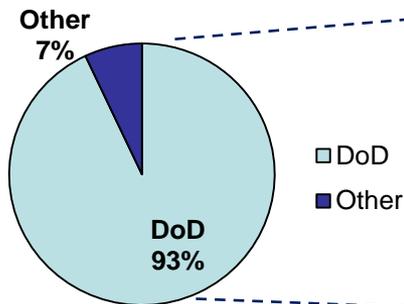


# Aviation Fuel Usage

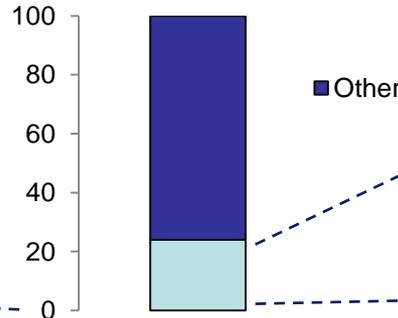
## Navy fuel consumption by numbers

- The U.S. consumes 7.1 billion barrels of liquid fuel per year, ~25% of world demand, while the Federal Government accounts for about 2%.
- Naval Aviation accounts for about 12 million barrels annually.

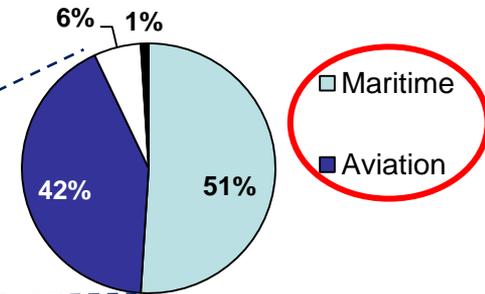
Total USG Liquid Fuel Use



DoD Fuel Use



US Navy Fuel Use by Function



- For every \$1 rise in the price of petroleum, the Navy’s fuel bill increases by \$31 million per year.

**SMALL INCREMENTAL IMPROVEMENTS MAKE A DIFFERENCE!**



# Cost Per Hour (CPH)

... for a typical Air Wing



**Fuel (FF)**  
100% variable cost.  
Reduce flying,  
reduce cost.

**Consumables (FM)**  
Items used to sustain or repair aircraft. Reduce flying, reduce most cost. Residual cost incurred as periodic maintenance is performed.

**Repairables/AVDLR (FA)**  
Aircraft components that are repaired and returned to the supply system. Reduce flying, reduce costs. Residual cost incurred as periodic maintenance is performed.

**Contracts (FW)**  
100% fixed cost.  
Labor contracted to sustain aircraft.  
Cost is not recoverable and is lost in year of execution.

T/M/S	CPH
EA-6B	\$10,651
F/A-18C	\$9,658
F/A-18E	\$9,613
F/A-18F	\$9,537
EA-18G	\$9,450
E-6B	\$6,053
P-3C	\$6,011
E-2C	\$5,941
C-2A	\$5,878
EP-3E	\$5,284
MH-60R	\$3,288
MH-60S	\$2,046

Average CPH

# Leadership Guidance



14 February 2013

## MEMORANDUM FOR DISTRIBUTION

From: Commander, Naval Air Forces  
Deputy Commandant for Aviation, USMC  
Commander, Naval Air Systems Command

Subj: NAVAL AVIATION ENTERPRISE (NAE) STRATEGIC GUIDANCE, 2013-2014

1. **Problem Statement.** Operational demand for Naval Aviation forces for the foreseeable future will hold steady or increase because of the value these forces bring to the fight. Juxtaposed with that fact, Naval Aviation is operating in a resource constrained environment where we must balance the needs of the Navy and Marine Corps with the realities of a budget reflecting the country's deficit and rising debt. Naval Aviation faces an estimated \$1.5B Operations and Support (O&S) funding shortfall between FY13 and FY19. It will take a 15% reduction in total O&S costs to close this gap. An effort of this magnitude must include a dynamic O&S cost reduction strategy, a renewed emphasis on "cost-wise readiness" and a demanding "should cost" perspective across the NAE. This gap closure strategy must address not only Flying Hour Program cost but all elements of O&S cost.

