



# *Building A Foundation For The Green Fleet: Sustainable/Renewable Fuels*



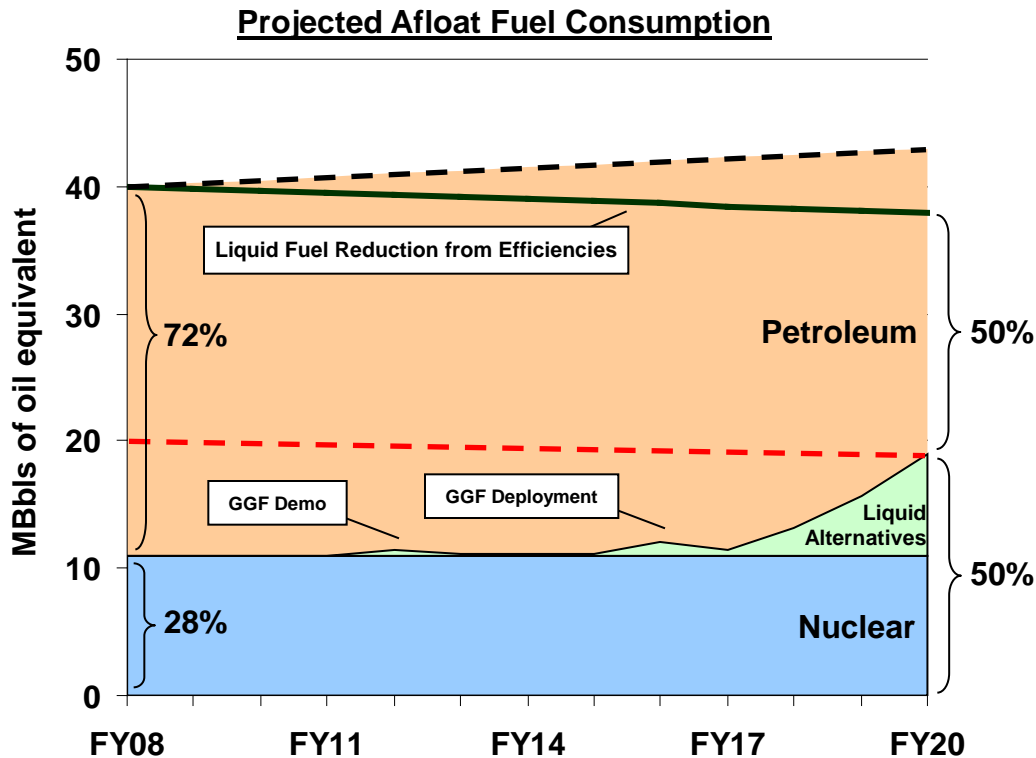
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Prepared For: **Navy Energy Forum**

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# 50% Alternative Fuel Afloat

- Reduce liquid fuel consumption through conservation and efficiency
- Increase use of alternative fuels (with liquid fuel from renewable sources)



## Navy gets to 50% alternatives in 2020 by:

- Reducing the requirement for liquid fuel from projected 32M bbl to 27M bbl
- Replacing 8M bbl of petroleum-based fuel with liquid alternative fuel

