Department of Navy's Biofuel Demand

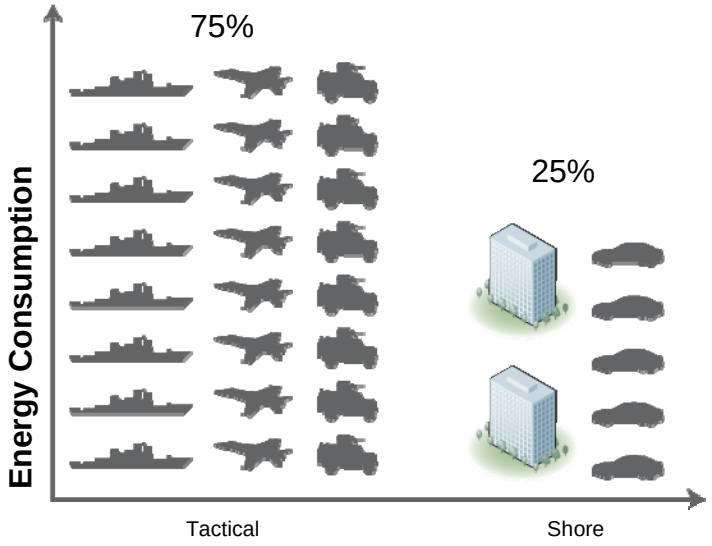
Prepared for:

Renewable Energy and Biomass Field Day

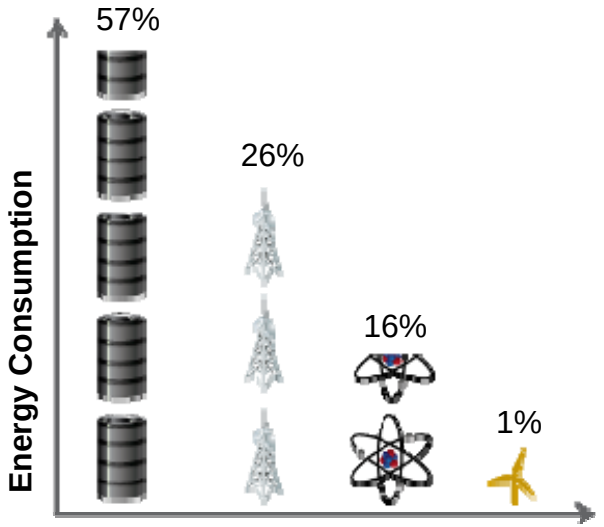
November 16, 2010

Naval Energy Profile

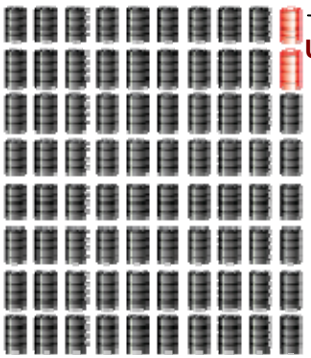
Overall Energy Consumption

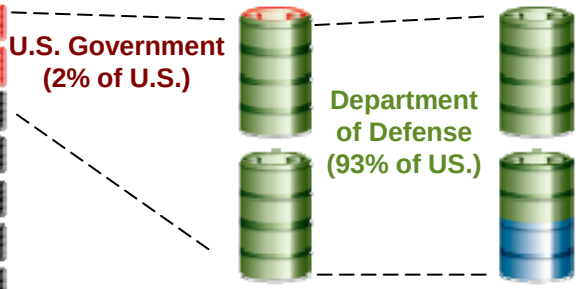


Overall Energy Sources

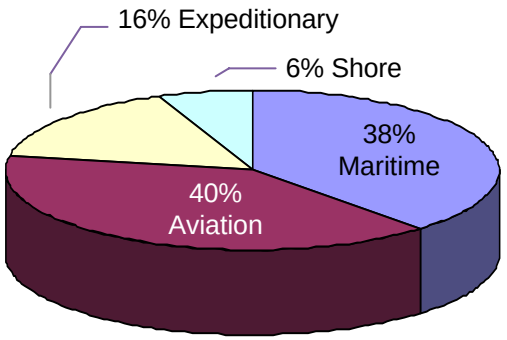


U.S. Petroleum Consumption





Navy Petroleum Consumption in Perspective



SECNAV Energy Goals

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, at least 50% of shore-based energy requirements will come 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