2. **Action.** Taking the following NAE stakeholder actions to find/fix readiness degraders while concurrently reducing cost will be critical to the success of Naval Aviation:

a. Reduce the overall Flying Hour Program cost per flight hour (CPFH) across all Type Model Series (TMS) by 10 percent. An aggregate Execution Index (EI) of 1.1 across all TMS platforms is the goal. Specific TMS CPFH goals will be established according to the TMS life cycle position, with newer TMS platforms having the most potential to realize CPFH savings. These

a. Reduce the overall Flying Hour Program cost per flight hour (CPFH) across all Type Model Series (TMS) by 10 percent. An aggregate Execution

Flying Hour Program cost management strategies to develop a methodology for

- NAE Strategic Guidance, 2013-2014 called for a reduction in the Flying Hour Program cost per flight hour of 10%.



# Air ENCON Background

- Task Force Energy ( TFE ) established the Aviation Working Group ( AWG ) to study and identify fuel-saving opportunities through the NAE
  - AWG consisted of active-duty aviators, support personnel and civilian members of the NAVAIR team
  - Studied existing fuel practices (commercial & military), evaluation of potential operations and interviews with current aviators
- AWG proposed the Aviation Energy Conservation ( Air ENCON ) program, modeled on Surface Warfare community's Incentivized Energy Conservation ( i-ENCON ) program
  - Defines roles/responsibilities, structure, metrics, awards and incentives, initial fuel-saving procedures to target, and implementation schedules