## Biofuel requirement:

- 2012 Demo – 8K Bbls
- 2016 Sail – 80K Bbls

# Alternative Fuels Strategy

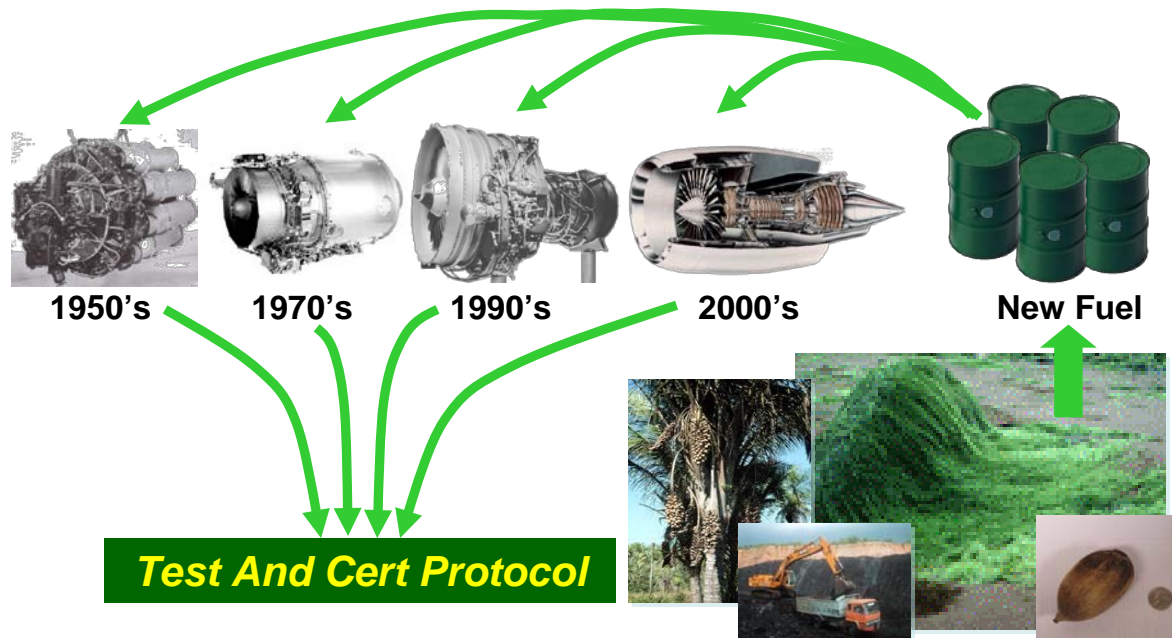
## Primary Assumption:

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:

Existing Engines

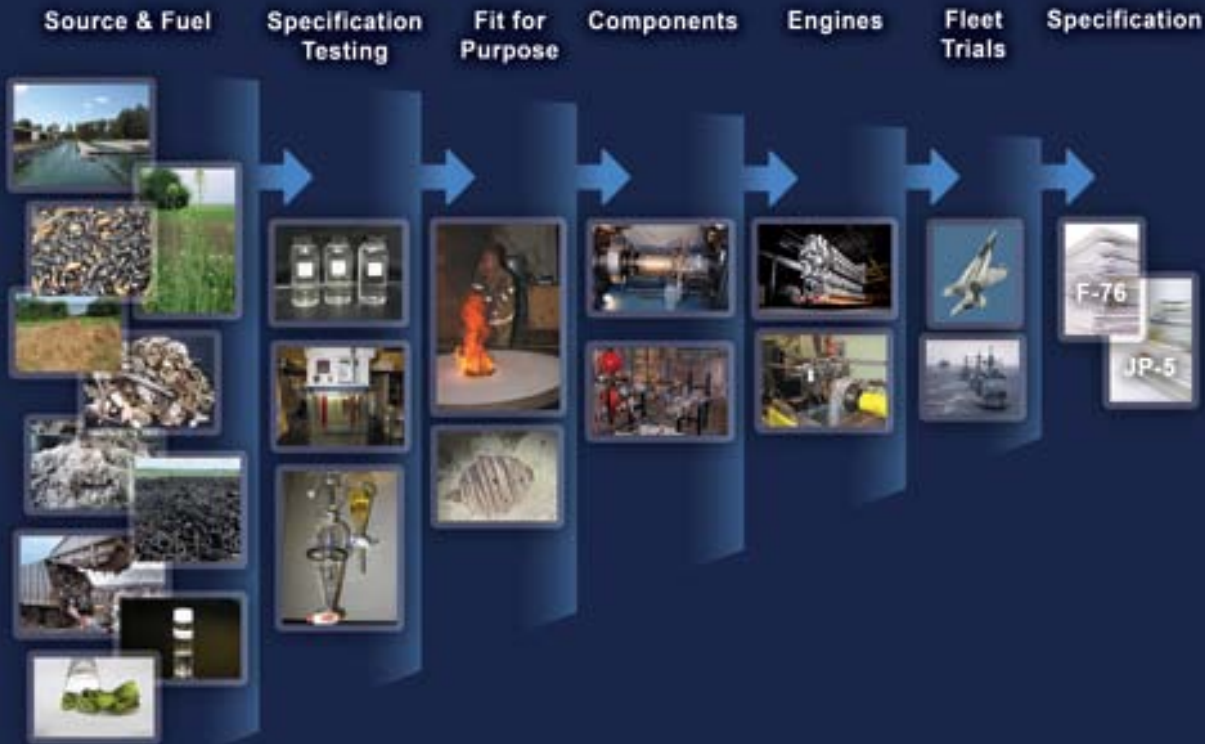


Engineer the fuel, not the platform



# FROM FIELD TO FLEET

*Certifying Drop-In Replacements*



## Phase 1:

- Chemical And Physical Property Similarity
  - Specification
  - Fit For Purpose