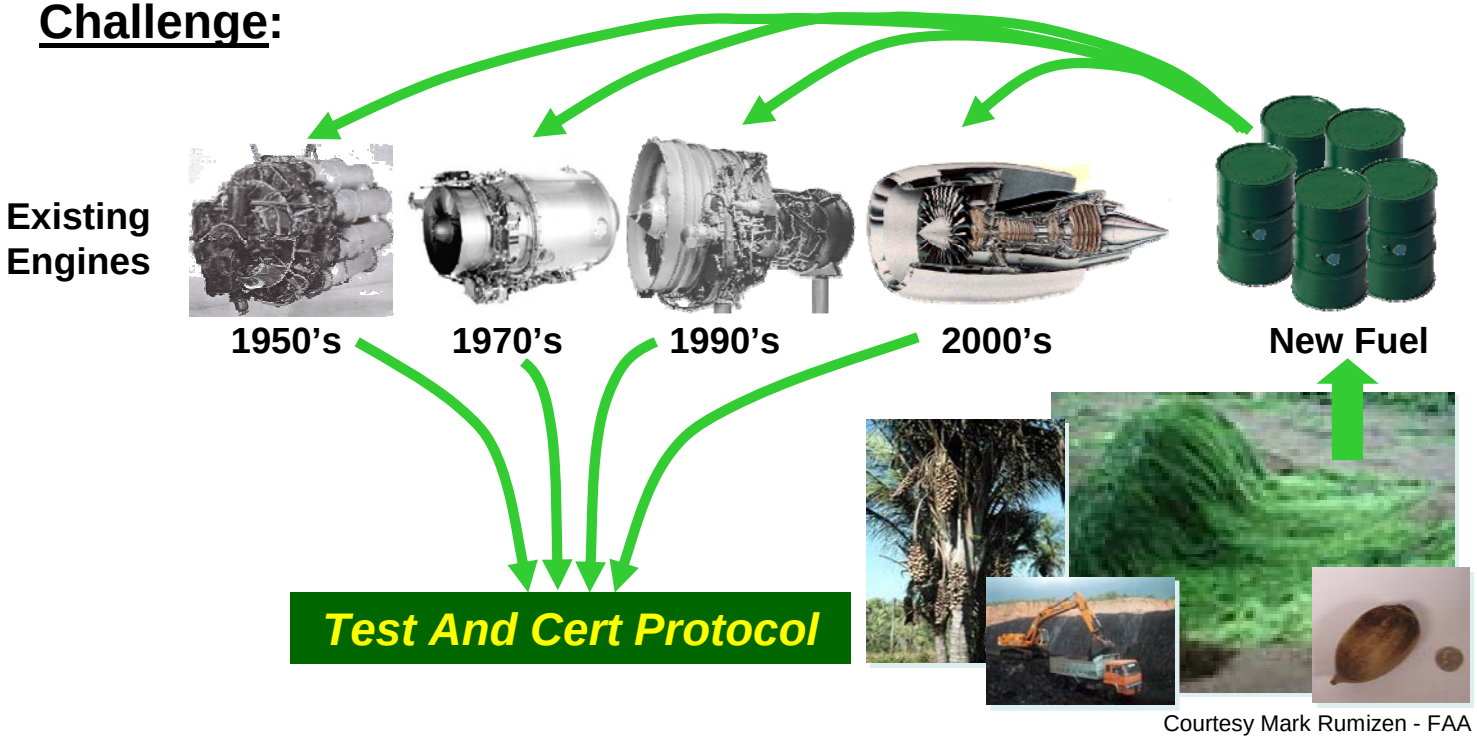
Alternative Fuels

Assumption:

Alternative fuel must be a drop-in replacement, invisible to the operator

- ✓Meets fuel performance requirements
- ✓Can be mixed or alternated with petroleum fuel
- ✓Requires NO change to aircraft or ship
- ✓Requires NO change to infrastructure

Challenge:



Courtesy Mark Rumizen - FAA

Great Green Fleet Certification

Ship Progress



7m RHIB 50/50 Algal Biofuel Test

RCB-X

501K

YP Boat

LCAC

CVN EDG (JP-5)