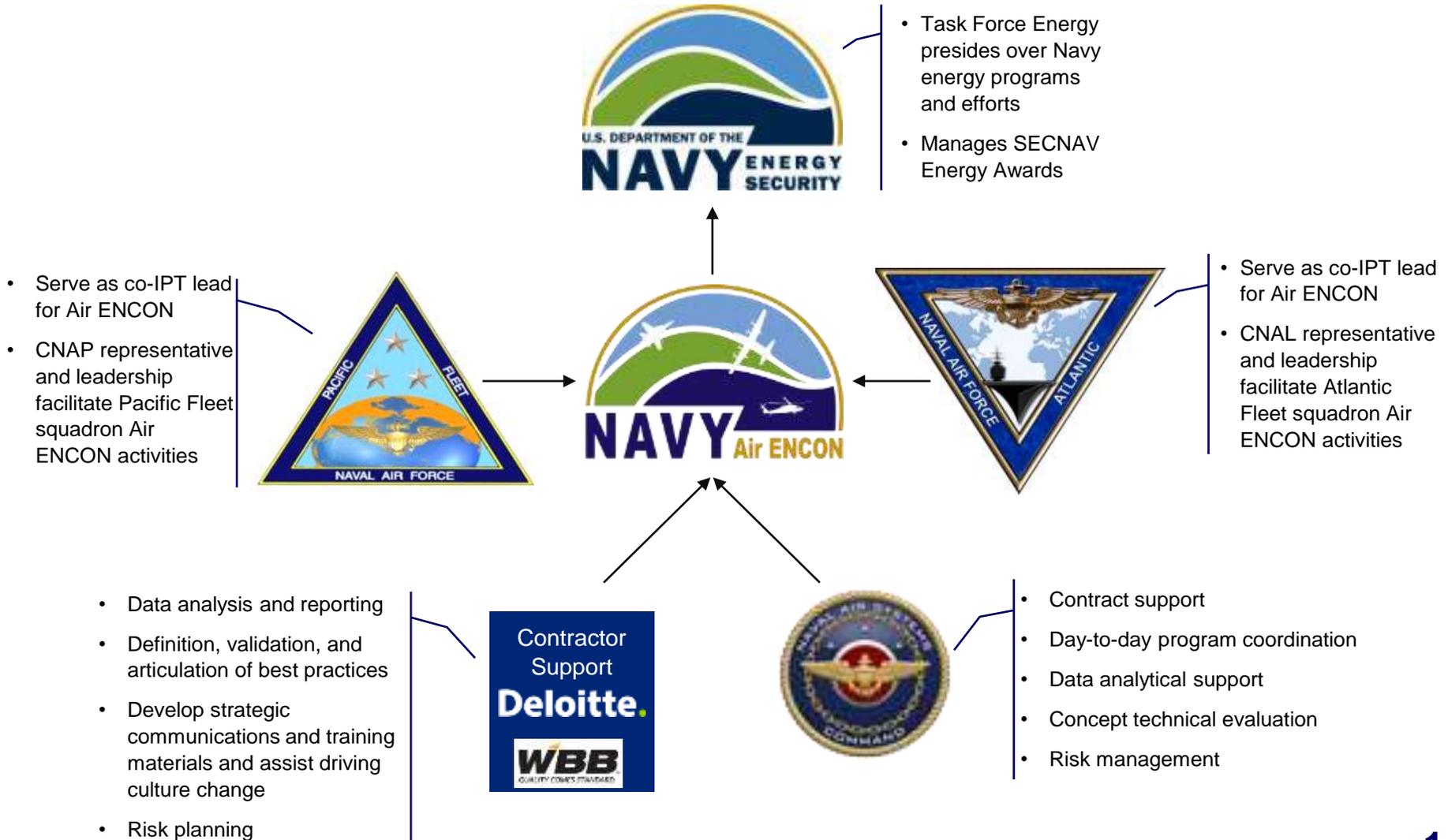
# Air ENCON Program Overview

## Objective

- Establish a Naval Aviation Enterprise-wide program that:
  - Reduces reliance upon petroleum;
  - Promotes a culture of energy awareness;
  - Identifies and communicates best practices;
  - Eliminates inefficient cultural paradigms;
  - Rewards innovation and most efficient utilization of energy resources

**Without negatively impacting safety, mission or readiness**

# Air ENCON IPT Primary Stakeholders





# Beta Test Leadership Guidance

## Air ENCON Beta test launch 2013

- In 2013, the Air ENCON program launched a beta test for 19 squadrons to begin real-time evaluations of fuel-savings practices.
- VADM Buss and RADM Branch distributed communications encouraging support for the beta test.

From: Buss, David H VADM CNAF/CNAP, N00  
Sent: Wednesday, October 31, 2012 13:01  
To: Shannon, Thomas K RDML CCSG-1, N00; LaBranche, Rick CAPT CVW 17 CAG, N00; Winter, Jeffrey S CAPT CVW-17, DCAG; Black, Mark E CAPT CSFWP, Commodore; Chatfield, Shoshana S CAPT Commodore, N00; Danehy, Matthew CAPT COMACCLOGWING, Commodore N00; Deal, Steven E CAPT CPRW-10, Commodore N00; Bouye, David W CAPT CHSMWP, N00; Springett, John P CAPT CVWP, Commodore N00  
Cc: Branch, Ted N RADM COMNAVAIRLANT, N00; Haas, Paul A CAPT COMNAVAIRLANT, N01; Hewlett, Ben CDR COMNAVAIRLANT, N001; Byers, Gregory D O-5/CDR VAQ-134 CO, B2642 R261; Garcia, Fernando CDR VFA-22, CO; Halloran, David B CDR VFA-94, CO; Sicola, Craig C CDR VFA-113, CO; Soltero, Gabe CDR HS-15, CO; Revery, Paul CDR VP-1, B410 R207B; Jones, Russell W CDR VAQ-139, CO; Bucey, William H CDR HSM78, CO; Clemons, Dwight L CDR VAQ-139, CO; Weitzel, Richard H CDR HSM78, N0; Hill, Richard B CDR Executive Officer, VFA-22; Kelley, Roy CAPT CNAP, N01; Meier, John F CAPT CNAP, N40; Long, Kevin D CDR CNAP, N0; Quinn, Daniel T LCDR CNAP, N3/N40  
Subject: Aviation Energy Conservation Program (Air ENCON) Beta Test Launch

Aviation Leadership,

I am sending you this email to encourage your support for the upcoming beta test launch for the Aviation Energy Conservation Program (Air ENCON).

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Energy is an increasingly vital resource to the Navy. COMNAVAIRPAC Aviation Energy Conservation Program (Air ENCON) is a program that will help the Navy use energy as efficiently as possible. The Navy has the fuel it needs with and supports the Vision, and has the

From January 2013 through December 2013, we will be conducting a



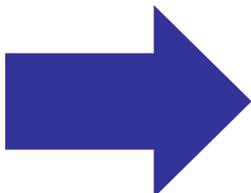
# Air ENCON Current Focus

- Data Analysis
- Standard Operating Guidance (SOG)
- Fleet Communications
- Beta Test CY13, Fleet Rollout 01 Apr 2014



# Air ENCON Current Focus - Data Analysis

- **ACES:** Summarizes all Budget Operating Report (BOR) data by squadron, providing executed flight hours and fuel consumed.
- **FHP:** Tracks allocated flight hours and R+ month in a Fleet Readiness Training Plan (F RTP) phase.
- **CAVTS:** A web-tool process used to identify future FHP cost drivers, track actual execution. Utilized for SOG development.