## Phase 2:

- Performance Similarity
  - Materials
  - Components
  - Propulsion/Fuel Systems
  - Distribution Systems

## Phase 3:

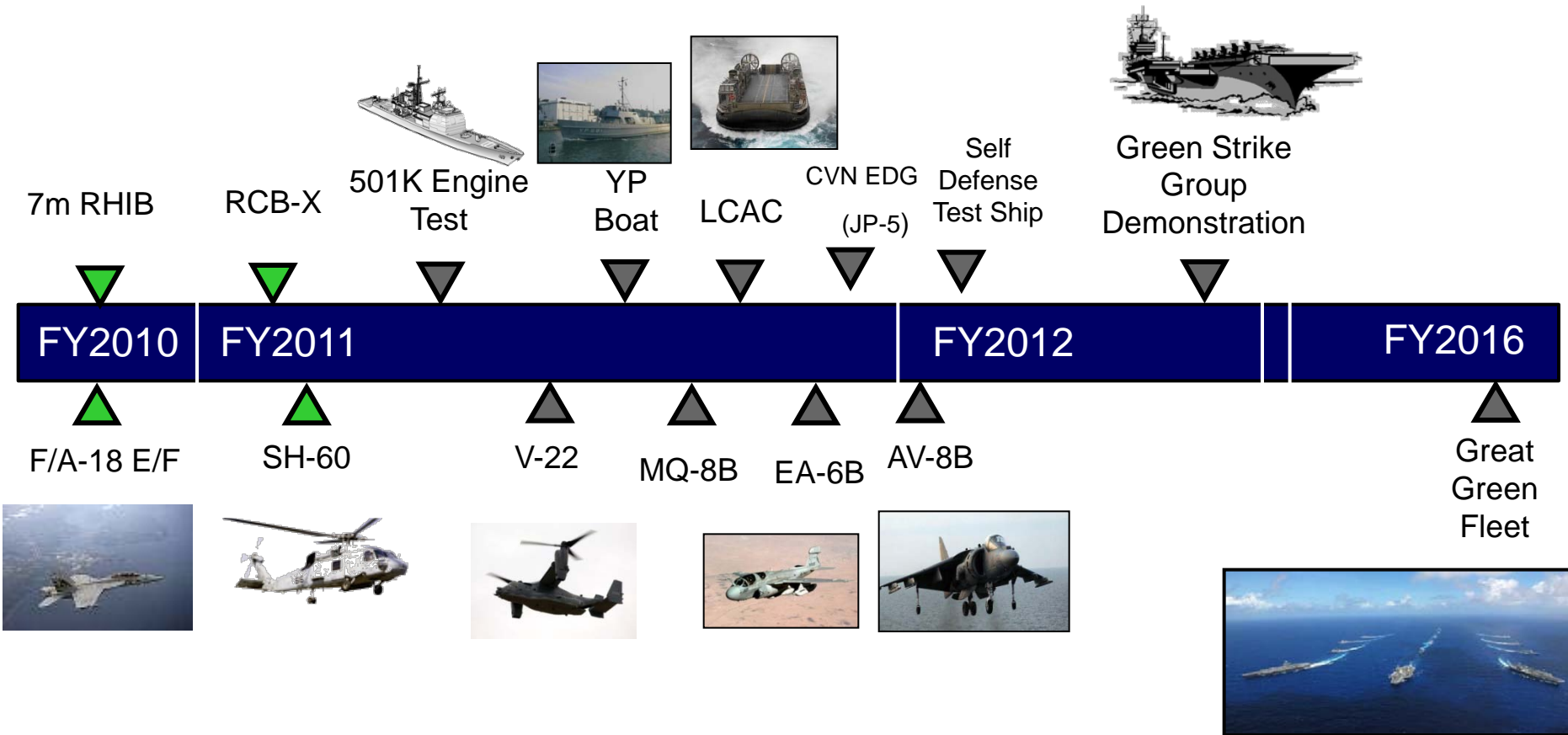
- Operational Similarity
  - Weapon System Trials

## Phase 4:

- Long Term Operability
  - Field Trials

# 50/50 Renewable Fuel Testing

## Ship Progress



## Aviation Progress

# Strategic Partnerships

- Continue to leverage the knowledge and resources of many partners
  - Inter-service
  - Interagency
  - State/Local
  - Industry
  - Academic
  - International



Strong Collaboration is Essential to Meeting the Navy's Energy Goals