National Defense Test Ship

Green Strike Group Demonstration

FY2010 | FY2011 | FY2012 | FY2016

F/A-18 Flight Test Completed

MH-60S

CV-22

MQ-8B

EA-6B

AV-8B

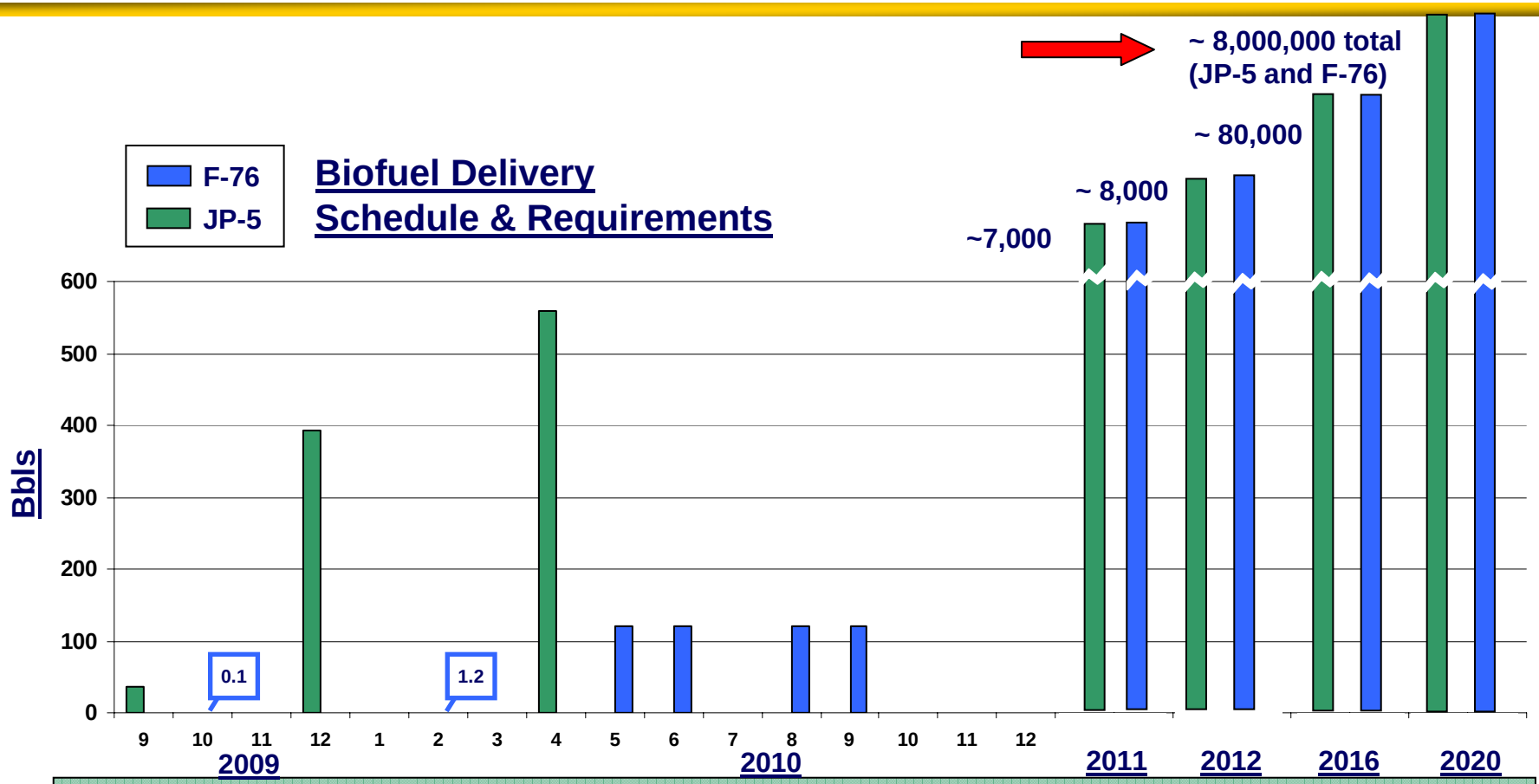
Great Green Fleet





Aviation Progress

Great Green Fleet Biofuel Needs



Creating a Demand for Biofuels

Airline industry and the Department of Defense collectively consume 1.5 million barrels of jet fuel per day

Defense Logistics Agency – Energy and the Air Transport Association of America signed an Alternative Fuels Pact on March 19, 2010

- Shared goals of spurring the development and deployment of commercially viable and alternative aviation fuels
- Collaboration reinforces commitment to commercialization of jet fuel
- Developing key fuels for alternative energy effort

AIR TRANSPORT ASSOCIATION

USDA – DON Partnership

- **Partnership to coordinate on biofuels and renewable energy**
- **Memorandum of understanding established agreement to:**
  - Leverage expertise
  - Cooperate on strategy and plans
  - Collaborate on renewable energy projects
  - Support evaluation/implementation venues
- **Hawaii was selected as the first region to advance partnership**
- **Hawaii Industry Forum in April 2010**
- **Current initiatives underway**
  - DoD, DLA Energy, HECO coordination

