Energy - Why is it Important?

Operating forward requires vast amounts of fuel

Supply chain is vulnerable

Increasing energy demand to support new platforms

Future Fleet will employ high energy systems

Energy is Navy’s most vital resource
Navy Energy Goals

**SECNAV Goals**

<table>
<thead>
<tr>
<th>Goal</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Increased Alternatives Afloat 2020</td>
<td>50% of total DON energy consumption from alternative sources</td>
</tr>
<tr>
<td>Increased Alternatives Ashore 2020</td>
<td>At least 50% of shore-based energy from alternative sources; 50% of installations net-zero</td>
</tr>
<tr>
<td>Sail the “Great Green Fleet” 2012/2016</td>
<td>Green Strike Group: local operations/sail</td>
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<tr>
<td>Reduce Non-Tactical Vehicle Petroleum Use 2015</td>
<td>Reduce petroleum use in commercial vehicle fleet by 50%</td>
</tr>
<tr>
<td>Energy Efficiency Acquisition</td>
<td>Evaluation of energy factors mandatory when awarding systems/buildings contracts</td>
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**CNO Targets**

<table>
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<tr>
<td>Reduce Consumption Afloat 2020</td>
<td>Navy will increase efficiency and reduce consumption afloat by 15%</td>
</tr>
<tr>
<td>Reduce Consumption Ashore 2020</td>
<td>Navy will increase efficiency and reduce consumption ashore by 50%</td>
</tr>
<tr>
<td>Protect Critical Infrastructure 2020</td>
<td>Navy’s critical infrastructure will have reliable backup/redundant power systems where viable</td>
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Green Fleet Initiative

Purpose is to demonstrate fuel saving technologies and alternative energy.

Technology Initiatives
- **Passive:** Technology that is always working to reduce consumption
- **Active:** Options to engage technology for improved efficiency
- **Actionable:** Will save fuel when information is analyzed and utilized

Alternative Fuel Requirements
- **Drop-in compatibility** with existing platforms and infrastructure
- **Price competitive** with fossil fuel
- **Energy density** comparable to fossil fuel

Participants

Use Existing Distributed Maritime Operations

2016 Great Green Fleet (GGF)
- Like the Great White Fleet, the GGF will highlight new capabilities from innovative fuel saving technologies, changes in procedures, and alternative fuels
- Will use existing global distributed maritime operations - logistics and schedule still being developed
- Fuel will not be purchased at a premium price

- Total: 283 Ships
- Deployed: 83 Ships
- 40,000 personnel

Green Fleet... the new normal for energy conservation
Operational Benefits

Air Operations
- Time at max power
- Range and endurance
- Reduces required number of F-18E tankers
- More F-18E available for other missions

Surface Operations
- Operational flexibility
- More time on station and energy for advanced systems
- Increased time/distance between refuelings

Expeditionary Operations
- Reduced convoys to Forward Operating Bases
- Extended range and endurance

Less time refueling… more time in the fight
Navy Alternative Fuel Program

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

- Meets current fuel performance requirements
- Can be mixed or alternated with petroleum fuel
- NO change to aircraft or ship configuration
- NO change to transport/storage infrastructure

Past

First Gen biofuels not fit for operational use
- Water separability
- Stability issues
- Material compatibility, corrosion
- Lower energy density

Current

Hydrotreated Renewables
Test & Certification
- Chemical & Physical Properties
- Component Performance
- Platform Performance
- Long-term Operability

Near-Term Future

Process Validation
- Alcohol to Jet
- Direct Sugar to Hydrocarbon
- Hydroprocessed Depolymerized Cellulosics
- Catalytic Hydrothermal Conversion

Longer-term Biofuel Solution

Integrated Alternatives
- Multiple Feedstocks
- Increased Production
- Decreased Cost

Engineer the fuel not the platform
International Engagement in Alternative Fuel

- Collaborate to expedite testing and adoption of new fuel standards
- Preserve interoperability

Biofuel development discussions with...
- Royal **Australian** Navy
- **Brazilian** Navy
- **Chilean** Navy
- **Israeli** Navy
- **Italian** Navy
- **UK** Royal Navy

International Cooperation: Key to Interoperability
Navy’s At-Sea Environmental Initiatives

- Compliance to support readiness
- At-sea training and testing
- Science-based modeling
- Research and stewardship

Stewardship and compliance are complimentary
For More Information:

Please visit our Energy, Environment and Climate Change website at http://greenfleet.dodlive.mil/

You can ‘Like’ Task Force Energy on Facebook at http://www.facebook.com/navalenergy

You can also follow us on Twitter at http://twitter.com/NavalEnergy