U.S. Navy Air ENCON Program

### Air ENCON Squadron Fuel Efficiency Profile

Squadron: \_\_\_\_\_ Reporting Period: Apr - Jun 2013

**Squadron Overview**

		Historical (24 Months)	Current (FY13Q3)
VAW-36	Consumption (Gallons/Squadron/Quarter)	162,977	119,219
	Burn Rate (Gallons/Flight Hour)	276	442
	Flight Hours Budget Execution (%)	100%	100%
E-2C,TE-2C Baseline	Consumption (Gallons/Squadron/Quarter)	175,764	122,947
	Burn Rate (Gallons/Flight Hour)	288	280
	Flight Hours Budget Execution (%)	100%	100%

Maximum considered flight hour budget execution, excluding Deployed Phase is 100%

**U.S. DEPARTMENT OF THE NAVY ENERGY SECURITY**

**Burn Rate Trend:** Deteriorating

Based on fuel efficiency, is ranked 8 out of 10 E-2C,TE-2C squadrons.

**Burn Rate by Readiness Phase – (FY10Q3 – FY13Q3)**

Phase	VAW-36	E-2C,TE-2C Average	Delta by FHP
Basic	385	385	-1.0%
Deploy	335	365	-6.7%
Informal Ops	417	413	-0.9%
Maintenance	410	412	1.9%
Sustain	440	411	7.3%
Other	374	374	N/A

\*Data\* reflects differences between a squadron and the-THIS by FHP Mode for past 24 months.

**How YOU Can Improve Fuel Efficiency**

There are several proven concepts for increasing aviation fuel consumption efficiency within the NAF. Please consult the Air ENCON fuel efficiency concepts detailed at: <http://www.navy.mil/navalairforce/aircon/navalairforce/aircon/aircon.html>

For questions regarding these concepts, or to share ideas for additional fuel efficiency concepts, please contact the Air ENCON Program Team: [aircon@navalairforce.mil](mailto:aircon@navalairforce.mil)

More Information Will Be Provided in the Aviation Breakout Session



# Air ENCON Current Focus - SOGs

- Two SOGs approved, Six in Pipeline
  - Fuel Truck and Hot Pit Refueling - **APPROVED**
  - Short-Cycle Mission and Recovery Tanking (SMART) - **APPROVED**
  - Optimum Climb Profile
  - Continuous Descent Profile
  - Optimum Thrust T/O (Land Based)
  - Less-Than-All Engine Taxi (Land Based)
  - Base-Wide Takeoff Time Allocation
  - Configuration Optimization

More Information Will Be Provided in the  
Aviation Breakout Session



# Air ENCON Current Focus - Approved SOGs

- Reduce Fuel Dump
  - Short-Cycle Mission and Recovery Tanking (SMART)
  - Estimated savings of 15,000 gallons of fuel per eight event fly day
- Increase Truck Refueling
  - Replace “hot pit” refueling with “cold” truck refueling for fixed-wing aircraft
  - NAS Oceana study estimated 245,000 gallons in savings per year on-base



More Information Will Be Provided in the  
Aviation Breakout Session



# Air ENCON Current Focus - Fleet Communications

- Website
  - <http://airencon.dodlive.mil>
- N40 SharePoint Site
  - <https://cpf.portal.navy.mil/sites/cnap/N40/encon/default.aspx>
  - CAC enabled
- Quarterly Beta Squadron Reports



**Aviation Energy Conservation Program (Air ENCON)**

**Mission**

Relative Energy Conservation Program (RECP) is a Navy Air Force-wide program designed to optimize fuel consumption for fleet aircraft while ensuring the highest level of flight safety and mission readiness.

**Standard Operating Guidance Documents  
(and their applicability to each Type-Model-Series (TMS))**

Standard Operating Guidance (SOG)	Operational Fixed Wing Aircraft										Operational Rotary Wing Aircraft			
	C-2A	C-2B	C-2C	C-2D	C-2E	C-2F	C-2G	C-2H	C-2I	C-2J	UH-1E	UH-1H	UH-1Y	UH-60M
SOG 1000	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1001	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1002	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1003	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1004	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1005	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1006	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1007	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1008	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1009	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SOG 1010	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

More Information Will Be Provided in the Aviation Breakout Session



# Your Role

Keep an open mind and consider how to achieve SECNAV objectives:

- Stay engaged
- Provide feedback on the Air ENCON program
- Provide innovative suggestions for future energy conservation efforts
- Implement new energy conservation practices





**QUESTIONS?**