Hawaii Biofuel Demand

DoD Hawaii Biofuel Requirements

Tactical Renewable Fuel Requirements *

Type	Fuel (M Gallons)
JP-5	3.6
F-76	21.1
JP-8	39.3
Total	64.0

This is quantity of biofuel and petroleum – acquired as a 50:50 blend

Power Generation Biofuel Requirements **

Location	Size (MW)	Fuel (M Gallons)
Schoffield/Wheeler Base	20	0.8
MCB Kaneohe Bay	30	1.2
Pearl Harbor	50	2.0
Total		4.0

* As detailed in the DLA Energy RFI in June 2010
** Information from NAVFAC Pacific ; assumption is generation used as peaking plants

HECO Biofuel Requirements

Power Generation Biofuel Requirements

Type	Fuel (M Gallons)
Biofuel (80:20 split)	272.0 *
Crude Biofuel	137.9
Biodiesel	77.6
Total (Crude + Biodiesel)	215.5 (76:24) **

* Maximum biofuel amount that can be consumed by HECO to meet 80:20 rule, based on DoD requirements
** Needs according to HECO Biofuels RFP in April 2010

Total DoD – HECO Biofuel Requirements

Category	Fuel (M Gallons)
DoD Tactical	64.0
DoD Power Generation	4.0
HECO Power Generation	215.5
Total	283.5

Petroleum Reduction in Non-Tactical Vehicles

DON will reduce petroleum use in the commercial fleet by 50% by 2015, through the increased use of flex fuel, hybrid electric, and neighborhood electric vehicles.

Navy Initiatives

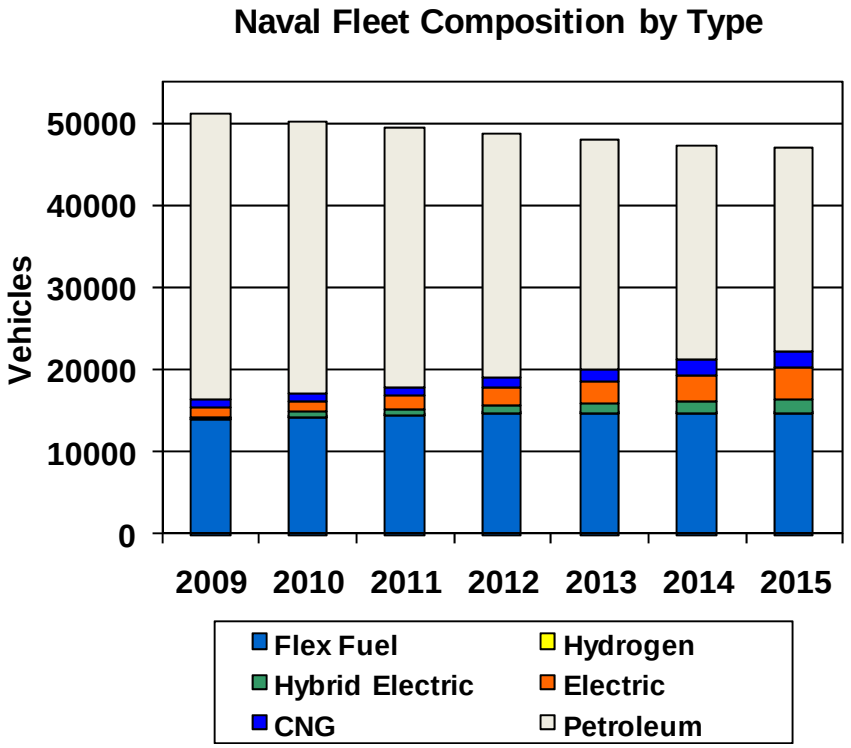
- 35% of fleet is alternative fueled capable vehicles
- 1000 conventional vehicles replaced with neighborhood electric vehicles

Currently: 30 E85/B20, 12 CNG stations
Planned: 2 E85, B20, 2 Electric stations planned

Marine Corps Initiatives

- 24% of fleet is alternative fueled capable vehicles
- 340 conventional vehicles replaced with neighborhood electric vehicles

Currently: 17 E85/B20, 7 CNG, 1 Hydrogen stations
Planned: 4 E85 and 1 Hydrogen stations planned



Baseline based on FY2009

- *Marine Corps: 6.8MM gallons*
- *Navy: 9.3MM gallons*

100% Renewable Energy Platform

Thank you!

Questions?

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