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# Department of Navy – Biofuel Initiatives



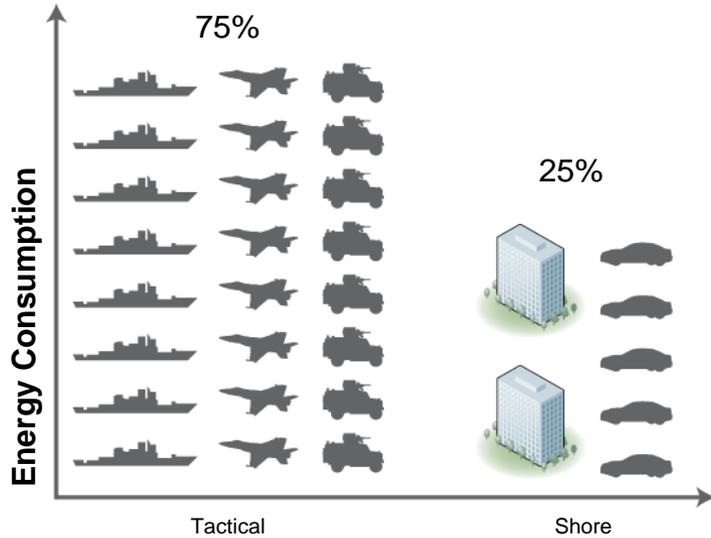




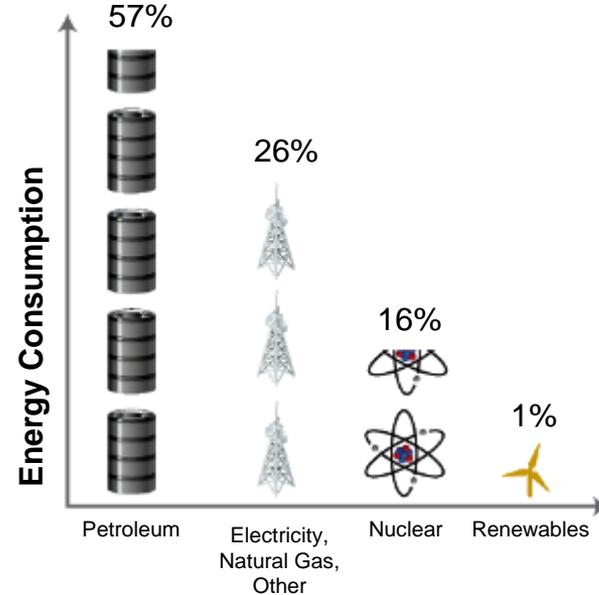


# Naval Energy Profile

Overall Energy Consumption



Overall Energy Sources

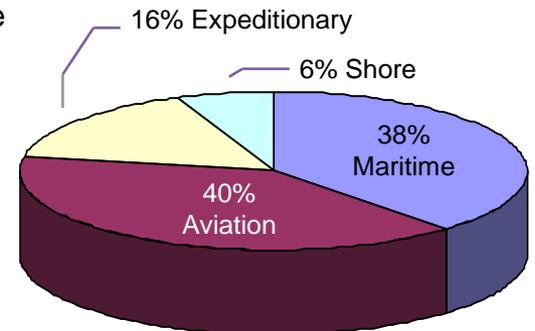


U.S. Petroleum Consumption

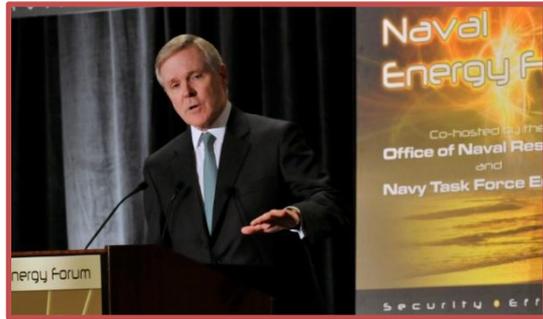


U.S. Government  
(2% of U.S.)

Navy Petroleum Consumption in Perspective



# ***DON Energy Goals***



**Increase Alternative Energy  
Department-wide**

**By 2020, 50% of total Department energy consumption  
will come from alternative sources**

**Increase Alternative Energy  
Sources Ashore**

**By 2020, at least 50% of shore-based energy requirements  
will be met by alternative sources; 50% of Department  
installations will be net-zero**

**Reduce Non-tactical Petroleum Use**

**By 2015, Department will reduce petroleum use in  
vehicles by 50%**

**Sail the "Great Green Fleet"**

**Department will demonstrate a Green Strike Group in  
local operations by 2012 and sail it by 2016**

**Energy Efficient Acquisitions**

**Evaluation of energy factors will be mandatory when  
awarding contracts for systems and buildings**

# ***The Biofuels Enterprise Model***



## **Participants include:**

***Landowners***

***Ag Processors***

***Refiners***

***Distributors***

***Farmers***

***Trade Groups***

***Technologists***

***Military Services***

***Regulatory Agencies***

***Defense Logistics Agency – Energy***

## **Resources to bring to enterprise to reduce process risk:**

***USDA***

***Department of Energy***

***Private Sector***

***Department of Defense***

***How do we stimulate industry to produce enough volume to be meaningful to military operations and to the energy market?***

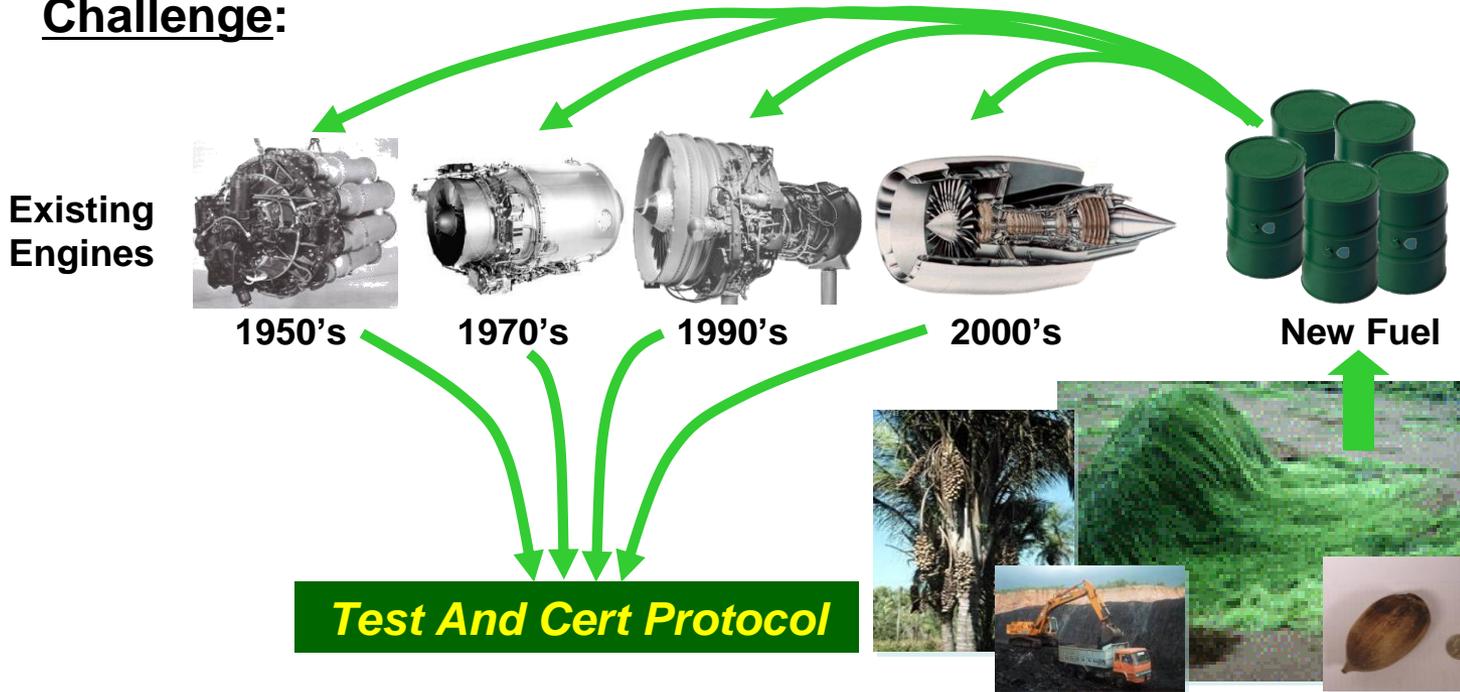
# Alternative Fuels

## Assumption:

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

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

## Challenge:



Courtesy Mark Rumizen - FAA

# Green Hornet – Earth Day 2010

- *Green Hornet flies supersonic at Naval Air Station Patuxent River*
- *Final approval and certification of camelina-based biofuel completed for F/A-18 Hornet in summer 2010*



# ***Riverine Command Boat (RCB-X)***



***RCB-X was tested in October 2010 on a blend of 50-50 algae biofuels where it achieved speeds above 40 knots.***

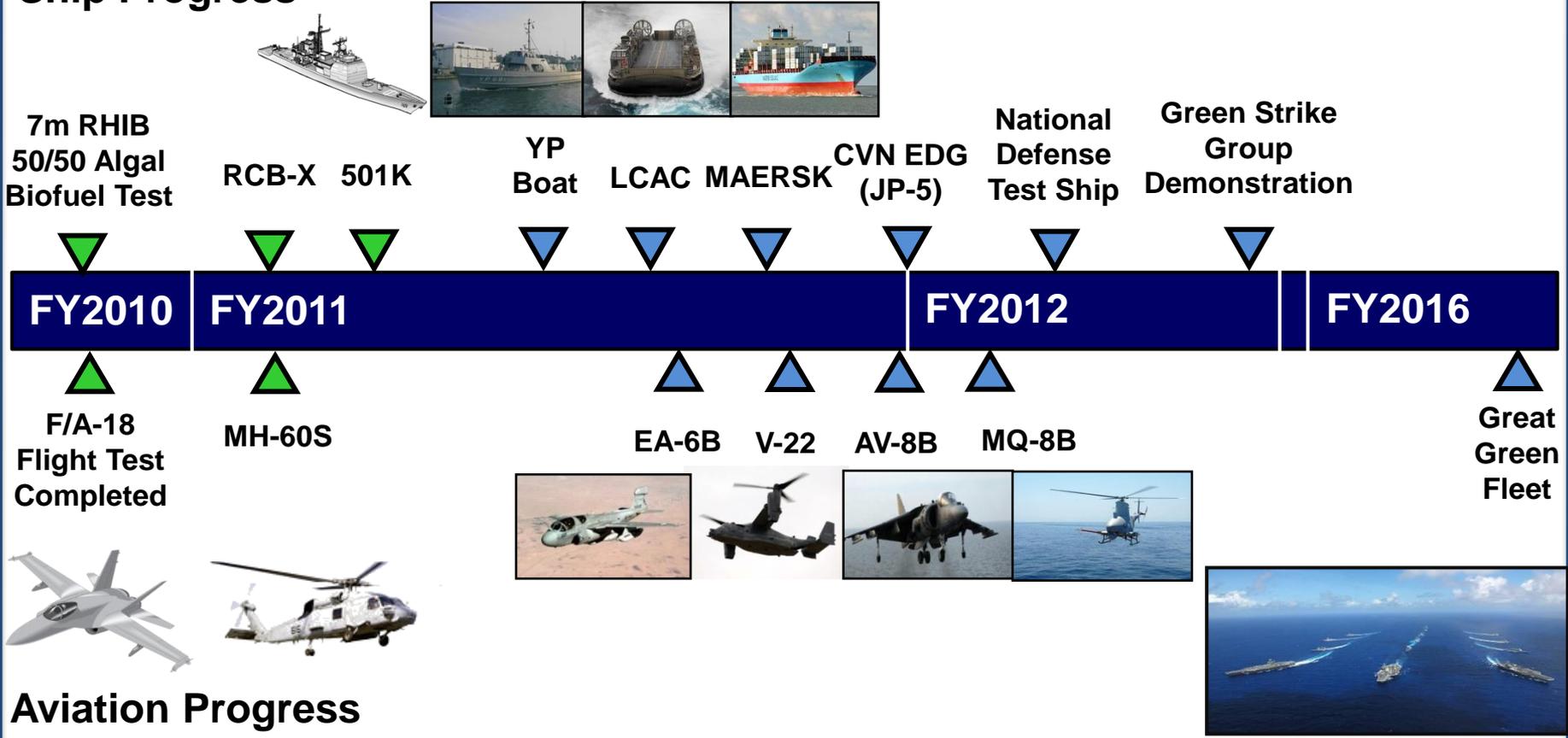
# ***Seahawk Helicopter (MH-60)***



***In November 2010, the Seahawk was tested and flawlessly operated on a blend of 50-50 camelina-based biofuels.***

# Great Green Fleet Certification

## Ship Progress

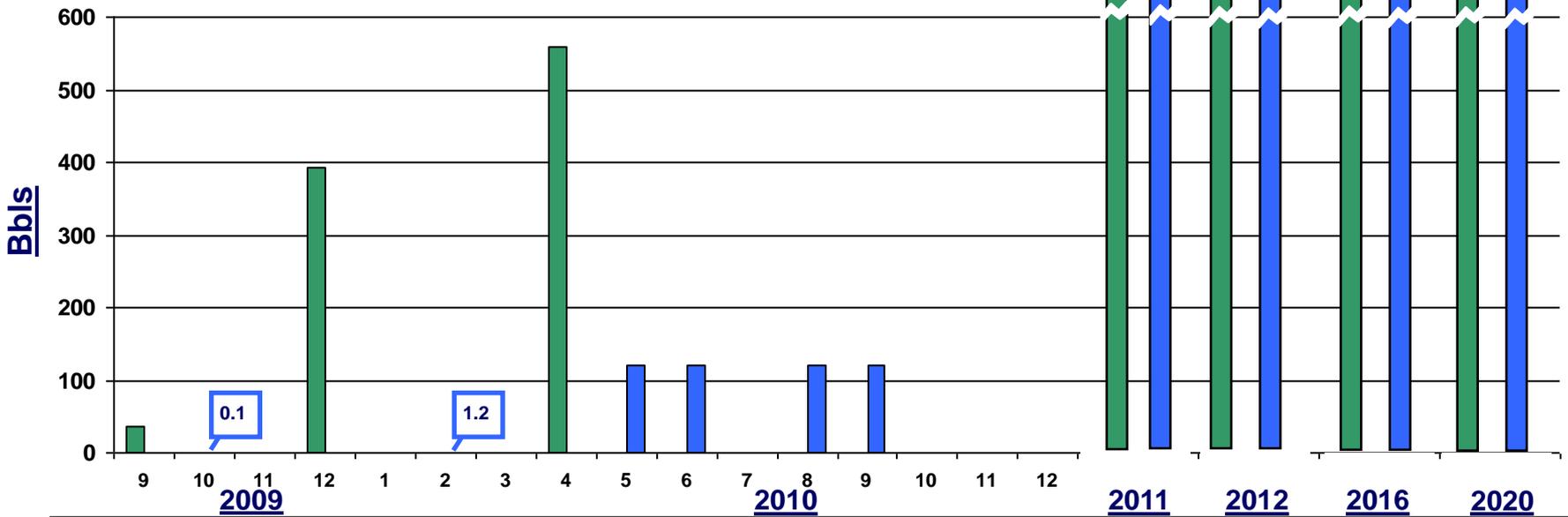


## Aviation Progress

# Great Green Fleet Biofuel Needs

→ ~ 8,000,000 total (JP-5 and F-76)

## Biofuel Delivery Schedule & Requirements



# ***Biofuel – Partnerships and Fueling the Fleet***

## **Department of Energy**



- DOD-DOE MoU
- DON/DOE Renewable Energy working groups:
  - Energy Efficiency
  - Renewable Energy
  - Smart Grid
  - Acquisition

## **DLA Energy**



- Long term contracts
- Preferred feedstocks
- Co-leading the Green Initiative for Fuels Transition Pacific (GIFTPAC) effort

## **Department of Agriculture**

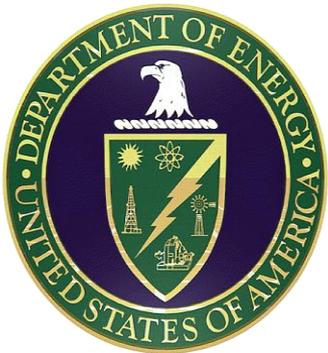


- USDA partnership on crop/agricultural
- Working with agricultural community to develop a market for biofuels

## **Industry**

- Air Transport Association (ATA)
- Private Equity Firms
- Venture Capitalists
- Top Biofuel Companies

# President on US Energy Security



***“I’m directing the Navy and the Department of Energy and Agriculture to work with the private sector to create advanced biofuels that can power not just fighter jets, but also trucks and commercial airliners.”***

*President Obama at Georgetown University, March 2011*

# ***100% Renewable Energy Platform***



***Thank you!***